ID#	Application Phase	Commenter Agency	Section of EA (e.g., 6.1.2)	Subject	WG comments (screening and round 1)	Proponent Responses
1	screening	Gitga'at First Nation	AS3.3	Aboriginal Consultation	Table AS3-3 does not include all of the key concerns raised during the pre-application stage.	Table AS3-3 is a high-level summary of the key concerns raised by all members of the working group during the pre-Application stage of the environmental assessment related to all sections of the Application. The table was not intended to represent all concerns raised by Gitga'at First Nation. The full list of concerns raised by Gitga'at First Nation at the time of filing the Application is found in Table 10-1 "Gitga'at First Nation Interests, Concerns and Status" (see Appendix S.1 - Aboriginal Consultation Report #2). Table 12.3-6 of the Application includes Aurora LNG's understanding of key issues raised by Gitga'at First Nation during the pre-Application phase of the environmental assessment. This table was provided to Gitga'at First Nation for review in advance of the pre-submission workshop in October 2016. In addition to those two tables, Table 12.9-1 includes Gitga'at First Nation views specific to the assessment completed in Part C. Aurora LNG is of the opinion that, taken together, these tables provide a meaningful record of Gitga'at First Nation's views and concerns raised in the pre-Application phase. Aurora LNG will continue to track the views and feedback received during the upcoming workshops, as well as Aurora LNG's response to these views and feedback as well as the status of any outstanding items.Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified inAboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5.The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1.1	round 1	Gitga'at First Nation	AS3.3	Aboriginal Consultation	"As a follow up to screening comment #1 It is unclear to Gitga'at why two versions of Gitga'at's pre-application concerns exist in the Application, i.e., Appendix S.1, Table 10-1 and Table 12.3-6? Also, in Aurora LNG's screening response to screening comment #1, an ACR#3 is mentioned; Gitga'at would like to review the draft ACR#3 prior to submission, and would like Aurora LNG to provide a response to Gitga'at's comments prior to submission."	The full list of concerns raised by Gitga'at First Nation at the time of filing the Application is found in Table 10-1 "Gitga'at First Nation Interests, Concerns and Status" (see Appendix S.1 - Aboriginal Consultation Report #2). Table 12.3-6 of the Application includes Aurora LNG's understanding of key issues raised by Gitga'at First Nation during the pre-Application phase of the environmental assessment. This table was provided to Gitga'at First Nation for review in advance of the pre-submission workshop in October 2016. In addition to those two tables, Table 12.9-1 includes Gitga'at First Nation views specific to the assessment completed in Part C. Aurora LNG is of the opinion that, taken together, these tables provide a meaningful record of Gitga'at First Nation's views and concerns raised in the pre-Application phase. Aurora LNG will continue to track the views and feedback received during the upcoming workshops, as well as Aurora LNG's response to these views and feedback as well as the status of any outstanding items.Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified inAboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5.The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
2	screening	ECCC	1.2	Proposed Project Overview	Environment and Climate Change Canada (ECCC) would like to see detailed information about the water intake and discharge system and understand how such a system will affect the terrestrial and marine enviornment during construction and operations. Reference to Page 1-78 Water Supply - Seawater intake with an associated on-site desalination plant.	Please see the subsections on Water Supply (pages 1-25 through 1-26) and Wastewater Management (pages 1-16 through 1-27) of the Project Overview (Section 1) for a conceptual description of the desalination and discharge components of the project. As noted, the final design and location of the water supply system will be confirmed during FEED. The water intake and discharge system are considered under the Project Component/Physical Activity of Waste Management in Table 3-2 in Section 3 (Assessment Methods). Potential terrestrial and marine effects from operations Waste Management, including water intake and discharge, are considered under the following Environment VCs: Acoustic Environment (Section 4.4), Water Quality (Section 4.5), Wildlife Resources (Terrestrial) (Section 4.7), Freshwater Fish and Fish Habitat (Section 4.8), and Marine Fish and Fish Habitat (Section 4.9). Water intake/discharge volumes will be the greatest during operations and are therefore the focus of the assessment.
3	screening	FLNRO, Heritage Branch	1.2.2	Proposed Project Overview	Heritage Branch requires a shapefile of the project location to determine potential overlap with heritage and fossil resources.	A shapefile of the Project development area (PDA) was provided to the Heritage Branch via email on January 5, 2017. The local assessment area (LAA) for the assessment of potential Heritage effects is the PDA because potential Project effects on the VC would be site-specific and limited to locations directly affected by vegetation clearing and/or ground disturbance during construction.
4	screening	Lax Kw'alaams Band	1.2.5	Proposed Project Overview	See comments throughout regarding missing information on pipeline landfall, alternatives, and material balance information, among others.	Comment noted. See responses to other comments as appropriate.
5	screening	CEAA	1.2.6	Proposed Project Overview	From the description provided on page 1-35, the proponent indicates that Brown Passage has been identified only as a 'potential disposal location', and that the final disposal site will be selected at a later date once the suitability of the site has been evaluated. Information regarding the suitability of the disposal at sea site is required for the purposes of the environmental assessment. Any alternative disposal at sea sites should be fully assessed through the EA.	Brown Passage is currently the preferred disposal at sea site and was assessed in the Application. See Table 3-2 in Section 3 (Assessment Methods) for the VCs where there are potential interactions with dredging and disposal at sea activities.
5.11	round 1	CEAA	1.2.6	Proposed Project Overview	**As a follow up to screening comment #5** Issue remains outstanding. As required under Section 19(1)(g) of CEAA 2012, federal environmental assessment must take in to account the alternative means of carrying out the project that are technically and economically feasible, and the environmental effects of any such alternative means. While the proponent has conducted an alternatives assessment of sediment disposal method (on land, at sea, or a combination of both), alternative disposal at sea sites were not assessed. If Brown Passage is considered to be the 'preferred' site, it remains unclear as to why its suitability (i.e.: technical and economic feasibilty) would not be assessed, via comparison to other potential disposal sites, prior to submitting the Application.	The Application Information Requirements (AIR) document for the Aurora LNG Project committed Aurora LNG to assessing potential effects associated with dredging and disposal at sea activities (see Table 3-7 of the AIR). A requirement to assess alternative sites for disposal at sea was not included in the final AIR. Aurora LNG acknowledges comments made by regulatory agencies and Aboriginal Groups regarding the selection of Brown Passage as the proposed disposal at sea location for the Project. Aurora LNG also acknowledges comments made during the Working Group meeting on February 7, 2017 by ECCC and DFO on the topic of disposal at sea and disposal site alternatives. In following, a meeting was scheduled by the BC EAO for Friday April 28, 2017 to discuss potential alternative disposal at sea sites for the Aurora LNG project. Various regulators and Aboriginal Groups attended that workshop. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
5.12	round 1	ECCC	1.2.6	Proposed Project Overview	"ECCC follow up comment to the original CEAA screening response comment #5 Management of dredged sediment is a project element subject to environmental assessment. While the proponent has proposed disposal of dredged material at a particular marine site, the acceptability of this specific option is ultimately dependent on an assessment of alternative management options (e.g., potential beneficial use of sediments, onland disposal). If disposal at sea is shown to be the only feasible option based on such an analysis, it is important that consideraton of alternatives extends to an effects assessment of alternative disposal at sea sites. ECCC guidance (accessible at http://www.ec.gc.ca/iem-das/default.asp?lang=En&n=8E789D01-1&offset=2&toc=show) can be helpful in this regard. Information Request ECCC requests that the proponent provide an effects assessment that includes a substantive consideration of alternative means of managing dredged material. If disposal at sea is demonstrated to be the only feasible option based on this analysis, the proponent should identify alternative sites and provide an effects assessment of potential disposal at those sites. The effects of potential disposal activities at each alternative site should be assessed to the same standard and rigour (e.g., dispersion modelling) to allow comparison and identification of sites that could be considered suitable taking into account the input of the public, Indigenous groups and expert government authorities participating in the environmental assessment. "	The Application Information Requirements (AIR) document for the Aurora LNG Project committed Aurora LNG to assessing potential effects associated with dredging and disposal at sea activities (see Table 3-7 of the AIR). A requirement to assess alternative sites for disposal at sea was not included in the final AIR. Aurora LNG acknowledges comments made by regulatory agencies and Aboriginal Groups regarding the selection of Brown Passage as the proposed disposal at sea location for the Project. Aurora LNG also acknowledges comments made during the Working Group meeting on February 7, 2017 by ECCC and DFO on the topic of disposal at sea and disposal site alternatives. In following, a meeting was scheduled by the BC EAO for Friday April 28, 2017 to discuss potential alternative disposal at sea sites for the Aurora LNG project. Various regulators and Aboriginal Groups attended that workshop. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
6	screening	Lax Kw'alaams Band	1.2.7	Proposed Project Overview	No detailed materials balance data on by-products from the gas feedstock that are removed at the facility, as well as other process by-products, provided here. In the Project Description (e.g., at pg. 1-15), discussion of the removal of SO2 and H2S is provided. The amount of these and other byproduct materials that will be generated at the site (e.g., mercury) is not clear in the Application. For such a large facility, the amounts and more exact plans on how they will be captured, controlled and dealt with, and implications of these management plans, for all byproducts is critical to Lax Kw'alaams and to the conduct of good EA. For example, incineration of byproducts may or may not be an acceptable option; more information is required on options available for each byproduct. Please provide quantities of materials and plans on capturing, controlling, and disposing of these materials.	A material balance is not available at the current stage of project design. A detailed material balance will be completed during FEED. The primary products removed from the feedgas are non-methane hydrocarbons (natural gas liquids and traces of heavy hydrocarbons will be consumed as fuel), carbon dioxide (CO2), hydrogen sulphide (H2S), water and trace levels of mercury. CO2 and H2S will be removed in the acid gas removal unit and incinerated. Water will be removed to prevent freezing and mercury will be removed to prevent corrosion of the cryogenic equipment. Waste water and mercury will be discharged and disposed of as per applicable regulations. When incinerated, all of the H2S removed from the feed gas is converted to SO2. The quantity of SO2 emitted from the Project is detailed in the Air Quality VC in Table 4.2-12 Project-alone Case Air Emission Summary. Detailed SO2 emission rates for each of the four proposed incinerator stacks are provided in the Air Quality Technical Data Report (Appendix A) in Table 4-16. The total emission rate (i.e., the sum of the four incinerators) is 82 kg/h of SO2 at full build out. Similarly, the CO2 removed from the feedgas is discharged to the atmosphere. The quantity of CO2 discharged to atmosphere via the incinerator stacks is described in the Greenhouse Gases VC in Table 4.3-14. The incinerator stack will emit 1,389,816 tonne/yr of CO2 to the atmosphere at full build out.
7	screening	Gitga'at First Nation	1.2.8	Proposed Project Overview	The temporal scale of the decommissioning activities for the Project is inaccurate; for example, "remediation and reclamation of the site" will take longer than 5 years, especially considering the baseline conditions present (e.g., peatlands).	The temporal scale for decommissioning assumes that activities related to remediation and reclamation of the site can be completed within 5 years. However, it is recognized that establishment of the natural environment, such as plant communities, will extend beyond this timeframe.
7.1	round 1	Gitga'at First Nation	1.2.8	Proposed Project Overview	"As a follow up to screening comment #7 Considering Nexen's screening response to comment #7, Gitga'at would like an explanation on why a significant effect was then not predicted for wetlands/peatlands (also see Round 1 comment in Section 4.6 below). "	Screening comment #7 expresses concern about the accuracy of the five-year timeframe for reclamation of the site contained in the Project Description. The response to comment #7 clarifies that reclamation activities are anticipated to last for five years, but acknowledges that subsequent ecosystem recovery is a longer-term process. In response to comment # S7 here, please see Table 4.6-6 which provides the significance threshold for residual effects on wetland functions. Note that the threshold is tied to the definition of 'ecologically important wetlands,' as defined by regional guidance from Environment and Climate Change Canada (Environment Canada 2014). Some of the peatland wetland associations present in the PDA do not meet the definition of 'ecologically important wetlands' according to this regional guidance and are therefore not subject to the no-net-loss-of-wetland-functions goal of the Federal Policy on Wetland Conservation. Consequently, the significance threshold listed in Table 4.6-6 is not exceeded and Project residual effects to wetland functions are predicted to be not significant.
8	screening	Gitga'at First Nation	1.2.9	Proposed Project Overview	Gitga'at was not afforded the same opportunity of other Schedule B Aboriginal Groups to provide input on preliminary project design and planning, and mitigation measures.	Consultation with the Gitga'at First Nation during the environmental assessment of the Project has been guided by direction provided by the EAO. According to the Section 11 Order for the Project issued by the EAO on August 25, 2014, Aurora LNG was directed to consult with the Aboriginal Groups listed in Schedule B and C, specifically, Lax Kw'alaams Band, Metlakatla First Nation, Gitxaala Nation, Kitselas First Nation, and Kitsumkalum First Nation, and to provide notification to the groups listed in Schedule D, specifically Gitga'at First Nation and Métis Nation of B.C. However, on August 30, 2016, the EAO issued a Section 13 Order which added Gitga'at First Nation to the Aboriginal groups identified for consultation in Schedule B. Since then, Aurora LNG has offered meaningful opportunities, including a focused workshop prior to submitting the Application, for Gitga'at First Nation to provide input regarding project design and planning, and mitigation measures to avoid or reduce potential adverse effects of the Project. Pre-Application consultation with Gitga'at First Nation is detailed in The Aboriginal Consultation Report #2 (Appendix S.1 of the Application). Aurora LNG looks forward to further consultation activities with Gitga'at First Nation during the Application-review phase of the environmental assessment to refine appropriate mitigation measures, work to resolve any outstanding issues, identify need for follow-up strategies, and identify the scope and nature of any additional consultation or related commitments.
8.1	round 1	Gitga'at First Nation	1.2.9	Proposed Project Overview	"As a follow up to screening comment #8 Nexen lists that since the August 30, 2016 Section 13 Order, ""Aurora LNG has offered meaningful opportunities"" - can you please provide how Nexen views ""meaningful""? In response to the statement that Gitga'at could ""provide input regarding project design and planning"" at the workshop in October 2016 is misleading given the timing and plans of Nexen to submit the Application for screening within the month proceeding the workshop (which was made clear to Gitga'at during the workshop). In response to Nexen's reference to ACR#2, as outlined in our outstanding screening comment (see comment on Section 12.3 and Appendix S.1 below), Gitga'at has many issues with Appendix S.1, e.g., the language used and extrapolation of our presence at the October meeting. "	Aurora LNG's response to Screening comment #8 was not intended to be misleading. The description of the workshop with Gitga'at First Nation should have matched the description found in section 10.2.2.3 of ACR#2 which reads as follows: "Due to the timing of Gitga'at's addition to Schedule B (requiring consultation in relation to the EA for the Project), Gitga'at did not participate in First and Second Technical Workshops held with the other Aboriginal Groups. As such, Aurora LNG worked with Gitga'at to develop workshops on October 13 and 14, 2016. The topics covered during these workshops included topics that were covered with the other Aboriginal Groups as part of the First and Second Technical Workshops." "As part of the workshops, Gitga'at and Aurora LNG reviewed drafts of the portions of Sections 11.3 (Requirements under CEAA 2012 Section 5(1)(c)) and 12.0 (Aboriginal Consultation) that related to Gitga'at. In advance of the workshop, Aurora LNG provided drafts of Sections 11.3 and 12.0 and supporting materials (i.e. summarized information and conclusions related to the other Part B VCs) and requested that Gitga'at provide any views or feedback that it had regarding the relevant aspects of these documents at the workshop. Aurora LNG, as part of the workshop, recorded the views provided by Gitga'at, with respect to CEAA section 5(1)(c) effects (in accordance with section 11.3.10 of the AIR) and relevant information and feedback with respect to Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.0 of the Application, accordance with the AIR." In addition, please see Aurora LNG's responses to Gitga'at First Nation's specific comments regarding Section 12.3 of the Application and ACR 2 (Appendix S.1). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.

9	screening	Lax Kw'alaams Band	1.3.1	Proposed Project Overview	Aboriginal land and marine use plans are not integrated into the assessment. The 2004 Interim Land and Marine Resources Plan of the Allied Tsimshian Tribes of Lax Kw'alaams is mentioned and presented, but little is done to demonstrate the Proponent understands, considers, and addresses plan intentions. Please integrate plan throughout the Application, including demonstrating how it was used to inform Project design, alternatives, and EA methods.	The Interim Land and Marine Resources Plan was reviewed to help identify potential concerns to be included in the assessment, and to understand the planning context in the area. As required by Section 1.3 of the AIR, Section 1.3.1of the Application summarizes relevant land and marine use plans of potentially affected Aboriginal Groups, including the "Interim Land and Marine Resources Plan of the Allied Tsimshian Nations of Lax Kw'alaams". In addition, Section 6.4 of the Application, (Land and Resource Use) also summarizes the Interim Land and Marine Resources Plan and specifically discusses whether the Project is consistent with the plan. As outlined in Section 6.4.5.2 of the Application, the Project PDA and parts of the shipping route are located within the "Kxeen SMA" set out in the Interim Land and Marine Resources Plan - the stated intent of the restrictions applied to the "Kxeen SMA" is to preserve archaeological record and support cultural tourism. Restricted activities include intensive tourism and commercial recreation, industrial development, commercial and sport fishing, and shellfish aquaculture. Aurora LNG recognizes that construction and operation of the Project would constitute a restricted activity and would not be inherently consistent with the Interim Land and Marine Resource Plan. Aurora LNG will seek to develop additional mitigation measures that reduce the magnitude of potential adverse effects on values associated with the Kxeen SMA through collaboration with Lax Kw'alaams Band (e.g. Archaeological and Heritage Resources Management Plan).
10	screening	MOJTST	1.4.4	Proposed Project Overview	Request for additional information on 1.4.4.5 Employment Policies and Practices: There is a statement on page 1-66: "To increase opportunities and benefits for local employment, Aurora LNG will...communicate anticipated need and skill levels of workers for construction and operations...and communicate increases and decreases of workforce numbers as early as possible..." The request for additional specific information is: to whom and/or what will these be communicated? The community, the Province of British Columbia, training insitutions, employers, etc?	The specific content, format, and distribution of information related to employment needs has yet to be finalized. This information could be included within the Socio-economic Management Plan and/or specific planning documents related to hiring/employment or human resources management. Aurora LNG will use multiple channels of communication (e.g. open houses, local community employment workshops, internet, newspapers, bulletins, radio ads, etc.) to advise all interested stakeholders of the personnel needs of the Project.
11	screening	Lax Kw'alaams Band	1.4.4	Proposed Project Overview	Information on employment estimates specific to Lax Kw'alaams is missing. Information needs to be presented from Lax Kw'alaams and each First Nation here in summary form.	Aurora LNG cannot provide specific estimates of the extent to which Lax Kw'alaams or other First Nations community members will be employed by the Project. Such estimates are not possible at this time because they would require specific detailed information on the skills, availability, and interest of community members, as well as assumptions concerning likely Project participation rates. Aurora LNG has indicated that it will work with training organizations to help local and Aboriginal community members obtain necessary training to improve their chances of obtaining Project employment (see Section 1.4.4.5 and Mitigation No. 5.2.5 (Section 5.2.5)). In addition, Aurora LNG is currently participating in the Tsimshian Round Table Training Initiative and the Skeena Marine Research Collaboration, and providing funding for capacity building and job-related education.
12	screening	Lax Kw'alaams Band	1.4.4.5	Proposed Project Overview	Information on employment estimates specific to Lax Kw'alaams is missing. Information needs to be presented from Lax Kw'alaams and each First Nation here in summary form.	Aurora LNG cannot provide specific estimates of the extent to which Lax Kw'alaams or other First Nations community members will be employed by the Project. Such estimates are not possible at this time because they would require specific detailed information on the skills, availability, and interest of community members, as well as assumptions concerning likely Project participation rates. Aurora LNG has indicated that it will work with training organizations to help local and Aboriginal community members obtain necessary training to improve their chances of obtaining Project employment (see Section 1.4.4.5 and Mitigation No. 5.2.5 (Section 5.2.5)). In addition, Aurora LNG is currently participating in the Tsimshian Round Table Training Initiative and the Skeena Marine Research Collaboration, and providing funding for capacity building and job-related education.
13	screening	Lax Kw'alaams Band	1.5.1	Proposed Project Overview	Information on benefits specific to Lax Kw'alaams is missing. Information needs to be presented from Lax Kw'alaams and each First Nation here in summary form.	At this time, Aurora LNG cannot estimate specific benefits that may accrue to the Lax Kw'alaams and other Aboriginal Groups resulting from the Project. The nature of such benefits will depend on a number of factors which may include the capability, capacity, and competitiveness of Aboriginal Group vendors seeking Project contracts. As identified in Mitigation No. 5.2.1 (Section 5.2.5), Aurora LNG will work to facilitate local and Aboriginal economic participation within the Project, including the development of work packages that consider the capacity and capabilities of local and regional suppliers. Benefits may also be discussed during long term project agreement negotiations with Lax Kw'alaams (Section 12.5.4.7).
14	screening	Lax Kw'alaams Band	1.7	Proposed Project Overview	Information from BC Hydro is missing. Power alternatives are provided in the assessment of alternatives, but the assessment of alternatives is premature without provision of information from BC Hydro on one alternative (as well as the obvious and previously stated gap that the alternatives assessment does not include criteria reflecting TK/TU information from Lax Kw'alaams). In the updated Application, please provide inputs from BC Hydro to inform the alternatives analysis.	As described in Section 1.7 (Alternative Means), Aurora LNG is considering a number of options to meet the power requirements of the Project. As part of this assessment of options, Aurora LNG is examining the feasibility of utilizing power provided by BC Hydro. The analysis conducted to date has identified a number of limitations on the ability of the existing grid to supply power to meet the demands of the Project; however, a final determination of the power supply for the Project will not be made until the analysis has been completed.
15	screening	NAV CANADA	1.7	Proposed Project Overview	While initial discussions between NEXEN and NAV CANADA have occurred, additional information is required on flare stacks design, their locations and emissions that could impact the provision of air navigation services. Additionally, further coordination on possible electronic interference with navigational signals is required. Finally, flare plume rise and flare visible light impact on aviation requires further discussion to determine potential impact on air navigation service provision.	Refer to Section 6.3.4 (Project Interactions) of the Infrastructure and Services VC for consideration of potential effects of the flare on air traffic. As noted in section 1.7.3.2, the site layout and orientation of onsite infrastructure, including the flare, will be further refined as the Project progresses through FEED, but the extent of on-land development will remain within the PDA. Aurora LNG will work with NAV Canada to ensure the flare design meets permitting requirements under the Canadian Aviation Regulation. Aurora LNG is also willing to have further discussions with NAV Canada regarding the plume rise and flare visible light assessments.
16	screening	ECCC	1.7	Proposed Project Overview	ECCC would like to see detailed information about the water intake and discharge system and understand how such a system will affect the terrestrial and marine enviornment during construction and operations. Reference to Page 1-78 Water Supply - Seawater intake with an associated on-site desalination plant.	Please see the response to IR#2.
17	screening	Gitga'at First Nation	1.7	Proposed Project Overview	Part A, Section 1.7 (p. 1-75) states "Feedback was received from Aboriginal Groups regarding disposal of marine sediments and is noted in Section 1.7.5 below. No further feedback was received from Aboriginal Groups regarding the other alternative means of undertaking the Project."; the statement that "no further feedback was received from Aboriginal Groups regarding the other alternative means" is incorrect as Gitga'at First Nation provided feedback about alternative means for power generation during the draft Application Information Requirements public commenting period (see Gitga'at First Nation's comment #12 in Public Tracking Table) and during the October 13 and 14, 2016 workshop. Gitga'at First Nation feels that Nexen can do better in terms of Air Quality and Greenhouse Gas Emissions.	Section 1.7 of the Application was updated during Screening to include additional information regarding feedback received from Aboriginal Groups related to Project design alternatives, including power supply (Section 1.7.1), disposal of marine sediments (Section 1.7.5), and camp locations (Section 1.7.8). The air quality and greenhouse gas assessments were based on conservative assumptions. As the Project progresses through detailed design, Aurora LNG will continue to look for opportunities to reduce our project's environmental impacts and improve operating efficiency through design and engineering practices, the use of technology, and by leveraging the global LNG experience of the project partners.
18	screening	Gitga'at First Nation	2.4	Environmental Assessment Process	Table 2-6 does not include all of the key concerns raised during the pre-application stage.	Table 2-6 of the Application provides a summary of the key issues and concerns raised by members of the Working Group during the pre-application stage and is not intended to list all concerns. Table 12.3-6 of the Application includes Aurora LNG's understanding of key issues raised by Gitga'at First Nation during the pre-Application phase of the environmental assessment. The portion of the table related to key issues identified by Gitga'at First Nation was provided to the Nation for review in advance of a pre-submission workshop. Aurora LNG did not receive a request to by Gitga'at First Nation to revise the summary of key issues prior to submission of the Application. The full list of concerns raised by Gitga'at First Nation at the time of filing the Application is found in Table 10-1 of ACR #2 (see Appendix S.1). Aurora LNG will continue consultation with Gitga'at First Nation during the Application-review stage of the environmental assessment to discuss these concerns further, and to seek resolution of outstanding issues. Aurora LNG will report on progress on the resolution of issues consistent with the requirement to prepare an interim consultation report at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016), and to submit Aboriginal Consultation Report #3 at day 120 of the 180 day Application-review period (as per the section 11 Order).
18.1	round 1	Gitga'at First Nation	2.4	Environmental Assessment Process	"As a follow up to screening comment #18 It is unclear to Gitga'at why two versions of Gitga'at's pre-application concerns exist in the Application, i.e., Appendix S.1, Table 10-1 and Table 12.3-6? Also, in Aurora LNG's screening response to screening comment #18, an ACR#3 is mentioned; Gitga'at would like to review the draft ACR#3 prior to submission, and would like Aurora LNG to provide a response to Gitga'at's comments prior to submission."	The full list of concerns raised by Gitga'at First Nation at the time of filing the Application is found in Table 10-1 "Gitga'at First Nation Interests, Concerns and Status" (see Appendix S.1 - Aboriginal Consultation Report #2). Table 12.3-6 of the Application includes Aurora LNG's understanding of key issues raised by Gitga'at First Nation during the pre-Application phase of the environmental assessment. This table was provided to Gitga'at First Nation for review in advance of the pre-submission workshop in October 2016. In addition to those two tables, Table 12.9-1 includes Gitga'at First Nation views specific to the assessment completed in Part C. Aurora LNG is of the opinion that, taken together, these tables provide a meaningful record of Gitga'at First Nation's views and concerns raised in the pre-Application phase. Aurora LNG will continue to track the views and feedback received during the upcoming workshops, as well as Aurora LNG's response to these views and feedback as well as the status of any outstanding items. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). Gitga'at First Nation will have an opportunity to review and provide any comments on the draftAboriginal Consultation Report #3 at this time. As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
19	screening	Lax Kw'alaams Band	3.7	Assessment Methods	Aurora relies on Project contribution significance estimation in cumulative effects. Lax Kw'alaams rejects this model outright.	As described in Sections 3.7.3 and 3.7.8, the cumulative effects assessment considers the overall residual cumulative effect with the Project, as well as describing the Project's contribution to the residual cumulative effect, for context. However, as noted in Section 3.8.2, the significance determination is based on the overall residual cumulative effect.
20	screening	Lax Kw'alaams Band	3.2.2	Assessment Methods	Limited integration of TU/TK information from any First Nation is troubling. No evidence that residual effects criteria were developed using TU/TK information or significance thresholds for that matter. Please update Application to better integrate measures throughout the EA to reflect TU/TK information, re-assessing relevant VCs and updating conclusions accordingly.	Traditional Knowledge and Traditional Use Information was included throughout the Application. Table 12.4-1 "Incorporation of TK or TU Information in the Assessment of VCs in Part B of the Application" in Section 12 of the Application describes in detail how Traditional Knowledge and Traditional Use Information was incorporated into the existing conditions and assessment for each VC. Residual effects criteria and significance thresholds were developed based on criteria developed in the AIR and described in Section 3 of the Application. Pre-Application Consultation activities included consulting on the draft AIR for the Project as part of the Working Group process (see Section 5.1 of the Aboriginal Consultation Report #2). The Application includes a summary of key information and concerns gathered during Pre-Application consultation activities that influenced the scope of the assessment.
21	screening	ECCC	3.3.1	Assessment Methods	Described but not sufficent - marine emissions should be assessed along the navigational channel to the territorial sea.	Section 4.2.4 of the Application describes the consideration of potential interactions of the Project with Air Quality and the rationale for not carrying forward the potential effects of emissions from shipping into the assessment. The spatial boundaries for the assessment of air emissions, as defined in Section 4.2.2.5 (and Figure 4.2-1) of the Application, were determined in consultation with the working group members during development of the AIR.
22	screening	Lax Kw'alaams Band	3.4	Assessment Methods	See comments above re: no information reflecting TU/TK information, values or priorities of the Coast Tsimshian.	Comment noted. Please see responses to individual comments.
23	screening	Gitxaala Nation	3.4	Assessment Methods	The existing conditions as listed for each Section does not include a description of existing Aboriginal conditions related to each VC. This is despite the existing conditions in 3.4 indicating that available TK and TLU would be integrated into the application.	Traditional Knowledge and Traditional Use Information is included throughout the Application. Table 12.4-1 "Incorporation of TK or TU Information in the Assessment of VCs in Part B of the Application" in Section 12 of the Application describes in detail how Traditional Knowledge and Traditional Use Information was incorporated into existing conditions for each VC.

24	screening	Lax Kw'alaams Band	3.4	Assessment Methods	See comments above re: no information reflecting TU/TK information, values or priorities of the Coast Tsimshian.	Comment noted. Please see responses to individual comments.
25	screening	MOE	3.5	Assessment Methods	3.5, Project Interactions, Table 3-2: This table should include: camp waste incineration, sludge incineration, power generation, and stormwater treatment.	The level of detail in the breakdown of Project Components and Physical Activities in Table 3-2 was established in consultation with the working group during development of the AIR. Table 3-2 in the Application aligns with Table 3-6 in the AIR. Camp waste incineration, sludge incineration, and stormwater treatment are components of waste management. Power generation is a component of natural gas pre-treatment and natural gas liquids extraction and LNG production. Table 3-2 identifies which Valued Components are expected to interact with the Project Components and Physical Activities.
25.1	round 1	MOE	3.5	Assessment Methods	"As a follow up to screening comment #25 Waste generation and elements of waste management presented in the application have potential to result in interactions that may cause a significant effect. Inclusion in Table 3-2 is required and a complete assessment of waste disposal options with respect to the different solid waste streams generated by the project must be presented for assessment. In particular, air discharges related to incineration of waste generated by the work camp will release serious contaminants of concern. This type of emission is authorized by MoE generally as a last resort. Please refer to the Combustion of Municipal Solid Waste Fact Sheet here: http://www.bcairquality.ca/reports/msw_factsheet_2011.html"	See Section 6.3.5.2 of the Application for additional information on solid waste management. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. Aurora LNG is considering the use of an incinerator for potential food wastes from the worker accommodation. Aurora LNG intends to limit the size of the incinerator to below the BC MOE defined threshold of 400kg/hr and to limit the incinerated waste streams to organic food wastes. The incinerator, if utilized, will help to limit potential food waste odors that could attract wildlife or other pests. Please see the "Assessment of Work Camp Waste Incineration" technical memo which will be filed with the BC EAO.
26	screening	Lax Kw'alaams Band	3.6.6	Assessment Methods	See comments above re: no information reflecting TU/TK information, values or priorities of the Coast Tsimshian.	Comment noted. Please see responses to individual comments.
27	screening	Dodge Cove	3.7.1	Assessment Methods	Table 3-4 Omission - no mention of the Prince Rupert Gas Transmission pipeline that will surround Digby Island. No mention of cumulative effects of Pacific Northwest LNG, Aurora LNG, and the gas pipeline all within the Skeena River estuary, Nass River, and Chatham Sound migration routes of marine fish and marine mammals. No other cumulative effects mentioned as well. This needs to be studied for Section 4.9 Marine Fish and Fish Habitat.	Table 3-4 includes the Prince Rupert Gas Transmission Project and Pacific Northwest LNG Project as future projects or physical activities, on pages 3-21 and 3-22 of the Application. Potential cumulative effects associated with the Prince Rupert Gas Transmission Project and the Pacific Northwest LNG Project, with respect to Marine Fish and Fish Habitat, are considered in Section 4.9.6 and Table 4.9-22.
28	screening	Lax Kw'alaams Band	3.7.3	Assessment Methods	Aurora relies on Project contribution significance estimation in cumulative effects. Lax Kw'alaams rejects this model outright.	This comment is a duplicate with IR#19. Please see response to IR#19.
29	screening	ECCC	4.2.2	Air Quality	Present but inadequate. Regional Assessment Area (RAA) only slightly bigger than the Local Assessment Area (LAA). Should be big enough to include impacts of marine emissions on Haida Gwaii, along the shipping route via the Dixon Entrance and/or Hecate Strait.	The Regional Assessment Area (RAA) and Local Assessment Area (LAA) for Air Quality were selected in consultation with, and approved by, the BC MOE and are consistent with the final Detailed Air Quality Model Plan for the Proposed Aurora LNG Project (the "Model Plan"). The spatial extents of the RAA and LAA were selected based upon the Guidelines for Air Quality Dispersion Modelling in British Columbia (BC MOE 2008). The selection of the LAA and RAA were made taking into consideration the dispersion of pollutants from the Project, the locations of nearby communities and traditional use areas and the location of major emission sources in the region with potential for cumulative effects. Other air quality assessments completed in the airshed were also reviewed to verify that the selected spatial boundaries encompass areas where potential cumulative effects may occur. The LAA is sufficiently large to predict changes in air quality where effects from the Project are expected to be greatest, and the RAA is sufficiently large to predict changes in air quality over a larger area where other emission sources in the region may have overlapping effects with the proposed Project effects. The final approved Model Plan is presented in the Air Quality Technical Data Report as Appendix A.
30	screening	Metlakatla First Nation	4.2.2	Air Quality	The project description does not indicate whether there will be air emissions in the form of fog/steam from the project's cooling tower. In the absence of this information, it is not possible to determine if all correct measurable parameters have been selected. In the event that there will be steam emissions, sodium compounds need to be measured or the Application must be considered incomplete.	The LNG facility and marine terminal will require electrical power to operate supporting facilities and infrastructure. Approximately 250 megawatts (MW) of power will be required. The Project will include the installation of an onsite power generation facility capable of supplying the additional required electrical power. Final decisions regarding the type of power generation and capacity will be confirmed during FEED (see Section 1.7.1 for power supply options being considered for the Project); however, the preliminary design being assessed is a combined cycle natural gas power plant with a recirculating cooling tower (Section 1.2.5.3, Power Supply). Cooling towers are used to reject heat from industrial processes by evaporating water. The cooling towers are a source of water vapour emissions, as well as trace emissions of water droplets (drift). Water vapour emissions are 100% pure water vapour and do not contain any impurities such as sodium. Water droplet emissions may contain a small quantity of dissolved minerals; however, modern cooling tower designs include drift eliminators which eliminate water droplet emissions to 0.001% of cooling water flow rates or less. Modern cooling towers result in negligible liquid water emissions. The cooling tower is expected to result in a visible plume of condensed water vapour under certain atmospheric conditions; however, it is not considered to be an important source of pollutant emissions and is not predicted to have adverse effects on air quality.
31	screening	Lax Kw'alaams Band	4.2.4	Air Quality	Aurora has not provided a description of potential effects from shipping traffic along the shipping route. Aurora states the following: "CAC emissions produced while the LNG carrier and associated tugs are in transit between the pilot station and the marine terminal will result in similar effects as described in the assessments of other LNG projects in the area" (4.2-19). Aurora must provide a description of the potential effects from shipping traffic along the shipping route, including shorter-term construction-related traffic. The reference of other Project studies does not fulfill the AIR requirements (AIR section 4.1). Furthermore, because "Marine-based activities are a major source of CAC emissions in the RAA prior to Project construction" (4.2-14) it is important to understand cumulative effects of shipping traffic. Aurora has not conducted an assessment of CAC emissions from the Project (or cumulatively) in the Application, and provides insufficient explanation. Aurora that "transit of LNG carriers along the shipping route will be sporadic and short-term in duration (i.e., about 3 hours each way). As such, potential effects of emissions from shipping are not carried forwards into the assessment." Please provide a quantitative response as to why these effects are not a concern. As it stands, Lax Kw'alaams finds that 256 LNG carriers are visiting the LNG facility per year justies a cumulative effects analysis, notwithstanding the additional two tug boats per LNG carrier, plus any construction-related or operations support traffic (4.3-21). Without a meanginful estimation of potential effects of emissions from shipping the current significance of determination remains deficient. Please provide potential Project-related and cumulative effects from shipping traffic along the shipping route, which assesses the Project to Criteria Air Contaminants and Related Pollutants	For the Project marine vessel emissions, conservative, simplifying assumptions were applied based upon consultation with the BC MOE and as detailed in the final approved Air Quality Model Plan. The assessment focuses on modelling maximum anticipated CAC emissions from marine activities while at the berth, cumulatively with emissions from the LNG facility. Project marine-based activities considered LNG carrier and tugboat maneuvering, berthing and hoteling activities within one kilometre of the marine terminal. The emissions from these activities are conservatively assumed to occur as a point source while berthed. These assumptions result in conservative air quality predictions since maximum LNG facility emissions and maximum vessel emissions occur in the same location at the same time where they can act cumulatively and the emissions occur near the closest and largest number of potential receptors (e.g. residences) to the Project. CAC emissions produced while the LNG carrier and associated tugs are in transit between the pilot station were not modelled, as effects on air quality were determined to be less than those associated with the marine vessels at or near berth scenario. This qualitative assessment was made in consultation with the BC MOE and approved in the final Air Quality Model Plan. This qualitative assessment was also made based upon professional discretion and the model results available from other EAs where maximum pollutant concentrations associated with similar LNG vessels in transit had been modelled (i.e. Pacific NorthWest LNG, LNG Canada). These assessments concluded that associated predicted concentrations along the shipping route will contribute small incremental additions to ambient concentrations that are less than the most stringent applicable objectives. The transit of LNG carriers along the shipping route will be sporadic and short-term in duration (i.e., about 3 hours each way). As such, potential effects of emissions from ships in transit was not carried forwards into the assessment.
32	screening	Metlakatla First Nation	4.2.4	Air Quality	Per comment above, in the event that there are steam emissions, elevated levels of sodium compounds may have an effect on soils.	The cooling towers are a source of water vapour emissions, as well as trace emissions of water droplets (drift). Water vapour emissions are 100% pure water vapour and do not contain impurities such as sodium. Water droplet emissions may contain a small quantity of dissolved minerals; however, modern cooling tower designs include drift eliminators which eliminate water droplet emissions to 0.001% of cooling water flow rates or less. Modern cooling towers result in negligible liquid water emissions and as a result it is not considered an important source of pollutant emissions and is not predicted to have adverse effects on air quality.
33	screening	ECCC	4.2.4	Air Quality	Described but not sufficient - marine emissions should be assessed along the navigational channel to the territorial sea.	For the Project marine vessel emissions, conservative, simplifying assumptions were applied based upon consultation with the BC MOE and as detailed in the final approved Air Quality Model Plan. The assessment focuses on modelling maximum anticipated CAC emissions from marine activities while at the berth, cumulatively with emissions from the LNG facility. Project marine-based activities considered LNG carrier and tugboat maneuvering, berthing and hoteling activities within one kilometre of the marine terminal. The emissions from these activities are conservatively assumed to occur as a point source while berthed. These assumptions result in conservative air quality predictions since maximum LNG facility emissions and maximum vessel emissions occur in the same location at the same time where they can act cumulatively and the emissions occur near the closest and largest number of potential receptors (e.g. residences) to the Project. CAC emissions produced while the LNG carrier and associated tugs are in transit between the pilot station were not modelled, as effects on air quality were determined to be less than those associated with the marine vessels at or near berth scenario. This qualitative assessment was made in consultation with the BC MOE and approved in the final Air Quality Model Plan. This qualitative assessment was also made based upon professional discretion and the model results available from other EAs where maximum pollutant concentrations associated with similar LNG vessels in transit had been modelled (i.e. Pacific NorthWest LNG, LNG Canada). These assessments concluded that associated predicted concentrations along the shipping route will contribute small incremental additions to ambient concentrations that are less than the most stringent applicable objectives. The transit of LNG carriers along the shipping route will be sporadic and short-term in duration (i.e., about 3 hours each way). As such, potential effects of emissions from ships in transit was not carried forwards into the assessment.
34	screening	Health Canada	4.2	Air Quality	There are new CAAQS for sulphur dioxide (SO2). While these guidelines do not come into effect until 2020, it may be valuable to consider them since the project will be operational at this time. 1-h SO2 = 70 ppb, annual SO2 = 5 ppb. http://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html	The model predictions provided in the EA allow for a direct comparison to the new CAAQS for SO2. Maximum predicted one-hour SO2 concentrations, based upon the 99th percentile of the daily 1-hour maximums over one year are predicted and presented in the EA for purpose of comparison to the British Columbia Air Quality Standards. The new CAAQS uses the same statistical metric as the BC Air Quality Standard with the exception that the CAAQS applies to a 3-year rolling average. The maximum value in one year is a conservative (i.e. greater than) representation of a 3-year rolling average and can be directly compared to the CAAQS value of 70 ppb. Maximum annual average SO2 concentrations are presented in the EA and can be compared to the CAAQS value of 5 ppb. Maximum predicted one-hour and annual average sulphur dioxide concentrations are presented in Tables 4.2-8, 4.2-13, 4.2-17 and 4.2-19 for the Base Case, Project Case, Application Case and CEA Case, respectively. For all assessment cases, at all receptors and for all averaging periods, the maximum predicted SO2 concentrations are less than the new CAAQS.
35	screening	Lax Kw'alaams Band	4.2	Air Quality	Aurora states information was obtained on TK and TU from Aboriginal Groups through consultation, information gathering and voluntary information sharing (e.g. Project-specific studies); however, Aurora does not describe how it was integrated into the assessment. Aurora ambiguously states "This information was reviewed and considered during the preparation of the Application, and has been incorporated into the assessment, where applicable" (4.2-3). This information is pertinent to understand the potential Project interactions, effects, and impacts on Lax Kw'alaams. Please coherently and transparently describe how TK and TU from Aboriginal Groups was integrated into the assessment. Furthermore, if Aurora finds that obtained TK and TU data is not applicable, please explain why and how it came to that conclusion.	TK and TU information was incorporated into the Air Quality VC in the selection of potential effects and measurable parameters, the selection of Aboriginal Interests locations and the findings of the air quality assessment that were carried forward into the Aboriginal Interests section of the Environmental Assessment Certificate Application. Specifically, maximum pollutant emissions rates were determined and models were used to predict maximum ambient concentrations or deposition rates for substances of concern that were important to human health, water quality, and vegetation and wetland resources. Maximum concentrations and deposition rates were predicted at identified Aboriginal Interests locations and evaluated in the EA. Aurora LNG relied on TK and TLU information available at the time of air quality model design to select specific receptor locations for air quality modelling. In particular, Aurora LNG included known traditional use locations (28 total), known sacred or cultural areas available(8 total), and reserves within the Air Quality (LAA/RAA) as receptors for air quality modelling.
36	screening	Gitga'at First Nation	4.2.2.4	Air Quality	Total VOC's were not assessed as per the AIR.	Potential effects of VOC emissions were evaluated qualitatively and determined to not have the potential for adverse effects on air quality based upon the low magnitude of emissions, the absence of British Columbia and Canada ambient objectives for VOC, low magnitude model predictions from other similar LNG environmental assessments that had predicted individual VOC concentrations, and professional judgement. There are no applicable objectives for total VOCs in Canada or BC. Air quality assessments completed for other LNG projects (e.g., LNG Canada; 2014) have demonstrated that the contribution of VOC emissions to ambient concentrations of VOC compounds from LNG facilities is insubstantial. As a result, the quantitative assessment of potential effects was focused on evaluating the increase of CAC concentrations due to Project emissions from the LNG facility (during all Project phases) and vessels at berth for loading. Although VOCs are not carried forward into the assessment, VOC emission estimates are provided in the Air Quality TDR (see Appendix A).
36.1	round 1	Gitga'at First Nation	4.2.2.4	Air Quality	"As a follow up to screening comment #36 While there may not be a guideline for total VOCs, there are guidelines for individual VOCs that should be used. Please provide assessment, e.g., benzene, toluene, ethylbenzene, xylenes, 1,3-butadiene, cyclohexane, and trimethylbenzenes."	In developing the list of substances of interest (SOI), the Proponent consulted extensively with the Provincial and Federal government representatives at the working group level. The BC Ministry of Environment approved a list of SOI including total VOC, and excluding speciated VOCs. LNG facilities, unlike oil refineries, do not emit VOCs in substantial quantities. LNG facilities process sales quality natural gas, a product that has been processed to remove contaminants like hydrogen sulphide and carbon dioxide, and small quantities of complex hydrocarbons (heavier than hexane). Sales quality natural gas is comprised of Methane and several other simple hydrocarbons (ethane, propane, butane, pentane) that are not toxic to humans. The quantity of VOCs of interest in natural gas are very small, and very little is released. They are therefore not a concern. Also see the "Volatile Organic Compounds and Human Health Assessment" technical memo which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

37	screening	Gitxaala Nation	4.2.2.4	Air Quality	Due to the level of detail included in the Project Description (as noted in earlier comments), we do not know the specifications of the cooling tower and therefore do not know if this section is sufficient. Specifically, there is no information about whether or not the cooling tower with have emissions. If it does have emissions , the application should include a commitment to measure ambient sodium concentrations. If the cooling tower will not have emissions, the application can be considered complete.	The cooling towers are a source of water vapour emissions, as well as trace emissions of water droplets (drift). Water vapour emissions are 100% pure water vapour and do not contain impurities such as sodium. Water droplet emissions may contain a small quantity of dissolved minerals; however, modern cooling tower designs include drift eliminators which eliminate water droplet emissions to 0.001% of cooling water flow rates or less. Modern cooling towers result in negligible liquid water emissions and as a result it is not considered an important source of pollutant emissions and is not predicted to have adverse effects on air quality.
38	screening	ECCC	4.2.3	Air Quality	Present but NOT CORRECT. The Proponent used pre-ECA conditions to establish baseline/base case conditions which can mask the impact of the project on AQ. Similarily, YVR monitoring data is not applicable to PPRA due to the difference in amount of marine (and other transportation) traffic, and so this could also mask the impact of the Project. In addition, marine emissions from vessels underway should be included.	Section 4.3.4 provides an overview of existing conditions by summarizing available climate and baseline air quality data as well as using a dispersion model to predict Base Case air quality concentrations. In consultation with the BC MOE, representative air quality monitoring stations from the Prince Rupert, Kitimat, Smithers and Vancouver areas were used to summarize baseline air quality. The Government of Canada adopted regulations that establish an Emission Control Area that requires that vessels use diesel fuel with a sulphur limit of 0.10% effective January 1, 2015. While it is correct to note that the ambient SO2 concentrations summarized and presented in Section 4.3.4 and in the Technical Data Report correspond to the pre-ECA time period, the ambient data is still the best available information representative of the study area and was selected and adopted in consultation with the BC MOE as detailed in the final approved Model Plan. Other EAs completed for LNG projects in the area, as well as the Prince Rupert Airshed Study (PRAS) adopt similar assumptions to describe baseline air quality. The dispersion modelling completed in support of the EA is intended to provide conservative predictions of potential effects on air quality. The baseline concentrations presented in Section 4.3.4 are added to dispersion model predictions to account for the influence of emission sources that are not modelled (e.g. transboundary pollution, vehicle and heating emissions from communities). The adoption of pre-ECA ambient SO2 concentrations that potentially overstate SO2 concentrations to determine baseline air quality concentrations is a conservative measure and consistent with the intent and purpose of the EA. Section 4.3.4 also presents Base Case model predictions. Marine emissions from vessels underway in the airshed were included in Base Case, Application Case and CEA Case model predictions. The Environment Canada National Marine Emission Inventory Tool (MEIT) v4.1.0 database was used to extract emission estimates of SO2, NOX, CO, hydrocarbons, and particulate matter (total PM, PM10, PM2.5) for the year 2015. The emissions for vessels underway in the MEIT was used as an input to the CALPUFF dispersion model and the influence of these vessels on air quality is reflected in the model predictions.
38.1	round 1	ECCC	Section 4.23 in Appendix A	Air Quality	"As a follow up to screening comment #38 In Section 4.3 of Appendix A, the proponent states that ""SO2 baseline is based on the 98th percentile of the monitoring data collected at the Vancouver International Airport (2010-2014) and the Kitimat Rail (2006 – 2009) monitoring stations."" As a consequence, the base case does not reflect the influence of the North American Emission Control Area which came into effect in 2012 and has served to reduce marine-source SO2 and particulate matter (PM) emissions. Information Request ECCC requests that the proponent estimate emissions ""without the project"" and ""with the project"" - taking into account the more recent North American Emission Control Area conditions - to facilitate a more accurate understanding of project-induced air quality impacts including cumulative effects. "	Aurora LNG respectfully disagrees with ECCCs position on baseline SO2. Vancouver International Airport was specifically chosen due to proximity to Georgia Strait and the marine emissions associated with the Port of Vancouver, a port many times the size of Prince Rupert.The time interval chosen (e.g. most recent) included 3 years of post-ECA data. Also, the SO2 baseline is derived from the 98th percentile of the monitoring data collected at the Vancouver International Airport, which makes it more conservative.
39	screening	ECCC	Appendix A - Air Quality TDR	Air Quality	Present but NOT CORRECT. The Proponent used pre-ECA conditions to establish baseline/base case conditions which can mask the impact of the project on AQ. Similary, YVR monitoring data not applicable to PPRA due to the difference in amount of marine (and other transportation) traffic, and so this could also mask the impact of the project. In addition, marine emissions from vessels underway should be included.	Sections 4.3.4 of the Air Quality VC and Sections 4.3 and 7.1 of the Air Quality Technical Data Report provide an overview of existing conditions by summarizing available climate and baseline air quality data as well as using a dispersion model to predict Base Case air quality concentrations. In consultation with the BC MOE, representative air quality monitoring stations from the Prince Rupert, Kitimat, Smithers and Vancouver areas were used to summarize baseline air quality. The Government of Canada adopted regulations that establish an Emission Control Area that requires that vessels use diesel fuel with a sulphur limit of 0.10% effective January 1, 2015. While it is correct to note that the ambient SO2 concentrations summarized and presented in Section 4.3.4 and in the Technical Data Report correspond to the pre-ECA time period, the ambient data is still the best available information representative of the study area and was selected and adopted in consultation with the BC MOE as detailed in the final approved Model Plan. Other EAs completed for LNG projects in the area, as well as the Prince Rupert Airshed Study (PRAS) adopt similar assumptions to describe baseline air quality. The SO2 baseline is based on the 98th percentile of the monitoring data collected at the Vancouver International Airport (2010-2014) and the Kitimat Rail (2006 – 2009) monitoring stations. The dispersion modelling completed in support of the EA is intended to provide conservative predictions of potential effects on air quality. The baseline concentrations presented in Section 4.3.4 are added to dispersion model predictions to account for the influence of emission sources that are not modelled (e.g. transboundary pollution, vehicle and heating emissions from communities). The adoption of pre-ECA ambient SO2 concentrations that potentially overstate SO2 concentrations to determine baseline air quality concentrations is a conservative measure which is consistent with the intent and purpose of the EA and consistent with regulatory dispersion model guidance (BC MOE 2008). Section 4.3.4 also presents Base Case model predictions. Marine emissions from vessels underway in the airshed were included in Base Case, Application Case and CEA Case model predictions. The Environment Canada National Marine Emission Inventory Tool (MEIT) v4.1.0 database was used to extract emission estimates of SO2, NOX, CO, hydrocarbons, and particulate matter (total PM, PM10, PM2.5) for the year 2015. A detailed explanation of the Marine vessel inventory is provided in Section 5.1.2 of the Air Quality Technical Data Report. The emissions from vessels underway in the MEIT inventory was used as input to the CALPUFF dispersion model and the influence of these vessels on air quality is realistically reflected in the model predictions.
40	screening	ECCC	4.2.4	Air Quality	Marine emissions from underway vessels should be included. VOCs from loading of NGLs need to be assessed and included. Emissions of other Project-related marine vessels, that call at the MOF, should be included in the marine inventory (or in the AQ modelling).	Project operational activities that can result in emissions include the operation of the LNG facility, LNG production (intermittent flaring, the use of generators and continual facility operations), and LNG shipping (LNG carrier and tugboat traffic). As there are many possible operating scenarios (e.g., vessels in transit over a large geographic area, maneuvering, berthing or hoteling), it is necessary to make simplifying assumptions in order to apply a dispersion model. Based upon consultation with the BC MOE and as detailed in the final approved Model Plan, the assessment focuses on CAC maximum anticipated emissions from marine activities while at the berth. Project marine-based activities considered LNG carrier and tugboat maneuvering, berthing and hoteling activities within one kilometre of the marine terminal. The emissions from these activities are conservatively assumed to occur as a point source while berthed. These simplifying assumptions are conservative since they result in maximum LNG facility emissions and maximum vessel emissions that occur in the same location at the same time where they can act cumulatively and the emissions occur near the closest potential receptors (e.g., residences) to the Project. Potential effects of VOC emissions were evaluated qualitatively and determined to not have potential for adverse effects on air quality based upon low magnitude of emissions, the absence of British Columbia and Canada ambient objectives for VOC, low magnitude model predictions from other similar LNG EAs that had predicted individual VOC concentrations, and professional judgement. There are no applicable objectives for total VOCs in Canada or BC. Air quality assessments completed for other liquefied natural gas (LNG) projects (e.g., LNG Canada 2014) have demonstrated that the contribution of VOC emissions to ambient concentrations of VOC compounds from LNG facilities is insubstantial. As a result, the quantitative assessment of potential effects was focused on evaluating the increase of CAC concentrations due to Project emissions from the LNG facility (during all Project phases) and included vessels at berth for loading. Although VOCs are not carried forwards into the assessment, VOC emission estimates are provided in the Air Quality TDR (see Appendix A).
41	screening	ECCC	4.2.5	Air Quality	Present but inadequate. For predicted concentrations of AAQO - if emissions from marine vessels underway, and vessels calling at MOFincluded (per above comments), it's possible that the AAQO will be exceeded, which would require revisisions.	Marine emissions from vessels underway in the airshed were included in Base Case, Application Case and CEA Case model predictions. The Environment Canada National Marine Emission Inventory Tool (MEIT) v4.1.0 database was used to extract emission estimates of SO2, NOX, CO, hydrocarbons, and particulate matter (total PM, PM10, PM2.5) for the year 2015. A detailed explanation of the Marine vessel inventory is provided in Section 5.1.2 of the Air Quality Technical Data Report. The emissions from vessels underway in the MEIT inventory was used as an input to the CALPUFF dispersion model and the influence of these vessels on air quality is realistically reflected in the model predictions. For the Project marine vessel emissions, conservative, simplifying assumptions were applied based upon consultation with the BC MOE and as detailed in the final approved Model Plan. The assessment focuses on CAC maximum anticipated emissions from marine activities while at the berth. Project marine-based activities considered LNG carrier and tugboat maneuvering, berthing and hoteling activities within one kilometre of the marine terminal. The emissions from these activities are conservatively assumed to occur as a point source while berthed. These simplifying assumptions are conservative since they result in maximum LNG facility emissions and maximum vessel emissions that occur in the same location at the same time where they can act cumulatively and the emissions occur near the closest potential receptors (e.g., residences) to the Project. Base Case, Project Case, Application Case and CEA Case marine vessel emissions have been realistically modelled to predict effects on air quality.
41.1	round 1	ECCC	4.2.5	Air Quality	d"As a follow up IR to the screening comment #41 The scope of activities included in the assessment of potential impacts on air quality is important to ensuring information used in the analysis is complete and conclusions reliable. In terms of the project, it is important that the assement include a consideration of emissions resulting from marine vessels while they are underway and while they are at anchor. It should also be clarified whether materials offloading facility (MOF) activity will overlap operational activity. Information Request ECCC requests that the proponent revise the assessment of impacts on air quality to include emissions while vessels are underway to the limit of the territorial sea and emissions while vessels are at anchor. Any overlap in MOF activity with operational activity should also be factored into the assessment."	In developing the dispersion modelling methodology, Aurora LNG consulted extensively with the Provincial and Federal government representatives at the Working Group level. The BC Ministry of Environment approved a detailed dispersion modelling plan that included modelling marine vessels. The work was conducted as approved. Marine vessels were modelled in a way that portrayed all activities in close proximity to receptors on land including emissions while underway, maneuvering, and hotelling. These emissions were modelled at the Aurora LNG facilities and interactions with this operational activity is accounted for in the modelling. LNG carriers spend very little time at anchor given the precise scheduling involved when delivering a cargo that boils off as it warms. Any emissions while at anchor are predicted to be negligible as the vessels are essentially idle, running only enough generators to provide power for heating and ventilation, light and certain sub-systems. Marine vessels were not modelled underway in the open ocean. Previous LNG Facility assessments (LNG Canada specifically) demonstrated that emissions while under way have negligible effect on land-based receptors. This is primarily due to distance as the vessels pass no closer than several kilometers from land at their closest approach while under way.
42	screening	ECCC	4.2.6	Air Quality	Present but inadequate. Predicted concentrations for PM and NOx exceed AAQO. If marine underway emissions and MOF marine emissions are included in the assessment, AAQO will be higher still. The EIS does not specify how and by how much mitigation will be achieved, or whether proposed mitigation will be able to bring these values below AAQO.	Marine emissions from vessels underway in the airshed were included in Base Case, Application Case and CEA Case model predictions. The Environment Canada National Marine Emission Inventory Tool (MEIT) v4.1.0 database was used to extract emission estimates of SO2, NOX, CO, hydrocarbons, and particulate matter (total PM, PM10, PM2.5) for the year 2015. A detailed explanation of the Marine vessel inventory is provided in Section 5.1.2 of the Air Quality Technical Data Report. The emissions from vessels underway in the MEIT inventory was used as input to the CALPUFF dispersion model and the influence of these vessels on air quality is realistically reflected in the model predictions. For the Project marine vessel emissions, conservative, simplifying assumptions were applied based upon consultation with the MOE and as detailed in the final approved Model Plan. The assessment focuses on CAC maximum anticipated emissions from marine activities while at the berth. Project marine-based activities considered LNG carrier and tugboat maneuvering, berthing and hoteling activities within one kilometre of the marine terminal. The emissions from these activities are conservatively assumed to occur as a point source while berthed. These simplifying assumptions are conservative since they result in maximum LNG facility emissions and maximum vessel emissions that occur in the same location at the same time where they can act cumulatively and the emissions occur near the closest potential receptors (e.g. residences) to the Project. Base Case, Project Case, Application Case and CEA Case marine vessel emissions have been realistically modelled to predict effects on air quality. Section 4.2.6 presents the assessment of cumulative effects on air quality. The maximum predicted 24-hour PM10 concentration for the Application Case of 80.1 µg/m3 is greater than the BC 24-hour objective of 50 µg/m3. The small area of elevated PM10 concentrations are predicted to occur near the Prince Rupert Grain Terminal. The maximum predicted PM10 concentration for the Application Case is the same as the maximum predicted concentration for the Base Case, meaning the Project does not contribute to exceedance of the AAQO for PM10. The maximum predicted 1-hour and annual NO2 concentrations for the CEA Case are 248 µg/m3 and 75.4 µg/m3 µg/m3, respectively, which are greater than the BC 1-hour objective of 188 µg/m3 and the BC annual objective of 60 µg/m3. The elevated concentrations are predicted to occur in close proximity to the Fairview Container Terminal (Phase 2). The attribution analysis detailed in the Air Quality Technical Data Report indicate that both the maximum predicted 1-hour and annual average NO2 concentrations for the CEA Case greater than applicable objectives are primarily attributable to emissions from the Fairview Container Terminal. The predicted exceedances of the AAQO for PM10 and NO2 are caused by emissions from other industrial emission sources in the RAA. Changes to Project emissions would not materially reduce the magnitude of the elevated PM10 and NO2 predictions and would not eliminate the predicted exceedances.
42.1	round 1	ECCC	4.2.6	Air Quality	"As a follow up to screening comment #42 The emissions from marine vessels while underway in relation to other projects such as Pacific NorthWest LNG are pertinent to the assessment of cumulative effects. Information Request ECCC requests that the proponent revise the cumulative effects assessment to include the underway emissions from vessels associated with the Pacific NorthWest LNG facility and other developments located in a study area that extends to the limit of the territorial sea. "	In developing the dispersion modelling methodology, Aurora LNG consulted extensively with the Provincial and Federal government representatives at the Working Group level. The BC Ministry of Environment reviewed and approved a detailed dispersion modelling plan that included modelling marine vessels. The work was conducted as approved. Marine vessels were modelled in a way that portrayed all activities in close proximity to receptors on land including emissions while underway, maneuvering, and hotelling. These emissions were modelled at the Aurora LNG facilities and interactions with this operational activity is accounted for in the modelling. LNG carriers spend very little time at anchor given the precise scheduling involved when delivering a cargo that boils off as it warms. Any emissions while at anchor are predicted to be negligible as the vessels are essentially idle, running only enough generators to provide power for heating and ventilation, light and certain sub-systems. Marine vessels were not modelled underway in the open ocean. Previous LNG Facility assessments (LNG Canada specifically) demonstrated that emissions while under way have negligible effect on land-based receptors. This is primarily due to distance as the vessels pass no closer than several kilometers from land at their closest approach while under way.
43	screening	CAS	4.3.1	Greenhouse Gases	The input notes that consultation with the regulator was undertaken. In the future, we would like to make sure that CAS is considered in these conversations as a regulator under of GHG emissions for the province.	Aurora LNG appreciates your request and will continue to consult with the CAS in regard to GHG emissions.

44	screening	EAO	4.3.2	Greenhouse Gases	Can the amount of GHG emissions anticipated during decommissioning be quantified?	Information on how decommissioning emissions were qualitatively evaluated is provided in Section 4.3.5.2. As indicated in this section, it is anticipated that emissions during the decommissioning phase will be similar to, but lower than, construction phase emissions. With the primary sources being the equipment used to decommission the LNG facility. Due to the anticipated timing of decommissioning, there are a number of uncertainties related to estimating potential emissions, including potential modifications/advancements in the types of equipment, engine efficiencies, best management practices and applicable laws. The Application has qualitatively assessed decommissioning as noted in Section 4.3.5.2: "Detailed information is not available to accurately estimate GHG emissions that would occur during decommissioning. On this basis, GHG emissions are assessed qualitatively. Emissions during decommissioning are expected to be temporary, intermittent, and lower than those associated with construction. Aurora LNG will comply with applicable laws and submit a formal decommissioning plan before decommissioning and reclamation commence."
45	screening	ECCC	4.3.2	Greenhouse Gases	Page 4.3-6 - Note that for GWP, the current use of 25 for CH4 is accurate, however it is expected that the Proponent will align GWP in accordance with ECCC usage for it's inventory purposes, should it change in the future (prior to final EIS submission).	Aurora LNG acknowledges ECCC's request for it to align it's inventory with any global warming potential (GWPs) that are specified by ECCC. To this end, the Application has aligned with regulatory requirements related to the GWP for CO2, CH4 and N2O. The final Application has been submitted. However, if additional statements on this topic are required in the event the GWP were to change, direction would be provided by the EAO as to how to proceed.
46	screening	Lax Kw'alaams Band	4.3.2	Greenhouse Gases	CEAA-required upstream GHG emission calculations are missing. CEAA issued requirements for all federal EAs to include upstream emissions for GHGs as recognized in Section 4.3.2.2 of the Applications. This assessment, however, is missing from the Application as “methods of quantification are still being investigated”. Please provide this assessment so that a meaninful consideration of the Project and cumulative effects on GHGs can be conducted at the earliest stage of the Application review period.	As stated in the EAO's December 14, 2016 letter regarding acceptance of the Aurora LNG Application for application review, Nexen is required to submit an assessment of upstream greenhouse gases within the first 45 days of the Application Review Stage. Aurora LNG is currently preparing this report and will provide it to EAO within the requested timeline.
46.1	round 1	ECCC	4.3.2	Air Quality	"As a follow up to a original Lax screening comment #46, ECCC provided the following comment: ECCC requests that the Proponent clarify if the accounting of emissions considered in the impact assessment does not include marine vessels while they are underway.. If so, the assessment of impacts on air quality should be revised to include those emissions. ECCC also requests that the Proponent clarify whether in the Cumulative Effects assessment, the underway emissions from carriers calling at the PNW LNG project were omitted. If so, a rationale is requested"	In developing the dispersion modelling methodology, Aurora LNG consulted extensively with the Provincial and Federal government representatives at the Working Group level. The BC Ministry of Environment approved a detailed dispersion modelling plan that included modelling marine vessels. The work was conducted as approved. Marine vessels were modelled in a way that portrayed all activities in close proximity to receptors on land including emissions while underway, maneuvering, and hotelling. These emissions were modelled at the Aurora LNG facilities and interactions with this operational activity is accounted for in the modelling. LNG carriers spend very little time at anchor given the precise scheduling involved when delivering a cargo that boils off as it warms. Any emissions while at anchor are predicted to be negligible as the vessels are essentially idle, running only enough generators to provide power for heating and ventilation, light and certain sub-systems. Marine vessels were not modelled underway in the open ocean. Previous LNG Facility assessments (LNG Canada specifically) demonstrated that emissions while under way have negligible effect on land-based receptors. This is primarily due to distance as the vessels pass no closer than several kilometers from land at their closest approach while under way.
47	screening	CAS	4.3.2	Greenhouse Gases	The Regulatory and Policy Setting should be updated to reflect the enactment of GGIRCA (not the passing). Table 4-3.2 incorrectly identifies the LNG Environmental Incentive Program in which a portion of the GHG levy is returned if the facility is between .23 and .16. This is a separate program which is not part of GGIRCA and should be identified separately in the table. - Emissions from compression and liquefaction of NG beyond pipeline state, and from LNG storage, using WCI.350/360 methodologies, do not appear to be included in scope description or in calculations below, however they are attributable to LNG operations as per BC legislation (see s.4 of BC GHG Emission Reporting Regulation). -Upstream emissions are required to be evaluated. The assessment does not include upstream emissions as methods of qualification are still be investigated. This does not meet the requirement. For quantification methods see - PNW LNG Project – Review of related upstream GHG emission estimates -Additionally, the CEEA requirements include accounting of the direct GHG emissions associated with all phases of the project (CO2e) This is not done (decommissioning not accounted for “information not available to accurately estimate”)	i) Table 4.3-3 states the GHG Industrial Reporting and Control Act has been enacted. During screening, additional clarification was provided in Section 4.3.2.1 by replacing "Most recently, legislation has been passed in BC to introduce a LNG industry specific sector intensity benchmark" with "Most recently, legislation has been enacted in BC to introduce a LNG industry specific sector intensity benchmark" During screening Table 4.3-2 was also revised to separate GGIRA from the LNG Environmental Incentive Program. An additional row was added to provide details on the Liquefied Natural Gas Environmental Incentive Program separately. ii)For the purpose of the assessment, it has been assumed that the gas received at the LNG Facility will meet the transmission pipeline quality specifications, as it will be required to meet certain transportation specifications. As stated in Section 4.3.5.2, the activity of stripping off the formation CO2 in the form of acid gas and sending it to the thermal oxidizers for safety purposes has been considered in this assessment. Further, to address LNG Tank emissions, Mitigation 4.2.13 states "Recover boil-off gas during storage and loading processes, and re-inject the recovered gas into the fuel / feed gas system". Excess gas will be sent to the flare as described in Section 4.3.5.1 "Potential venting emissions from storage tanks and the dock loading area are captured and sent to the flare". Considering the above, the reporting requirements of WCI.350/360 are addressed. iii) As indicated in the December 14, 2016 letter from the EAO regarding acceptance of the Aurora LNG Application for review, an assessment of upstream greenhouse gases must be completed within the first 45 days of the Application Review stage. Aurora LNG is currently preparing this report and will provide it to EAO within the requested timeline. iv) Information on how decommissioning emissions were qualitatively evaluated is provided in Section 4.3.5.2. As indicated in this section, it is anticipated that emissions during the decommissioning phase will be similar to, but lower than, construction phase emissions. With the primary sources being the equipment used to decommission the LNG facility. Due to the anticipated timing of decommissioning, there are a number of uncertainties related to estimating potential emissions, including potential modifications/advancements in the types of equipment, engine efficiencies, best management practices and applicable laws. The Application has qualitatively assessed decommissioning as noted in Section 4.3.5.2: "Detailed information is not available to accurately estimate GHG emissions that would occur during decommissioning. On this basis, GHG emissions are assessed qualitatively. Emissions during decommissioning are expected to be temporary, intermittent, and lower than those associated with construction. Aurora LNG will comply with applicable laws and submit a formal decommissioning plan before decommissioning and reclamation commence."
48	screening	CAS	4.3.5	Greenhouse Gases	Does not appear to consider or estimate GHG emissions from compression and purification beyond pipeline quality natural gas state, and from LNG storage, using WCI.350/360 methodologies, despite these emissions being part of the attributable emissions to an LNG facility as per BC legislation. Does not calculate mobile combustion emission using WCI methodology referenced in BC GHG emissions Reporting regulation.	i) For the purpose of the assessment, it has been assumed that the gas received at the LNG Facility will meet the transmission pipeline quality specifications, as it will be required to meet certain transportation specifications.. As stated in Section 4.3.5.2, the activity of stripping off the formation CO2 in the form of acid gas and sending it to the thermal oxidizers for safety purposes has been considered in this assessment. Further, to address LNG Tank emissions, Mitigation 4.2.13 states "Recover boil-off gas during storage and loading processes, and re-inject the recovered gas into the fuel / feed gas system". Excess gas will be sent to the flare as described in Section 4.3.5.1 "Potential venting emissions from storage tanks and the dock loading area are captured and sent to the flare". Accordingly, the Application aligns with the methodologies of WCI.350/360. ii) Off-road and on-road diesel construction equipment have been assessed through the use of emission factors from the ECCC NIR (ECCC 2016) in conjunction with a list of representative construction equipment and estimated operation time and fuel usage. Mobile equipment during the operation phase, whose purpose is to transport or move substances, materials or products (WCI 2010) were included and are limited to the LNG vessels and marine fleet. On-road vehicles used during the operation of the facility were not included in the assessment as per WCI.280 - Mobile Equipment at Facilities (WCI 2010).
48.1	round 1	CAS	4.3.5	Greenhouse Gases	As a follow up to screening comment #48 ii) Please estimate the emissions from vehicles that are not on-road vehicles or marine vessels used during the operation of the faciltiy (if any).	Based on current operations information,non-road fossil-fuel driven mobile equipment will not be used for facilility operations (as defined by WCI.280) . Domestic and International registered marine vessels have been included in the operation emission inventory. Please refer to Chapter 4.3 Table 4.3-14 of the Application and Section 5.4 of Appendix B in the Application).
49	screening	Lax Kw'alaams Band	4.3.4	Greenhouse Gases	A description of potential interactions of the Proposed Project with waste management on GHGs is not provided, but is clearly defined in the AIR. Aurora states that waste management is "unlikely to interact with GHGs in a substantial manner", basing this on "experience and professional judgement" and, thus, find the potential for associated residual effects to be "negligible" Please include a description of waste management during the Project life-cycle on GHGs. If Aurora does not believe it is required, please provide quantitative data to substantiate the claim of experience and professional judgement. The AIR states that the Application makes conservative assumptions, thus leading to overstatement of expected effects and increasing confidence in assessment. This statement is not consistent with the absence of considering waste management effects on GHGs.	As indicated in the Application, it is not anticipated that waste management will interact with GHGs in a substantial manner. The primary basis for this conclusion is that Aurora LNG intends to avoid open burning of accumulated waste during all phases of the Project. Therefore, based on the avoidance and minimization of burning of accumulated waste, it is not anticipated that waste management contribute to GHGs in substantial manner. To reflect this commitment, the list of GHG mitigations has included a mitigation to "Minimize open burning of accumulated waste materials from the construction camp" (Mitigation 4.2.6) which will be managed through the Solid Waste Management Plan. This indicates that burning of waste during the construction phase may occur, but Aurora LNG plans to minimize this activity, where possible and safe to do so.
50	screening	ECCC	4.3.4	Greenhouse Gases	Present but inadequate. GHG emissions from project-related LNG carriers are omitted from the assessment. However, other recent marine project proposals include GHG emissions from the international fleet vessels and ECCC believes they should be included here as well. The emissions should also include emissions from vessels underway, and vessels calling at the MOF.	Shipping activities include emissions from LNG carriers (international) and domestic boats while in port and in transit. Canadian registered vessels were assumed to include push boats, tug boats and crew boats. Activities from these boats are included in the emission totals (Refer to Table 4.3-14). LNG carriers are considered international marine and their emissions are presented in the assessment (Refer to Table 4.3-14) but are excluded from the Project operational total (Refer to Section 4.3.5.1). This aligns with methods used in summary tables for the National Inventory Report (2016) and 2006 IPCC Guidelines, where emissions from fuels used by international marine are quantified, but reported separately. Further, the approach utilized in the Application, is consistent with other approved LNG export facility applications, such as LNG Canada.
50.1	round 1	ECCC	4.3.4	Greenhouse Gases	"As a follow up to screening comment #50 It does not appear that GHG emissions have been estimated for either project vessels at anchorage or project vessels underway within the territorial sea. These project activities account for a substantial portion of marine-based sources of GHG. A comparison of expected marine source GHG emissions with the project and without the project would facilitate an understanding of project contribution to GHG impacts. Information Request ECCC requests that the proponent identify GHG emissions from vessels at anchorage and from vessels underway within the territorial sea. ECCC also requests that the proponent provide a ""with the project"" and ""without the project"" comparison in terms of marine source GHG emissions. "	Section 5.4 of the GHG Technical Data Report (Appendix B of the Application) discusses marine operations considered in the assessment. GHG emissions were calculated for maneuvering, berthing, and loading at the terminal and during transiting from Triple Island. A summary of the predicted emissions are presented in Table 27 of the GHG Technical Data Report and are carried through to the GHG assessment (Chapter 4.3 of the Application). GHG comparison between "with Project" and "without Project" for marine activities is outside of the final approved scope of the Aurora LNG assessment. However, in Section 4.3.5.2 of the Application, the PIR and NIR totals from 2014 (baseline) were compared to those of the Project. This comparison includes emissions from domestic fleet. International fleet (LNG carriers) emissions were not included in the "with Project" and "without Project" comparisons, but were reported separately in Table 4.3-14 (Chapter 4.3 of the Application).
51	screening	ECCC	4.3.5	Greenhouse Gases	Page 4.3.22 There is reference made to not consuming power from BC Hydro. More information is requested on this point: as to whether this was indicated by BC Hydro; if there is the option of partial BC Hydro supply, and if not, why not; the location, lack of power infrastructure, etc.; and , if there ere Is there a possibility of alternative power becoming available in the future - i.e. for Phase 2 (trains 3 & 4)? Present but inadequate. GHG emissions from project-related LNG carriers are omitted from the assessment. However, other recent marine project proposals include GHG emissions from the international fleet vessels and ECCC believes they should be included here as well.	As described in Section 1.7 (Alternative Means), Aurora LNG is considering a number of options to meet the power requirements of the Project. As part of this assessment of options, Aurora LNG is examining the feasibility of utilizing power provided by BC Hydro. The analysis conducted to date has identified a number of limitations on the ability of the existing grid to supply power to meet the demands of the Project; however, a final determination of the power supply for the Project will not be made until the analysis has been completed. Shipping activities include emissions from LNG carriers (international) and domestic boats while in port and in transit. Canadian registered vessels were assumed to include push boats, tug boats and crew boats. Activities from these boats are included in the emission totals (Refer to Table 4.3-14). LNG carriers are considered international marine and their emissions are presented in the assessment (Refer to Table 4.3-14) but are excluded from the Project operational total (Refer to Section 4.3.5.1). This aligns with methods used in summary tables for the National Inventory Report (2016) and 2006 IPCC Guidelines, where emissions from fuels used by international marine are quantified, but reported separately. Further, the approach utilized in the Application, is consistent with other approved LNG export facility applications, such as LNG Canada.
51.1	round 1	ECCC	4.3.5 & 1.7	Greenhouse Gases	"As a follow up to screening comment #51 In section 1.7.1.2, the proponent states that, "The preferred option is the combined natural gas turbines and the combined cycle natural gas power plant. The combined option provides a cost effective and reliable power source that does not require electrical grid access or infrastructure." However in the comparison table (Table 1-24), there is no difference between the preferred option and the combined cycle gas plant option. Information Request ECCC requests that the proponent: • provide a rationale for why Option 3 was chosen over Option 2 • describe plans for technology selection in relation to the gas turbines identified in Chapter 5 - GHG Technical Data Report • clarify (with rationale) if high-efficiency aero-derivative gas turbines (or those with equivalent efficiency rating) will be used. It is stated by the proponent that “Engagement to date with BC Hydro has indicated that it is unlikely that the existing grid can supply all of the power to produce LNG and operate project infrastructure. The feasibility of this option is subject to the results of BC Hydro’s evaluation.” Information Request ECCC requests that the proponent update the power alternative analysis once BC Hydro's evaluation is complete. "	The alternatives analysis presented in Section 1.7.1.2 and table 1-24 of the Application was based on the information available at that time. As noted, BC Hydro was unable to provide certainty that it could supply any power from the electrical grid. However, the selection of the option 3 as preferred option was based on the expectation that at some time some amount of power may become available from the electrical grid. It is unlikely that the grid would be able to accommodate the full 1000 MW power demand but may be able to supply partial power. In following, operating the LNG refrigeration units on standalone turbines and potentially converting the remainder of the facility power to electrical grid may be an option at some time in the future. The Application provides example equipment lists including the use of the more fuel efficient aero-derivative natural gas turbine units. In addition, the facility design would look to maximize fuel efficiency and minimize GHG emissions (i.e., both are economic costs on the facility operation) wherever technically feasible so additional measures such as the use of combined cycle gas turbine units (still using aero-derivative turbine units) and waste heat recovery will be considered during facility design. At this time, Aurora LNG does not have any additional information to provide regarding the BC Hydro evaluation. As a result, the alternatives analysis presented in Table 1-24 of the Application does not change.
52	screening	CAS	4.3.5	Greenhouse Gases	Did not address decommissioning emissions.	Information on how decommissioning emissions were qualitatively evaluated is provided in Section 4.3.5.2. As indicated in this section, it is anticipated that emissions during the decommissioning phase will be similar to, but lower than, construction phase emissions. With the primary sources being the equipment used to decommission the LNG facility. Due to the anticipated timing of decommissioning, there are a number of uncertainties related to estimating potential emissions, including potential modifications/advancements in the types of equipment, engine efficiencies, best management practices and applicable laws. The Application has qualitatively assessed decommissioning as noted in Section 4.3.5.2: "Detailed information is not available to accurately estimate GHG emissions that would occur during decommissioning. On this basis, GHG emissions are assessed qualitatively. Emissions during decommissioning are expected to be temporary, intermittent, and lower than those associated with construction. Aurora LNG will comply with applicable laws and submit a formal decommissioning plan before decommissioning and reclamation commence."
52.1	round 1	CAS	4.3.5	Greenhouse Gases	As a follow up to screening comment #52 - Section 4.3.5.2 does indicate that emissions during the decommisioning phase will be similar to but lower than the construction phase emissions. This conservative estimate should be included in calculation to assist with forecasting."	Emissions calculations for the decommissioning phase are not possible at this time. Given the nature of the activity, it is expected that equipment usage during the decommissioning phase will be less than the construction phase. It is also expected that the more modern mobile equipment will likely consume fuel more efficiently at the time of decommissioning. These factors suggest that during the decommissioning phase, GHG emissions will be less than the construction phase but determining an estimate of GHGs would be speculative.

53	screening	Gitga'at First Nation	4.4	Acoustic Environment	Shipping noise was not assessed; Section 4.4.4 lists findings from PNW LNG, which is a different project with different project components (e.g., 3 trains compared to Aurora LNG's proposed 4 trains). Similar to Gitga'at's comments in the Public Tracking Table on the Draft AIR, shipping noise of the Aurora LNG Project should be assessed by the Proponent. This is important for Gitga'at to assess the potential impacts of the Project on Gitga'at's Aboriginal Interests.	Section 4.4.2 of the AIR outlines that a description of potential effects from shipping traffic along the shipping route and why these effects are not a concern for the Aurora LNG Project will be provided. This will include results of recently completed assessments in the area and a discussion on distance to nearest sensitive receptors. Section 4.4.4 of the Application provides this description and outlines why an assessment of noise effects along the shipping route is not required. Further discussion and rationale are provided in this response. In the PNW LNG EAC Application, the PNW LNG shipping route distance to the nearest sensitive receptor is 600 m (i.e., Receptor ID 38, Kinahan Islands in Table 1 of the PNW LNG TDR). The predicted nighttime noise contribution at this receptor from shipping is 27.2 dBA (see Table 20 of the PNW TDR). In consideration of the number of trains (e.g., Aurora LNG's proposed 4 trains instead of PNW's LNG 3 trains), the increase in nighttime noise contribution due to the increase in shipping schedule is approximately 1.3 dB. The predicted level at a distance of 600 m is 28.5 dBA (i.e. 27.2 dBA + 1.3 dB). The Aurora LNG Project shipping route distance to the nearest sensitive receptor (i.e., receptor ID R06, Barrett Rock) is 670 m. As this distance is further than the distance to the nearest sensitive receptor for PNW, the predicted nighttime shipping sound level would be less than 28.5 dBA. The nighttime sound level of 28.5 dBA is well below the nighttime existing sound level of 40 dBA at Barrett Rock presented in Table 4.4-7 of the Application. Further assessment of noise effects along the shipping route is therefore not required. As noted above, the scope of the shipping assessment is consistent with the requirements outlined in the AIR.
54	screening	EAO	4.4.2	Acoustic Environment	Pages 4.4-4 - 4.4-5 and Acoustic TDR: Influence of Consultation on the Assessment: "The acoustic environment at this location [Dodge Cove] is characterized primarily by sounds from residential activity, ferry or shipping activities, aircraft flyover, helicopter, and the natural environment such as birds, wind, rain and waves along the coast." During pre-application stage, Dodge Cove residents submitted noise complaints in relation to helicopters in proximity to their community to conduct IUL activities (geotechnical investigations) throughout the spring/summer. The acoustic TDR indicates that noise monitoring was set up at Dodge Cove from August 29 to 30, 2015. Please indicate whether and to what extent project-related IUL activities (helicopters, geotechnical drilling, clearing, etc.) may have contributed to the baseline measures.	In response to concerns from Dodge Cove residents regarding helicopter traffic during site investigation activities, Aurora LNG established a 500 m buffer from the community to be avoided by Project related helicopter traffic. Baseline monitoring was conducted at Dodge Cove from August 29 at 5:00 PM to August 30 at 4:00 PM. During the nighttime period (10:00 PM to 7:00 AM), no project-related IUL activities (i.e., project-related helicopter, geotechnical drilling, and clearing) were identified in the audio recording of the measured data used in the baseline analysis. Aurora LNG records indicate no project-related activities during the nighttime period. During the daytime period (7:00 AM to 10:00 PM), Aurora LNG records indicate some project-related activities during the daytime period. There were no drilling or clearing activities; however, there were some helicopter activities between north of Fredrick Point to south of Casey Cove. No project-related IUL activities were distinguishable from the audible recording during the daytime period. The daytime ambient sound levels are typically higher due to increased local activity. Noise effects from non-project related activities can be identified from the audible recording. The project-related IUL activities (helicopters, geotechnical drilling, clearing, etc.) may have contributed to the daytime baseline measures but it cannot be quantified.
55	screening	EAO	4.4.2.5	Acoustic Environment	Page 4.4-11: "Administrative boundaries for the assessment of noise and vibration are based on applicable government guideline, government guidance, and industry standards as follows: § ANSI 12.9 Noise Standard § BC OGC Noise Guideline § City of Toronto Construction Vibration Limit § ECCC Environmental Code of Practice for Metal Mines § Health Canada Noise Guidance." Please work with Health Canada to determine how to evaluate construction noise against Health Canada Guidance (which included references to WHO guidelines) regarding external continuous nighttime sound and potential sleep disturbances. How would this change the discussion on characterizing effects and significance of noise during each phase of the project?	The assessment of construction noise was developed in accordance with the current Health Canada Guidance. This included designing the noise assessment based on the guidance provided in Health Canada's Useful Information for Environmental Assessments document. The percent highly annoyed (%HA) consider the daytime and nighttime equivalent sound level during the nighttime period. Regarding the use of WHO guidance, Aurora LNG notes that the Health Canada's Useful Information for Environmental Assessments document (Health Canada 2010) is the current noise guidance document. In the Health Canada 2010 noise guidance, there is no reference to the World Health Organization (WHO) noise guidelines for sleep disturbances. Therefore, the assessment results were not compared to any sleep disturbance threshold in the EA. There are two WHO noise guidelines for sleep disturbances as follows: WHO Guidelines for Community Noise (WHO 1999) WHO Night Noise Guidelines for Europe (WHO 2009) The Health Canada's DRAFT Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise, January 2011 (Health Canada 2011) references the WHO 1999 guideline. The most recent Health Canada Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise, July 2016 (Health Canada 2016 Pre-Publication Final Approved Version) references both WHO 1999 and WHO noise guidelines. The WHO 1999 noise guidance recommends that indoor sound level of no more than 30 dBA LAeq (45 dBA outdoor) for continuous noise during the sleep period. The WHO 2009 noise guidance provides the following indicators for sleep disturbance: sleep related biological effects: indoor maximum sound level of 32 dBA to 35 dBA (53 dBA to 56 dBA outdoor).waking up in the night and/or too early in the morning - indoor maximum sound level of 42 dBA (63 dBA outdoor)increased average motility (i.e. body movement) when sleeping - outdoor nighttime sound level of 42 dBA Aurora LNG is available to work with Health Canada to further understand their recommendations on the applicable noise guidance (Health Canada 2010, Health Canada 2011, Health Canada 2016, WHO 1999, and WHO 2009) for construction activities.
55.1	round 1	EAO	4.4.2.5	Acoustic Environment	As a follow up to screening comment #55 "EAO requires an assessment of potential noise and vibration effects in relation to the nighttime sleep disturbance guidelines in the most recent Health Canada Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise, July 2016. The assessment must be conducted for all phases of the project and include predicted maximum noise levels, duration and frequency of those maximum sound events. For sound or vibration levels related to project activities that exceed the suggested ""thresholds"" outlined in the HC guidelines for assessing potential effects on sleep deprivation, identify and quantify additional mitigation measures that will reduce these effects and how monitoring will be undertaken to ensure compliance. Please carry the assessment of noise effects through the human health risk assessment if determined appropriate in your consultation with Health Canada, Ministry of Health and other relevant agencies. Please work with Health Canada, Ministry of Health and other relevant agencies to ensure this assessment is conducted in a manner that meets their requirements to support the EA. Further clarification of assessment requirements are described in Health Canada and Ministry of Health comments- please follow those directions."	The sleep disturbance effect and potential mitigations are addressed in the "Sleep Disturbance and Speech Interference" technical memo which will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
56	screening	Lax Kw'alaams Band	4.4.3	Acoustic Environment	Aurora does not identify any important data gaps for the effects assessment. Gaps must be identified herein to provide insights on level of confidence in data that is provided. This information on data gaps must be summarized and presented in the assessment before the Application can be deemed complete. Aurora has noted that noise monitoring was "constrained by factors such as security, access, and topography" (4.4-14), it fails to integrate such data gaps, uncertainty, and limitations of the data on existing conditions consequence of constraints. Aurora has not noted any limitations from potential "precipitation and high wind speed exceeding 15 km/hr", which are not considered acceptable weather conditions for noise surveying. Alberta Energy Regulator Directive 038 requires that a noise survey be conducted with a minimum Type 2 integrating sound level meter under weather conditions acceptable for noise measurements (AER 2007). Precipitation and high wind speed exceeding 15 km/hr are not considered acceptable weather conditions. Please discuss limitations of data quality resulting from wind speeds. Without proper information on the limitations and assumptions made in consequence of data gaps for existing conditions, it limits how the entire effects assessment and project interactions can be quantified. The lack of data gaps questions the certainty of the prediction confidence.	As noted in the Technical Boundaries Section of the Application (Section 4.4.2.5), uncertainties and assumptions are presented in the technical data report (TDR) (Appendix C). In the TDR, periods of high wind and rain/precipitation in the noise monitoring result graphs are indicated (Appendix C, Section 4.2, Figures 4-1 to 4-5). At all monitoring locations (i.e. M1 to M5), data not representative of normal site conditions or local activities (e.g., residential or animal) occurring at close proximity to the sound level meter were isolated (i.e., removed). Other noise sources such as field technicians, periods of high winds, and rain have also been isolated and excluded from hourly daytime Ld and nighttime Ln calculations. These activities and/or weather conditions are not considered representative of the acoustic environments at the measurement locations. The data gaps associated with these conditions are summarized as follows:M1: 158 minutes (9%) out of 1776 minutes were isolated, 27 hours of valid dataM2: 703 minutes (51%) out of 1391 minutes were isolated, 23 hours of valid dataM3: 1842 minutes (32%) out of 5746 minutes were isolated, 65 hours of valid dataM4: 3024 minutes (54%) out of 5624 minutes were isolated, 43 hours of valid dataM5: 937 minutes (33%) out of 2875 minutes were isolated, 32 hours of valid data The AER 2007 noise guideline recommends a minimum of 3 hours of acceptable data (after isolation) during the daytime or nighttime period for the survey to be considered valid. The amount of valid data indicated for each monitoring location (shown above) provides sufficient measurement points to quantify the baseline condition at each monitoring location.
57	screening	EAO	4.4.4	Acoustic Environment	Are noise level measurements average? What are the predicted maximum daytime and nighttime noise levels for construction and operations at each noise-sensitive receptor locations identified in Table 4.4-4?	The baseline noise monitoring results are equivalent daytime and nighttime levels. The BC OGC noise guideline and Health Canada guidance are based on equivalent sound level over the daytime and nighttime period. The predicted maximum noise levels are not required as per Table 3-2 in the AIR.
58	screening	EAO	4.4.5	Acoustic Environment	ages 4.4-25 to 4.4-26: Table 4.4-9 Mitigation Measures Proposed to Avoid or Reduce Change in Noise Level During pre-application stage, Dodge Cove residents submitted noise complaints in relation to helicopters in proximity to their community to conduct IUL activities (geotechnical investigations) throughout the spring/summer. EAO could not identify mitigation measures in relation to reducing noise from helicopters on Dodge Cove residents. Please provide reference to related mitigation in Application or provide rationale why such mitigation was not included. Page 4.4-35: "The assessment of compliance with the BC OGC Noise Guideline is performed for the operations phase only. BC OGC does not provide compliance criteria for construction noise assessment" Page 4.4-37: COMPARISON TO THE HEALTH CANADA NOISE GUIDANCE EAO could not find reference to or analysis in relation to Health Canada's guidance on nighttime sound and potential sleep disturbances. Please work with Health Canada to ensure an assessment of effects of nighttime noise on noise-sensitive receptors in relation to potential sleep disturbance.	In response to concerns from Dodge Cove residents regarding helicopter traffic during site investigation activities, Aurora LNG established a 500 m buffer from the community to be avoided by Project related helicopter traffic. There will be some helicopter traffic during construction on an as needed basis. The key use will be for medical services and emergency services, and management site visits will also use helicopters for site tours. Regular use of helicopters is not planned during the construction phase of the project. Mitigation measures specific to helicopter use are therefore not included in the Application. See response for IR55 for comment on working with Health Canada to further understand their recommendations on the applicable noise guidance for construction activities related to nighttime noise and potential sleep disturbance.
59	screening	EAO	4.4.5	Acoustic Environment	Pages 4.4-25 to 4.4-26: Table 4.4-9 Mitigation Measures Proposed to Avoid or Reduce Change in Noise Level During pre-application stage, Dodge Cove residents submitted noise complaints in relation to helicopters in proximity to their community to conduct IUL activities (geotechnical investigations) throughout the spring/summer. EAO could not identify mitigation measures in relation to reducing noise from helicopters on Dodge Cove residents. Please provide reference to related mitigation in Application or provide rationale why such mitigation was not included. Page 4.4-35: "The assessment of compliance with the BC OGC Noise Guideline is performed for the operations phase only. BC OGC does not provide compliance criteria for construction noise assessment" Page 4.4-37: COMPARISON TO THE HEALTH CANADA NOISE GUIDANCE EAO could not find reference to or analysis in relation to Health Canada's guidance on nighttime sound and potential sleep disturbances. Please work with Health Canada to ensure an assessment of effects of nighttime noise on noise-sensitive receptors in relation to potential sleep disturbance.	This comment is identical to IR #58; please refer to the response to IR #58.
60	screening	Dodge Cove	4.4.6	Acoustic Environment	4.4.6. Since no specfic engineering design for blasting were available at the time of assessment, for acoustic modeling, then studies of cumulative effects in regards to human health and marine mammal health are not complete. Dodge Cove Improvement District believes that this needs to be studied.	During the construction phase, the primary vibration effects are ground vibration and air blast due to blast activities within the Project PDA. In Section 4.4.5.3 of the assessment, the vibration effect was quantified. A blast design was considered in the assessment. The primary factor affecting vibration is the explosive charge per delay in the blast design. A maximum explosive charge per delay for different receptor distances can be specified in the blast design. The maximum explosive charge specification will be implemented so that the vibration thresholds will not be exceeded when there is blasting activity near a receptor. Table 4.4-26 in the EA provides specification on the maximum explosive charge aspect of the blast design. The blast design will result in vibration effects that meet the Environmental Code of Practice for Metal Mines (ECCC) vibration threshold of 12.5 mm/s for ground vibration and 128 dBL for air blast overpressure threshold at the closest receptor. Blast effects that meet the ECCC vibration threshold is adequate to reduce potential annoyance of human receptor. Vibration effect due to blasting is short term. No cumulative vibration effects are expected because the Project construction blasting activities are unlikely to act cumulatively with any blasting activities from other projects that are built at the same time. Potential effects of underwater blasting on marine mammals is assessed in Section 4.10.5.2.
61	screening	Health Canada	4.4.6.2	Acoustic Environment	Cumulative effects have not been adequately quantified in the assessment.	Residual effects of the Project, in combination with those of other existing BC OGC–regulated projects and existing activities in the RAA, are quantified in Section 4.4.5.2 of the Application. In Section 4.4.5.2 "Comparison to the Health Canada Noise Guidance", the assessment quantified the change in %HA between the baseline (i.e. Baseline %HA) and the cumulative effects (Project Only plus Baseline %HA). The change in %HA was compared to the threshold of 6.5%. In Section 4.4.5.2 "Measurable Change from Existing Sound Level", the measurable change from existing sound level is quantified by comparing the existing sound level and the cumulative sound level. The cumulative sound level included the noise effects of both existing sound level and the Project noise contribution. The arithmetic difference between the cumulative sound level and existing sound level at a receptor provides a comparison of the before and after noise effect due to the Project during different phases. Noise effects from future projects and activities can be difficult to quantify due to the availability of public information. The residual effects of the Project, in combination with future projects and activities, are not quantified in the cumulative assessment. The assessment of the cumulative effects of Project noise is adequate and consistent with requirements of the AIR. This cumulative assessment approach is also consistent with the approaches in other EAs (e.g., PNW LNG and LNG Canada).
62	screening	Health Canada	4.4.9	Acoustic Environment	Proposed follow-up and monitoring programs not sufficiently described in this section	A Noise Management Plan will be developed in consultation with the OGC that describe the procedures that will be implemented during normal operations of the LNG facility. The plan will include a description of requirements for notification of construction works to local residents and how issues or concerns raised by local stakeholders during construction and operations will be addressed. This Management Plan will be prepared as described in Section 14.5 of the Application. With the implementation of standard mitigation measures and Noise Management Plan, the Project will result in construction and operations noise effects that are not expected to result in any regulatory exceedances. No follow-up programs are therefore being proposed.

63	screening	EAO	4.5	Water Quality	Freshwater Quality VC Introduction (pg. 4.5-1) provides reference to Chapter 8 Human Health VC for assessent of effects to drinking water. Human Health VC includes discussion of Dodge Cove community water supply, however does not include the City of Prince Rupert drinking water supply (Woodworth and Shawatlan Lake), which are within the Water Quality LAA. Please assess potential water quality effects due to the proposed project for the COPR drinking water supply (Woodworth Lake). **MOE has water chemistry data for Woodworth Lake that can be shared with Nexen for the purposes of this assessment. Please contact Patrick Williston (MOE) to obtain the water chemistry data.** How were the results of the Prince Rupert Airshed Study for acidification and eutrophication effects to lakes and streams considered in the Application?	The assessment includes Dodge Cove water supply (LAK11), Shawatlan Lake (ADSW8) and Wahl Lake (LAK05). Woodward Lake was not incorporated into the assessment. Water chemistry data was obtain by MOE for Woodward Lake and a technical memo has been provided showing results of the acidification and eutrophication assessment for this lake. Shawatlan Lake is located adjacent to Woodward Lake and is expected to receive a similar depositional input. No acidification or eutrophication effects are expected for Shawatlan lake based on depositional inputs. The workplan indicating waterbodies to be sampled was approved by the MOE (July 6, 2016). Concerns from First Nations and the Dodge Cove community identified during consultation and workshops were incorporated into the sampling design. The final Prince Rupert Airshed Study was not released until September 2016, which did not allow sufficient time to incorporate its findings into the Application. Aurora LNG worked with the BC Ministry of Environment to develop the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project, which was finalized in July 2016. Where directed by the BC Ministry of Environment, the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project took into account the preliminary results of the draft Prince Rupert Airshed Study.
64	screening	MOE	4.5	Water Quality	No discussion of discharge from sediment ponds or runoff from stormwater into freshwater streams adjacent to the site. This should be included in the discussions about water quality and then integrated into the freshwater fish habitat and marine habitat. Effects will depend on soil types and buoyancy. See Appendix A_01_Project Overview_Screening, p. 1-26, second last paragraph	Effects of TSS in discharges from sediment ponds or stormwater to freshwater streams are discussed in Section 4.8 (Freshwater Fish and Fish Habitat), because of their direct relevance to fish health and habitat quality. They are not assessed in Section 4.5. The assessment (Section 4.8.5.6) assumed that all runoff into freshwater streams will meet water quality guidelines for discharge to freshwater streams. The list of mitigations (Table 4.8-11) includes erosion and sediment control (ESC) measures, which may be needed to achieve guidelines in receiving waters. Sediment ponds will be designed to address local soil types and precipitation patterns.
64.1	round 1	MOE	4.5	Water Quality	"As a follow up to screening IR comment #64 Section 4.8 only addresses the effects of eutrophication and acidification. It is not clear the BC WQGs/CCME guidelines can be addressed. Addressing TSS requires knowledge of natural water quality levels and patterns. A permit will be required under EMA to discharge stormwater (aka effluent) through treatment from works (aka sediment ponds, settling areas, ditches, etc.). Treatment (especially active that requires the use of a flocculent) and achieving compliance with a permit cannot be managed through discharges of effluent based on continuously changing background water quality. In other words, it is not feasible to treat effluent to meet constantly changing criteria and expect it to be successful. Baseline TSS data based on seasonal and annual variation is required to properly establish requirements for later permitting. Information collected once construction begins will be considered influenced by industrial activities and not representative of natural conditions."	Aurora LNG acknowledges that turbidity can fluctuate widely under natural conditions (e.g., during rain events) making baseline data difficult to use as means to establish changes in water quality due to construction activities. To address this, real-time monitoring using upstream and downstream locations is commonly used. The upstream location has no influence from Project activity (but it will reflect real-time natural variations in turbidity) while the downstream location can be influenced by Project activity. Discharged stormwater does not typically require a permit under the Environmental Management Act (EMA), however, it will comply with Fisheries and Ocean Canada Land Development Guidelines. A permit under the EMA will be obtained for such discharges as runoff from process areas (contact water), hydrostatic testing, the desalination plant, and cooling water. For further information on effluent discharge please refer to the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
65	screening	MOE	4.5.15.3	Water Quality	Hydrodynamic modelling in Appendix M does not included freshwater from Digby Island streams or address whether there is an effect on marine water quality modelling.	The hydrodynamic modelling (Appendix M) included freshwater inputs from the Skeena River but did not include inputs from small streams on Digby Island, as these are either too small to influence local oceanographic conditions relevant to the modelling or are not located in areas where they can influence conditions at the LNG marine berths and the MOF. The largest Digby Island stream (an unnamed creek referred to as J Creek) relevant to the hydrodynamic modelling enters at the head of Delusion Bay, which is more than 2 km away from the LNG marine berths. The mean annual discharge at J Creek measured in 2015 was 0.145 m3/s (Appendix T),which is considered to be not of significant magnitude when compared to tidal fluctuations in Delusion Bay. The creek that enters Casey Cove drains a much smaller watershed area than J creek, and flows from that creek are not expected to influence the modelling parameters used to assess the presence of the MOF infrastructure in Casey Cove. The suspended sediment predictions are modelled as increase over baseline, so localized inputs from small creeks are recognized as part of background. The Hydrodynamic Modelling report (Appendix M) describes the predicted effects of the proposed marine berths and trestles on local currents and sediment transport during operations, and model results are considered in the assessment of marine fish and fish habitat (Section 4.9). Appendix M (Section 6.3.3) indicates that the presence of marine infrastructure would result in small changes in TSS levels compared to baseline. These predictions were not further assessed in either 4.9.5.5 (change in fish health) or Section 4.5.13 (change in marine water quality).
66	screening	Metlakatla First Nation	4.5.15.3	Water Quality	Information regarding temperature of cooling tower effluent do not appear to have been provided. Please provide this information or indicate where it is located in the Application	The temperature of wastewater discharged through the deep water marine outfall (which may include cooling tower effluent) will be determined during FEED, and will meet regulatory guidelines, outside of a small mixing zone, for the protection of aquatic life.
66.1	round 1	Metlakatla First Nation	4.5.15.3	Water Quality	As a follow up to screening comment #66 Please indicate the size and extent of the mixing zone and the fisheries exclusion zone surrounding the outfall	Modelling will be conducted as part of Project design to determine the size and extent of the outfall effluent mixing zone and the results will inform the Project permitting stage. No fishery exclusions zones around the cooling water outfall are anticipated because there are no health or safety concerns associated with the effluent. See the "Discharges to the Marine Environment" technical memo for more details. The technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
67	screening	MOE	4.5	Water Quality	One sample for each lake and stream was collected for the assessment of acidification and eutrophication; however, this is not sufficient for determining baseline water quality for assessing the potential impacts from waste discharges. Water quality varies seasonally and a year of sampling is needed at minimum. The situation with marine water quality is slightly better in that 3 locations were sampled twice at surface and near bottom during the tidal cycle. However, variations due to rain events or seasonal changes like temperature can effect the water column in a marine environment and cause changes to water quality. A year of water quality data from key locations in the marine environment is needed at a minimum.	No waste discharges to lakes or streams are planned so no assessment is required. The concern for freshwater quality is acidification and eutrophication potential, as described in the AIR. The freshwater survey design followed the British Columbia Ministry of Environment Air Emissions Impacts Assessment for Liquefied Natural Gas Export Terminal Facilities: Guidance for the Assessment of Acidification and Eutrophication of Aquatic Systems (June 2015). The guidance document and scientific literature suggest acidification samples are best collected during late summer or early fall after lake-turnover, when there are fully mixed conditions. (BC MOE 2015; Strang et al. 2010). There is currently no regulatory requirement for one year of baseline data to be collected for LNG facilities. The existing conditions are described using both historical data and newly collected data. The historical data includes data provided by Environment and Climate Change Canada (September 2014) and a separate dataset provided by AECOM (September 2014). Stantec conducted additional surveys in September 2015 and April 2016. Each historical dataset or survey focused on sample collection from different waterbodies (i.e., The waterbodies were not sampled multiple times during these events). Appendix E Table 1-1 presents water chemistry data, while Table 1-2 presents in situ data. During field surveys on Digby Island, water samples for LAK11 were delayed due to entry permission requirements to sample in the reservoir. Once permission to enter was obtained, water chemistry samples were collected on October 26. 2015. However in situ monitoring equipment was unavailable at the time of sampling. For the acidification and eutrophication assessment, only laboratory data is used in the assessment. Although not all lakes in the RAA were included in the assessment, the study design does meet requirements for sampling frequency based on MOE guidance (BC MOE 2015). Lakes to be included in the assessment were discussed in consultations with the Working Group and the final workplan was approved by the MOE (July 6, 2016). The baseline marine water quality dataset was supported by desktop review of water quality data collected quarterly by the Prince Rupert Port Authority (PRPA) from 2013 to 2015. The PRPA reports provided robust data on spatial and temporal variation in water quality at sites close to the Project. Further details on water quality are provided in Appendix F, Marine Sediment and Water Quality, Technical Data Report.
67.1	round 1	MOE	4.5	Water Quality	As a follow up to screening comment #67 See the above screening comment II for screening IR#64	Screening comment 67 requested additional baseline marine water quality data. The follow-up statement on screening comment 64 requested additional freshwater baseline data. As noted in the response to Screening comment 67, the baseline marine water quality dataset was supported by desktop review of water quality data collected quarterly by the Prince Rupert Port Authority (PRPA) from 2013 to 2015. The PRPA reports provided robust data on spatial and temporal variation in water quality at sites close to the Project. Aurora LNG considers the existing baseline marine water quality data sufficient for the assessment of project waste discharges to the marine environment. Stormwater discharges to the marine environment do not typically require a permit under the Environmental Management Act (EMA); however, they will comply with Fisheries and Ocean Canada Land Development Guidelines. A permit under the EMA will be obtained for discharges to the marine environment such as from contact water from process areas, hydrostatic testing, the desalination plant, sanitary wastewater treatment plant, and cooling water. For further information on effluent discharge please refer to the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
68	screening	EAO	4.5.4 4.5.14	Water Quality	Project interactions Table 4.5-6 is focused only on changes in water quality from acidification and eutrophication. Does not consider potential effects of increase soil erosion, acid rock drainage/metal leaching (ARD/ML) and disposal of contaminated marine dredgeate (dioxins and furans) on land in soil storage area. Clarification: ARD/ML and disposal of contaminated marine sediment on land in soil storage area has not been identified as a project activity/interaction in the Freshwater or Marine Water Quality VC or Freshwater Fish Habitat VC. Please provide rationale. The AIR required assessment of effects for disposal at sea, but there is no information to assess effects for disposal on land. Please identify where in the Application the proposed disposal of contaminated marine sediments on land is assessed/considered? Need to identify if there are potential effects and mitigation for contaminated dredgate disposal on land? Will there be a separate dredge disposal site with liner and runoff collection to prevent contamination of surface water and groundwater? Are there regulatory requirements under EMA and CSR?	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4. Table 4.8-9 of Section 4.8.4 lists on-land disposal during construction, and waste management during operations, as potential project interactions. These activities include potential acid rock drainage/metal leaching from stored soil. The Project Description (Section 1.2.5.3) outlines management of potential acid generating rock to prevent low pH runoff from the soil storage area entering the freshwater ecosystem. Runoff and discharges to the freshwater environment are also assessed under Wastewater Management in Section 4.8.5.4 of the Freshwater Fish and Fish Habitat VC. As noted in Mitigation 4.8.8 (Table 4.8.8, Section 4.8.5.2), the project will be designed to maintain discharges to the freshwater environment within guidelines for the protection of aquatic life. Runoff from potential acid rock drainage is therefore not expected to cause effects to the freshwater ecosystem. The Project has been designed to dispose of the upper 0.5 m of dredged sediment in a separate engineered storage area. Some of the sediment in the top 0.2 m contains PCDD/Fs at levels higher than the Canadian Council of Ministers of the Environment Interim Sediment Quality Guideline of 0.85 pg/g. However, the maximum PCDD/Fs concentration found was 2.86 pg/g, well below the Contaminated Sites Regulation (CSR) standard for disposal on agricultural land (10 pg/g), and more than two orders of magnitude lower than the CSR standard for relocation to non-agricultural land (300 pg/g). Volume weighted averages for the top 0.2 m were also calculated for PCDD/Fs, to determine suitability for ocean disposal, and to account for the vertical and horizontal variability in PCDD/F concentrations(5 of 15 samples analyzed in the top 0.2 m had concentrations higher than the CCME ISQG). The highest volume weight average recorded for the top 0.2 m layer was for sediment from Berth 2, with a value of 0.068 pg/g. The PCDD/Fs concentrations in sediment disposed of in the soils storage area would be lower than this maximum volume weighted average because of mixing with sediment with lower PCDD/Fs concentrations from the entire 0.5 m depth horizon. Hence, the overall PCDD/F concentration in the engineered storage area would be well below the CCME ISQG and is not predicted to pose a risk to terrestrial or marine organisms. Due to the low PCDD/F levels, marine sediment proposed for disposal in the engineered storage area is not considered contaminated. This sediment has the potential to interact with the freshwater environment only through introduction of suspended sediment in surface water runoff. Potential effects to freshwater water quality and freshwater fish and fish habitat associated with the discharge of surface water runoff is assessed under Wastewater Management in the effect "'Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, (Freshwater Fish and Fish Habitat VC, Section 4.8.5.4). Runoff and discharges to marine water are assessed under Project Mechanisms for Change in the Physical or Chemical Composition of Marine Waters (Marine Water Quality VC, Section 4.5.15.3). As noted in Mitigation 4.5.8 (Table 4.5.26, Section 4.5.15.3), the project will be designed to maintain discharges to the marine environment within regulations and guidelines for the protection of aquatic life. Runoff from the engineered storage area is therefore not expected to cause effects to the freshwater or marine ecosystem. There are regulatory requirements for the relocation of sediment to land under the Contaminated Sites Regulation, as noted in Mitigation 4.5.10, Table 4.5-26 (Marine Water Quality VC, Section 4.5.15.3). The storage of marine sediment in an engineered storage area will be designed to meet these requirements (sediment meets the most conservative criteria for PCDD/Fs; because of the saline nature of the sediment, it needs to be disposed of in an area where drainage goes to the marine environment). Text in Section 4.5 was amended during screening to reflect these clarifications where needed.
69	screening	EAO	4.5.6 4.5.16	Water Quality	LAK11 (Dodge Cove Water Supply) and LAK05 (Wahl Lake) are identified as exceeding critical nutrient loads and high risk of eutrophication. There is limited rationale to support the conclusion that eutrophication effects to LAK11 (Dodge Cove water supply) are likely to be seasonal, and not expected to adversely affect drinking water quality. How were seasonal effects assessed with only 1 baseline sample collected (Oct 2015)? There is no discussion of potential adverse effects to drinking water from eutrophication (i.e. algal blooms can affect color, taste, water treatment effectiveness and release toxins with potential human health effects).	The acidification and eutrophication assessments are based on indicators that are protective of aquatic life. They are not indicators that are protective of human health. Section 8.2.4 of the Application provides a more detailed rationale related to the absence of Project interactions with drinking water quality, and incorporates the results of the acidification and eutrophication assessment in the rationale. As described in Section 4.5.6.3 of the Application (Page 4.5-37), the predicted change in water pH for the Dodge Cove drinking water reservoir (Location LAK11) and Wahl Lake (LAK05) is less than 0.3 pH units. This magnitude of pH change does not have direct effects to human health since humans regularly consume liquids that are substantially more acidic (e.g., coffee, orange juice) with no adverse health effect. This magnitude of pH change is also unlikely to result in any substantial change in metal leaching or metal toxicity, noting that the Project emissions are not a source of metals and the Dodge Cove drinking water reservoir is not adjacent to any known metal site or structure (e.g., landfill) that could be a source of metals. Seasonality in reference to eutrophication was meant to suggest that algal blooms typically occur during spring and summer months. The comment was not related to sampling. The methods for assessment of eutrophication effects followed the British Columbia Ministry of Environment Air Emissions Impacts Assessment for Liquefied Natural Gas Export Terminal Facilities: Guidance for the Assessment of Acidification and Eutrophication of Aquatic Systems (June 2015). Many factors can influence the response of a waterbody to nutrient additions and whether that could lead to taste and/or odour problems, or to algal blooms in general and toxic cyanobacteria blooms in particular. The Provincial guidance document for assessing eutrophication potential focuses on nitrogen, which would be released into the atmosphere through Project emissions. However, growth and composition of a phytoplankton community is regulated by concentrations of both nitrogen (which is predicted to increase) and phosphorus (which is not predicted to change). Thus, phosphorus is expected to be the limiting nutrient for phytoplankton.

70	screening	Lax Kw'alaams Band	4.6	Vegetation and Wetland Resources	Missing information on ecological communities of importance to Lax Kw'alaams and Metlakatla. Without this information, Lax Kw'alaams will not be able to fully assess the impact of the proposed Project on members' access to culturally important plants. The information is required before the Application Review can begin. Before Application Review or (if this is not possible) in advance of defining EA Certificate measures, Aurora should work with Lax Kw'alaams to identify important ecological communities for gathering plants, focusing on the communities that are most prevalent within the PDA and LAA. These may include deciduous forests, rich variants of mature forests, and possibly others. This information should inform a re-assessment of cumulative effects on these ecological communities, to determine whether further mitigations are required to ensure continued access to these ecological communities for Lax Kw'alaams. (At this point, the "go elsewhere" mitigation is not accepted and, therefore, reasonable mitigations are absent from the yet-complete Application.)	The assessment of change in abundance of plant species of interest, including traditional use plant species, has been conducted in accordance with the Application Information Requirements (AIR) for the Project. The scope of this assessment has focused on the changes to the abundance of traditional plant species rather than on the changes to the area of ecological communities capable of supporting identified traditional plant species. Aurora LNG anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO Aurora LNG has organized a fourth technical workshop to conduct a detailed review of Part B VC results and conclusions. In addition, Aurora LNG has organized a focused workshop with Lax Kw'alaams Band to discuss, among other topics, the characterization of CEAA 2012 5(1)(c) effects, and to continue developing a shared understanding of the potential effects related to Aboriginal Interests. Furthermore, Lax Kw'alaams Band will be invited to participate in a field tour to discuss study findings. This will include a review of study methodology and results, and how this information supported the assessment of key valued components.
71	screening	CEAA	4.6.2.1	Vegetation and Wetland Resources	The federal (ECCC) guidance document: Operational Framework for Use of Conservation Allowances may also apply here.	A reference to the Operational Framework for Use of Conservation Allowances can be found in the Conceptual Wetland Compensation Plan included in Appendix U of the Application.
72	screening	Lax Kw'alaams Band	4.6.2.5	Vegetation and Wetland Resources	RAA is inappropriately large and must be re-defined and effects re-assessed before Application is deemed complete. The Aurora RAA for vegetation and wetlands makes a finding of high significance (near) empirically impossible to obtain. Lax Kw'alaams would like to explore using a series of similar island and foreshore habitats to determine both project effects and cumulative effects. We request that Aurora work with Lax Kw'alaams to establish new RAAs for vegetation and wetland resources that is more in line with the size of the proposed development and includes similar habitats to those that will be removed if this Project goes ahead. In the absence of a more reasonably-sized RAA, it is difficult to determine whether impacts to ecological communities and wetlands are significant or not. Significant thresholds are unreasonable for wetlands and vegetation, requiring re-assessment of effects. Table 4.6-5 presents thresholds for determining the magntitude of change for ecological communities and for wetlands. The proposed Project involves complete removal of the ecosystems on Digby Island with likely irreversible effects. Lax Kw'alaams would like to work with Aurora to define a more reasonable way of determining magnitude of change before the Application is deemed to be complete.	The RAA used to assess effects on Vegetation and Wetland Resources is consistent with the AIR for the Project. The RAA was selected because it overlaps portions of both the Tuck and Kaien landscape units. These landscape units provide ecological context and retention objectives established by the provincial government for ecological communities at risk and old forest. The RAA includes habitats similar to those found on Digby Island, including Finlayson Island, Birnie Island, Tugwell Island, Smith Island, De Horsey Island and other small islands in the region. The RAA also includes comparable vegetation communities occurring within the same biogeoclimatic zone as the Project site. Since there is no legislation defining magnitude of loss for vegetation resources, the Great Bear Rainforest Order retention targets for ecological communities at risk and old forest were used. Potential effects of the Project are predicted to be much less than the retention targets set out in the Great Bear Rainforest Order for either landscape unit.
73	screening	CEAA	4.6.3	Vegetation and Wetland Resources	It is indicated that the Prince Rupert airshed study was unavailable at time of writing. The airshed study report was released in September 2016, and therefore is now available for the proponent's review and incorporation in to the assessment.	The final Prince Rupert Airshed Study was not released until September 2016, which did not allow sufficient time to incorporate its findings into the Application. Nexen worked with the BC Ministry of Environment to develop the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project, which was finalized in July 2016. Where directed by the BC Ministry of Environment, the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project took into account the preliminary results of the draft Prince Rupert Airshed Study.
73.1	round 1	CEAA	4.6.3	Vegetation and Wetland Resources	**As a follow to screening comment #73** While the Application was revised and resubmitted between November 2016 and January 2017, there is no indication that the completed Prince Rupert Airshed Study was considered within the revised Application. How will the study now be incorporated into the EA? Please note that the Prince Rupert Airshed Study does not focus exclusively on acidification and eutrophication, but more broadly examines effects from potential cumulative air emissions on human health, vegetation, soils and lakes. The final study can be accessed here: http://www.bcairquality.ca/airsheds/princerupert-airshed-study.html.	The final Prince Rupert Airshed Study was not released until September 2016, which did not allow sufficient time to incorporate its findings into the Application. Aurora LNG worked with the BC Ministry of Environment to develop the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project, which was finalized in July 2016. Where directed by the BC Ministry of Environment, the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project took into account the preliminary results of the draft Prince Rupert Airshed Study.
74	screening	Lax Kw'alaams Band	Appendix I - Vegetation and Wetland Resources	Vegetation and Wetland Resources	Assessment underestimates amount of red- and blue-listed ecological communities present in the PDA, LAA, and RAA and assessment. Section 3.1.1 discusses ecological communities at risk where the proponent notes that "Forested red- and blue-listed ecological communities are considered to be an occurrence of that community if they are presently structural stage 6 or 7 (mature or old forest)". This analysis underestimates the amount of red- and blue-listed ecological communities that are present in the PDA, LAA, and RAA. This analysis should be revised to include at least structural stage 5 and arguably structure stage 4, as these areas represent future values lost through development of the proposed Project. In the absence of this information, it is not possible to determine the full extent of impacts to red/blue listed ecological communities.	Although mid-seral stages of forest communities can be considered an element occurrence of an ecological community at risk, albeit with lower ecological integrity than mature forested communities, the BC Conservation Data Centre (BC CDC) indicates that in order to identify a given BC CDC red- or blue-listed ecological community at risk, the characteristic plant association and physiognomic structure must be present. Therefore, structural stages 6 and 7 have been used to estimate the extent of current forested ecological communities at risk within the Project study areas. Structural stage 5 is considered young forest (30-80 years old), and structural stage 4 is considered pole/sapling stages (15-40 years old), both of which are not likely to represent the mature (climax) plant association or physiognomic structure that define the forested ecological communities at risk in this area. At structural stages 6 and 7, the upper tree canopy is mature (80-250 years old) and the shrub and herb understories are typically well developed. For the purposes of an effects assessment, it was determined that current occurrences of forested ecological communities at risk (i.e. structural stage 6 and 7) should be the basis of the assessment; however, where they occur, younger seral stands of site series capable of supporting the BC CDC listed communities at risk can be managed for restoration or recruitment of red- or blue-listed communities in the future. Note that for climax shrub or herbaceous communities, all structural stages were considered to be current occurrences, and that the use of structural stages 6 and 7 to determine the area of forested red- and blue-listed ecological communities is consistent with assessment methods for other projects in the region, such as Pacific NorthWest LNG.
75	screening	Lax Kw'alaams Band	4.6.4	Vegetation and Wetland Resources	The assessment is missing consideration of effects on wetland function resulting from Project operations. Specifically, Project operations of natural gas pre-treatment and natural liquids extraction, and LNG production (including transfer to storage tanks, and loading on LNG carriers and routine flaring) are likely to interact with wetland function. These operations have the potential to impact wetland function through eutrophication, acidification, and particulate deposition (SO2, NO2). The rationale provided on p. 4.6-23 is difficult to understand. Given that vegetated resources will continue to exist in some portions of the LAA and RAA, Aurora must include consideration of whether operations associated with LNG production have the potential to impact wetland function within these broader areas. Without this information, Lax Kw'alaams has low confidence in the assessment of Project effects on wetland function. The missing information also makes it difficult to determine whether wetland compensation is adequate or whether further mitigations are required to offset these yet-to-be-identified impacts. This information is required before the review of the Project assessment can take place. (Note: the discussion of potential impacts to ecological communities of interest resulting from Project operations is discussed briefly in Table 4.6-9, but it is not obvious how the information was considered or integrated into the assessment. If this work was done, please provide a detailed description of methods, evidence used, and findings for the Application review phase.)	The potential effects of Project operations on wetlands due to soil eutrophication, soil acidification, or high concentrations of NO2 or SO2, are discussed in Section 4.6.5.3, under heading "Ecological Communities Sensitive to NO2, SO2, Soil Acidification, or Soil Eutrophication." The rationale on page 4.6-23 states that potential effects on Vegetation and Wetlands due to emissions (NO2, SO2, Soil Acidification, or Soil Eutrophication) are spatially-limited to vegetation and wetland resources that will remain present during the Operations phase because the area of vegetation and wetlands resources within the Project Development Area would be cleared during the Construction phase, prior to commencing Operations. Further information on which ecological communities are considered sensitive to NO2, SO2, soil acidification or soil eutrophication can be found in section 4.6.5.3, under heading "Project Mechanisms for Change in Abundance or Condition of Ecological Communities of Interest." No vegetated ecological communities occur within the NO2 critical level exceedance area of the Application Case, and there was no exceedance of the SO2 critical level predicted for the Application Case (see Section 3.6 of Appendix I, Vegetation and Wetland Resources TDR); therefore, no effects on wetlands are predicted due to either of these mechanisms. Section 3.6 of Appendix I, Vegetation and Wetland Resources TDR, shows that in the Application Case, 3.6 ha of wetlands are located within the area modelled to be above the calculated soil critical loads for acidification, and that 447 ha of wetlands are located within the area that is modelled to be above the calculated soil critical loads for eutrophication. Section 4.6.5.3 of the Application titled, "Likelihood of Residual Effects for Change in the Abundance or Condition of Ecological communities of Interest" discusses the uncertainty of the timing and direction of potential effects due to soil acidification and eutrophication; therefore, the Acidification and Eutrophication follow-up program (see Section 15.2.2 of the Application) has been proposed to monitor vegetation and wetlands resources for adverse effects due to soil acidification and eutrophication.
76	screening	EAO	4.6.5	Vegetation and Wetland Resources	Page 4.6-31: "traditional use plants are considered resilient because they can recover from a perturbation" Please confirm with Aboriginal Groups and relevant Working Group agencies: Is recovery of traditional use plants a reasonable assumption after a minimum of 25 years of operation? How do they recover? (Category 3) Page 4.6-42: "Construction will result in a direct loss of up to 75 ha of old-growth forest in the PDA (see Figure 4.6-3; Table 3-6 in Appendix I, Vegetation and Wetland Resources TDR), corresponding to 10% of the PDA and less than 1% of its extent within the RAA." This fails to provide sufficient understanding of the extent of effects on Digby Island. What is the percentage of old growth loss in relation to the total old growth on Digby Island? How is this considered in the characterization of effect significance on Digby Island? (Category 3) Pages 4.6-42, 4.6-68: "The old-growth forests in the PDA, terrestrial LAA, and RAA are relatively undisturbed and are considered resilient because they can recover from perturbation and will continue to persist in the terrestrial LAA and RAA." and "Old-growth forests are relatively undisturbed and common in the RAA; they are considered resilient because they can recover from perturbation, albeit taking over 200 years to develop." If old growth forests take over 200 years to develop, please provide rationale for why it is reasonable to suggest that they are resilient from disturbance. If one applies the assumption that old growth forests are not resilient to clearing activities because they take over 200 years to develop, how might this change the assessment of effects to old growth forests? (Category 3) Page 4.6-42: "The old-growth forests in the PDA, terrestrial LAA, and RAA are relatively undisturbed and are considered resilient because they can recover from perturbation and will continue to persist in the terrestrial LAA and RAA." and "The residual loss of old-growth forest is low in magnitude given that 60% of the RAA is considered old-growth forest." Is it possible that old growth forest on Digby Island have unique values to that in the rest of the RAA? And it is difficult ot determine the effects specific to Digby Island. Please evaluate significance in relation to effects specific to Digby Island. (Category 3) Pages 4.6-42, 6.4-34: "effects on the red- and blue-listed ecological communities are anticipated to be long-term and reversible once the Project is decommissioned." and "the Project will reclaim the land post-operations, to be conservative, the duration of the residual cumulative effect is considered permanent and irreversible because the land for the reasonably foreseeable future projects may revert to secondary industrial uses after project closures." These two statements seem to contradict each other. Are residual effects characterized as permanent and irreversible? (Category 3)	Page 4.6-31: Traditional use plants within the RAA are native species that are common in the area. These species are present in the PDA, LAA and RAA, indicating that there will be a seedbank and seed sources present for plants to grow from following a disturbance. Reclamation activities will use native plant seed and traditional use species where it is practical. Many of the traditional use species are herbs and shrubs, which would be expected to grow within a few years, provided seed sources are present. Therefore, it is ecologically and technically feasible for traditional use plants to be considered resilient. Nonetheless, this comment asks for this assumption to be confirmed with Aboriginal Groups and relevant Working Group agencies, which can occur at the next available working group meeting and/or in response to these information request comments. Page 4.6-42: The assessment of Project effects on old growth forest have been conducted in accordance with the AIR and spatial boundaries defined therein. Therefore, neither a characterization of Project effects, nor determination of significance, have been conducted for Digby Island itself because Digby Island is not one of the spatial boundaries defined in the AIR. The characterization of effects in the EAC Application compares the loss of old forest within the PDA to the extent in the RAA and references the old forest retention targets of the Great Bear Rainforest Order for the relevant landscape units that intersect the Project's spatial boundaries (see Table 4.6-5 and 4.6-6 for effects characterization criteria and significance thresholds, respectively). Pages 4.6-42, 4.6-68: The definition of resilient is: "capacity for vegetation and wetland resources to recover from a perturbation, and consideration of the existing level of disturbance." The existing disturbance to old-growth forest is limited within the RAA, and while centuries are required to develop old-growth forest in this region, the trees themselves are ecologically and technically capable of recovery following perturbation. If one applies the assumption that old growth forest is not resilient to perturbation due to their recovery timeframe, then the significance prediction remains unchanged based on the stated threshold that old growth forest would persist sustainably within the RAA, despite losses within the PDA. Page 4.6-42: The assessment of project effects on old growth forest have been conducted in accordance with the AIR and spatial boundaries defined therein. The old-growth forest communities present within the PDA are also present within the RAA. Field crews working on Digby Island did not indicate that the old-growth forest on the island was different than other old-growth forest in the RAA. Pages 4.6-42, 6.4-34: The distinction pertains to the difference between Project residual effects and Cumulative residual effects as follows: Project residual effects on red- and blue-listed ecological communities are anticipated to be long-term and reversible, because the Project will be reclaimed after decommissioning. Cumulative effects on red- and blue-listed ecological communities are anticipated to be permanent and irreversible because it is conservatively assumed that other projects in the RAA will revert to secondary industrial use rather than being reclaimed after decommissioning.
77	screening	EAO	4.6.6	Vegetation and Wetland Resources	Page 4.6-78: "Project residual effects to vegetation and wetland resources are predicted to be not significant... traditional use plants are abundant elsewhere in the RAA" Page 11-47: "Unless available information indicates otherwise, resources harvested on or around Digby Island and in surrounding waters are not considered unique and can be harvested elsewhere within the LAA depending on harvesting protocols and availability of other locations" For discussion with Nexen and Aboriginal Groups: Are traditional use plants abundant elsewhere on Digby Island? If not, how is the loss of plants as a result of the project relevant to current use, harvesting rights, governance, cultural identity, etc.? What is the relative impact on current harvesting of traditional use plants in consideration of proximity, accessiblity, experience and enjoyment, and harvest quality in relation to other traditional use plant sites?	Traditional use plants species are present elsewhere on Digby Island; however, field studies were not structured to determine their abundance on Digby Island outside the PDA. Rather, the studies were designed to determine traditional use plants species abundance within the PDA, LAA, and RAA for purposes of the effects assessment in accordance with the Application Information Requirements. The assessment of current use effects for each Aboriginal Group is presented in Section 11.3, Summary of Statutory Requirements Under CEAA 2012 Section 5(1)(c). This analysis took into consideration conclusions of the Vegetation and Wetlands VC, and included an assessment of change in quality of harvested vegetation, as well as access to harvesting sites. Project-related effects on harvesting rights (which includes traditional use plants and considers access and effects on the experience of harvesting), cultural wellbeing, and traditional governance are assessed for each Aboriginal Group in Section 12, Aboriginal Interests.
78	screening	Lax Kw'alaams Band	4.6.7	Vegetation and Wetland Resources	Impacts to traditional use species is flawed. Assessment traditional use species must include an assessment of plant quality (see above comment) and plant availability within areas that remain accessible for cultural use, not within the RAA as a whole. As formulated, the assessment underestimates the significance of removing culturally important plants from this location. The assumption that the entire RAA is culturally available for plant collection is a false assumption with no evidence to support it. The proponent's definition of reversibility is not appropriate. Even following restoration of the site, it will likely be many generations (and it may never occur) before people consider this area to be fully available for cultural use. From a cultural use perspective, impacts to the island as a result of the proposed LNG Project must be considered permanent.The proponent is requested to revise this section to include this consideration in their determination of impacts to traditional use plant species. Low confidence in assessment of soil acidification, eutrophication, and NO2 / SO2 deposition on senstiive ecological communities requires greater mitigations. Of particular concern is the low confidence in assessment of potential loss in wetland function as a result of the Project. To address this concern, Lax Kw'alaams recommends revising section 4.6.5.4 to include impacts on wetland function from these effects and enhancing mitigations accordingly. Compensation plan does not include wetland area lost for plan itself. Section 4.6.5.4, p. 4.6-57 describes the wetland compensation designed to "acheive no net loss of ecologically important wetland functions at a 2:1 ratio of compensatory wetland to lost wetland area". Informaiton on wetland area lost to develop compensation area must be provided in the Project application (not just in the compensation plan in Appendix U) to determine whether compensation adequately accounts for the full loss of wetland function within the PDA, LAA and vaLAA. Cumulative effects do not consider the impacts of invasives on ecological communities, plants, and wetlands (p. 4.6-62: "No Project contribution of invasive plant species are expected because no invasive plants were identified"). The proponent must revise this section to include a consideration of the cumulative effects of wetlands.This information is need to determine whether there is a significance effect on wetlands and ecological communities adjacent to the area that will be developed. The proponent must provide this information bdfore the application can be reviewed.	The assessment of change in abundance of plant species of interest, including traditional use plant species, was conducted in accordance with the Application Information Requirements for the Project. The scope of this assessment focused on the abundance (i.e., count or occurrence) of traditional plant species rather than on changes in traditional plant species quality. The assessment also looked at traditional use species rather than changes in the area of ecological communities capable of supporting identified traditional plant species. The assessment also examined changes in the abundance of traditional use species within the RAA, rather than changes in availability within a particular communities' traditional or specific gathering areas. It is ecologically-feasible to reclaim the Project development area to support the range of traditional use plant species identified in the Application; therefore, the residual effects are technically reversible, although it is noted that community members may choose not to use this area for cultural uses following its use for the LNG Project for a long time or permanently. Please see response to comment #75 regarding the assessment of soil acidification and soil eutrophication on wetlands. An Acidification and Eutrophication Follow-up Program (see Section 15.2.2 of the Application) has been proposed to monitor effects to vegetation and wetlands from NO2, SO2, soil acidification and soil eutrophication. The Wetland Compensation Plan will not result in a loss of wetlands: existing wetlands will be secured through a conservation agreement, restored, and/or enhanced to provide increased ecological functions; no loss of functions due to compensation is expected. If wetland creation is the tool used for compensation, then the area used to develop the wetland(s) would likely be uplands. Invasive plants are present in the RAA; however, none were detected within the Project Development Area. It is expected that invasive species within the RAA will be managed on other projects through invasive plant programs similar to the Invasive Plant Management Plan proposed for this Project (see Section 14.6 of the Application). The mitigation measures presented in Table 4.6-10 will help reduce the effects of invasive species on ecological communities of interest, including wetlands.

79	screening	Lax Kw'alaams Band	4.6.6.6 4.6.7.2	Vegetation and Wetland Resources	The gaps identified above must be filled for Lax Kw'alaams to have confidence in the conclusion of no significant cumualtive effect to wetlands. The conclusion that proposed mitigations, including the conceptual wetland compensation plan, will offset impacts to a red-listed wetland heavily impacted by the Project is not demonstrated with information provided. Missing information on impacts to wetlands from Project operations and invasive plants is particularly concerning at this suffciency stage of the EA. The Proponent is requested to address comments above, revise the assessment accordingly, including significance conclusions. This change must be implemented before the assessment document can be reviewed.	The Wetland Compensation Plan will offset impacts to the red- and blue-listed wetlands within the PDA, and includes a monitoring program to confirm that compensation occurs as planned, as well as effectiveness monitoring to confirm that the ecological functions of the wetlands are performing as they are intended. It is assumed that other projects within the RAA will be subject to the same standards as the Aurora LNG Project, and will require compensation for wetlands subject to the no net loss goal of the Federal Policy on Wetland Conservation. The potential effect of invasive species on wetlands is discussed under Section 4.6.5.4, heading "Project Mechanisms for Change in Wetland Function." The effect of Project operations on wetlands is discussed under Section 4.6.5.3, heading "Ecological Communities Sensitive to NO2, SO2, Soil Acidification, or Soil Eutrophication." There is a significant effect on wetlands if there is an uncompensated net-loss of wetland functions within ecologically important wetlands as defined in guidance from Environment Canada (Environment Canada 2014; Table 4.6-6). The Wetland Compensation Plan, monitoring program and effectiveness monitoring, along with the mitigation measures presented in Tables 4.6-10 (for invasive species), Table 4.6-11 (for ecological communities of interest) and Table 4.6-13 (for wetlands) will result in no net-loss of wetland functions of ecologically important wetlands for the Project. Other projects within the RAA are likely to be subject to the same standards as the Aurora LNG Project. Source: Environment Canada. 2014. Federal Policy on Wetland Conservation – Guidance for Application and Implementation in Environmental Assessment. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p403/d37786/1404937173815_193684738c554031afd3fe7a5b3bf6196c13620cba3241eac8c3f318682e8f7f.pdf Accessed: June 2016.
80	screening	Dodge Cove	4.7.1	Wildlife Resources (Terrestrial)	Section 4.7 There does not seem to be any information on migratory bird routes and the flyways that Digby Island is part of. Where are the studies of the thousands of birds that fly through Digby Island multiple times a year. Removal of migratory bird terrestrial habitat that is used seasonally, and the projects impacts on the flyway due to flaring and other disturbances needs to be addressed.	Information on the seasonal presence, richness, and distribution of terrestrial birds (including migratory bird species) is provided in the Wildlife Resources (Terrestrial) Technical Data Report (Appendix J) and incorporates Project and regional data. Potential Project residual effects to terrestrial migratory birds resulting from change in habitat on Digby Island is assessed in Section 4.7.5.2, and includes a discussion of direct habitat loss or habitat alteration from disturbance. Potential Project residual effects to terrestrial migratory birds due to flaring, lighting infrastructure, and other sensory disturbances discussed in Section 4.7.5.2, Section 4.7.5.3, and Section 4.7.5.4.
81	screening	Lax Kw'alaams Band	4.7.1	Wildlife Resources (Terrestrial)	The Topics included under the Wildlife Resources VC are not defined clearly and there is no rationale or explanation for why indicators or topics for assessment were selected. A description of the rationale for using specific indicators and why they were selected for assessing Project effects on this VC should be included. Since this is a VC representing many important values, an explanation of how the indicators link to a most sensitive receptor approach is required. A clear rationale for selecting indicators or for assessing effects on the Wildlife Resources VC is required for decision-makers to determine whether the assessment is adequate and is therefore required at the start of the Application Review period.	Sections 4.7.1 and 4.7.2 define and describe the scope of the assessment of potential effects on the Wildlife Resources (Terrestrial) VC. Section 4.7.3 describes the existing conditions for wildlife resources (terrestrial). Habitat modelling approaches used in the assessment are inclusive of all species potentially occurring in the Project Development Area (see Section 4.7.3.1). As described in Section 4.7.3.1, species selected for habitat suitability modelling was based on a combined consideration of the likelihood of occurrence or documented use of habitats on Digby Island, and within the LAA and RAA; potential interaction with Project activities; conservation status; ecological importance; established base of information, knowledge, or data; and cultural or traditional value. For each species, the season and life requisites were selected based on the sensitive period most likely to be affected by Project activities. Habitat suitability models were developed for four species of management concern (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad). As indicated in Section 4.7.3.1, the wildlife habitat community modelling completed for the Project is inclusive of other terrestrial wildlife species reasonably expected to occur in the Project Development Area and interact with Project activities. Modelling results were combined with data from Project specific field studies to characterize existing conditions for the variety of wildlife habitats present within the LAA and, by extension, the wider suite of wildlife species assemblages occupying them. Where there is a potential interaction between terrestrial wildlife and Project activities, it has been assessed (as applicable) under Change in Habitat (Section 4.7.5.2), Change in Mortality Risk (Section 4.7.5.3), or Change in Movement (Section 4.7.5.4). Culturally important species are also assessed throughout Section 4.7, particularly in Section 4.7.5.2, Section 4.7.5.3, Section 4.7.5.4, Section 4.7.6.3, Section 4.7.6.4, Section 4.7.6.4, and Section 4.7.7. Effects on traditional rights and interests related to terrestrial wildlife (e.g., hunting, harvesting, and cultural and spiritual values) are also assessed in Part C. Collectively, the assessment for wildlife resources (terrestrial) characterized potential Project effects for all federally-listed species with potential to occur in the Project area, and are described as applicable within Section 4.7.5.2, Section 4.7.5.3, Section 4.7.5.4, Section 4.7.6.3, Section 4.7.6.4, Section 4.7.6.4, and Section 4.7.7.
82	screening	Lax Kw'alaams Band	4.7.3	Wildlife Resources (Terrestrial)	Focal species selection does not address species of cultural importance for Lax Kw'alaams. Selected focal species are derived from a species-at-risk frame, without consideration of keystone cultural species that have the potential to interract with the Project. As above, without assessment of focal cultural keystone species it will not be possible to assess the impacts of the Project on rights and interests related to terrestrial wildlife.	The assessment of potential effects of the Project to culturally important wildlife species (e.g., species of traditional use or spiritual importance) was based on information provided in Project-specific traditional use studies and publicly available sources, as summarized in Section 4.7.2.3 and Section 4.7.3 (e.g., LFN 2004), and also described in Appendix J. Culturally important species are referenced throughout Section 4.7, particularly in Section 4.7.5.2, Section 4.7.5.3, Section 4.7.5.4, Section 4.7.6.3, Section 4.7.6.4, Section 4.7.6.4, and Section 4.7.7. While not necessarily assessed on a species-specific basis for keystone cultural species, culturally important species are considered in the assessment of residual effects on wildlife resources (terrestrial). For example, Section 4.7.5.2 describes change in habitat for wildlife habitat communities (e.g., loss or alteration of mature and old coniferous forest communities) and effects to black bear and black-tailed deer. Effects on traditional rights and interests related to terrestrial wildlife (e.g., hunting, harvesting, cultural and spiritual values) are also assessed in Part C. Aurora LNG anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO. Lax Kw'alaams First Nation (LFN 2004). Interim Land and Marine Resource Plan of the Allied Tsimshian Tribes of Lax Kw'alaams. pp. 161
83	screening	ECCC	4.7.3	Wildlife Resources (Terrestrial)	Proponent did not provide specific rationale for why each of the 4 focal species was selected. In addition, Proponent also did not provide rationale for why several other species of "management concern" or "likely to use habitats in the LAA and RAA" were not selected (e.g. Olive-sided Flycatchers, Northern Goshawk laingi subspecies). Having such information would be needed for ECCC to determine which species under ECCC's jurisdiction (SAR and Migratory Birds) would be potentially impacted by Project-related activities.	As described in Section 4.7.1 and 4.7.5 of the Application, the assessment of wildlife resources (terrestrial) is inclusive of all species of mammals, birds, amphibians, and reptiles that rely on the terrestrial environment for all or part of their life requisites and is based on species that are known, or are reasonably expected, to occur within the LAA or RAA. The assessment uses two habitat modelling approaches to assess and characterize change in habitat for terrestrial wildlife. Section 4.7.3.1 of the Application outlines the methods for each approach. Wildlife habitat community modelling completed for the Project is inclusive of all terrestrial wildlife species reasonably expected to occur in the Project Development Area and LAA and interact with Project activities, including migratory birds, species of management concern, and species at risk. Existing conditions for wildlife habitat communities are summarized in Section 4.7.3.2 of the Application and described in detail in Appendix J. The characterization of Project residual effects to wildlife habitat communities, and wildlife species or species assemblages within each community, are described in Section 4.7.5.2 of the Application. A discussion on the predicted effects to habitat for migratory birds, species of management concern, and species at risk (including olive-sided flycatcher and northern goshawk) are included in Section 4.7.5.2 of the Application. To complement the wildlife habitat community model approach, detailed habitat suitability models were also developed for four species of management concern (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad). As described in Section 4.7.3.1 of the Application, the species were selected for the habitat suitability modelling based on a combined consideration of the likelihood of occurrence and/or documented use of habitats on Digby Island, and within the LAA and RAA; potential interaction with Project activities; conservation status; ecological importance; established base of species information, knowledge, or data; and cultural or traditional value. Regional and Project specific datasets were considered in conjunction with the species selection criteria outlined above to determine a final list of appropriate species for the habitat suitability models.
84	screening	Health Canada	4.7.2	Wildlife Resources (Terrestrial)	No mention of integration into HH section	Human health in the context of this assessment is defined as the physiological health of a human population resulting from exposure to chemicals in the environment. The potential Project effects in the Wildlife Resources (Terrestrial) chapter include changes in habitat, mortality risk and movement. The assessment of these potential Project effects are based on removal of wildlife habitat, vegetation clearing, lighting, noise or vehicle collisions with wildlife, which are not related to exposure to chemicals in the environment. Section 6.6 of the Application assesses Community Health because construction, operations, and decommissioning of the proposed Project could affect health outcomes, social determinants of health (SDOH) and accessibility and availability of harvested foods which includes wildlife.
85	screening	Lax Kw'alaams Band	4.7.2	Wildlife Resources (Terrestrial)	While brief discussion migratory birds are included in these sections of the Application, there is no clear description of which species specifically may be impacted by the Project and how these are beind assessed under CEAA 2012 requirements related to migratory birds. Please update the assessment to differentiate between species impacted.	The Wildlife Resources (Terrestrial) Technical Data Report (Appendix J) and associated appendices provide information on the existing conditions, including the abundance, richness, and distribution of wildlife resources, including species defined by Article I of the Migratory Birds Convention. The assessment of wildlife resources (terrestrial) assesses potential Project effects to migratory birds, as defined by Section 2(1) of the Migratory Birds Convention Act, pursuant to Section 5(1)(a)(iii) of CEAA 2012, that rely on the terrestrial environment for all or part of their life requisites. Species that also rely on marine habitats for part of their life requisites and have potential to interact with marine components of the Project (e.g., marbled murrelet [Brachyramphus marmoratus], great blue heron fannini subspecies [Ardea herodias fannini]) are discussed in Marine Birds (see Section 4.11). During screening, Section 4.7.1, Section 4.7.2.1 (Regulatory and Policy Setting), Section 4.7.2.5 (Boundaries), Section 4.7.5, and Section 4.7.6 of the Application were updated to clarify that migratory birds, as defined by Section 2(1) of the Migratory Birds Convention Act, pursuant to Section 5(1)(a)(iii) of CEAA 2012 have been addressed in Section 4.7. Throughout section 4.7.5 and 4.7.6, potential Project effects on migratory birds are described by individual species, species guild, or habitat guild as appropriate to characterize the interaction with Project activities. Where a potential Project effect is expected to be applicable to many species of migratory bird to a similar extent, the assessment characterizes potential effects to migratory birds, overall.
86	screening	CEAA	4.7.2	Wildlife Resources (Terrestrial)	A conclusion on the significance of effects to migratory birds is not present in this chapter. This is included only in Section 5 (CEAA 2012 requirements)	The assessment of wildlife resources (terrestrial) is inclusive of assessing potential Project effects to migratory birds, as defined by Section 2(1) of the Migratory Birds Convention Act, pursuant to Section 5(1)(a)(iii) of CEAA 2012, that rely on the terrestrial environment for all or part of their life requisites. During screening, Section 4.7.1, Section 4.7.2.1 (Regulatory and Policy Setting), Section 4.7.2.5 (Boundaries), Section 4.7.5, and Section 4.7.6 of the Application were updated to clarify that migratory birds, as defined by Section 2(1) of the Migratory Birds Convention Act, pursuant to Section 5(1)(a)(iii) of CEAA 2012 have been addressed in Section 4.7. Section 4.7.1 indicates that information presented in Section 4.7 supports the Summary of Statutory Requirements under Canadian Environmental Assessment Act (CEAA) 2012 (Section 11.0). Accordingly, the determination of significance of Project residual effects and residual cumulative effects on wildlife resources (terrestrial), provided in Section 4.7.7, is inclusive of a significance determination for migratory birds (and species therein) and is carried forward in Section 11.9, Table 11.9-1, pursuant to Section 5(1)(a)(iii) of CEAA 2012.
86.1	round 1	CEAA	4.7.2	Wildlife Resources (Terrestrial)	**As a follow to screening comment #86** Under Section 5(1)(a)(iii) of CEAA 2012, the EA must specifically take in to account effects to migratory birds in its assessment of environmental effects. While the Application declares that migratory birds were assessed over two VCs (terrestrial wildlife and marine birds), there is no explicit conclusion regarding the significance of effects to migratory birds. Assessment by proxy is not acceptable; therefore issue remains oustanding.	Section 5(a) of CEAA 2012 requires that environmental effects or changes to components listed in Section 5(1)(a)(iii) must be taken into account in relation to an act or thing, physical activity, or a designated project. Sections 4.7.5, 4.7.6, 4.11.5, and 4.11.6 of the Application discuss potential residual Project and cumulative effects to migratory birds, as defined by Section 2(1) of the Migratory Birds Convention Act. Section 11 of the Application provides a summary of statutory requirements under CEAA 2012. Residual Project effects and cumulative effects for change in habitat, mortality risk, movement, and behaviour are described specifically for migratory birds in Section 11.2, Table 11.2-2. A significance determination for migratory birds is provided in Section 11.9, Table 11.9-1.
87	screening	CEAA	4.7.1	Wildlife Resources (Terrestrial)	For multiple VCs - at the beginning of each VC section, other relevant VCs are mentioned, but in several cases this is the only mention. It is not always clear how other relevant VCs are incorporated in to the assessment.	An overview of how relevant information from other VCs has been integrated into the assessment for the VC in question has been presented in the Introduction section of each VC chapter. Information on how relevant data or information (including data collected to support the assessment of other VCs) has been integrated into the assessment of each VC chapter is also described in the Analytical Methods and Existing Conditions sections for each VC chapter. A summary of how information from other relevant VCs was integrated into the assessment for the Wildlife Resources (Terrestrial) VC, specifically, is provided in Section 4.7.1. As indicated in Section 4.7.1 and Table 4.7-2 in Section 4.7.2.2, and cross-referenced throughout the Wildlife Resources (Terrestrial) VC, this assessment integrates information from the following VCs: Acoustic Environment (Section 4.4) - Assessment of potential noise-induced changes to wildlife movement patterns and behaviour integrate results of operational noise models (see Section 4.7.4, Section 4.7.5.2, Section 4.7.5.3, Section 4.7.5.4, Section 4.7.6.5, Section 4.7.7.2, and Section 4.7.9)Water Quality (Section 4.5) and Vegetation and Wetland Resources (Section 4.6) - Assessment of effects on amphibians considers how the potential change in mortality risk is influenced by Project-related effects to water quality, and vegetation and wetland resources, including acidification and eutrophication (see Section 4.7.5.1, Section 4.7.5.3, Section 4.7.6.4, Section 4.7.9)Marine Birds (Section 4.11) - Bird species that also rely on marine habitats for part of their life requisites and have potential to interact with both marine and terrestrial components of the Project are reflected in both the Wildlife Resources (Terrestrial) VC (see Section 4.7.2.1, Section 4.7.3.2, Section 4.7.4, Section 4.7.5.1, Section 4.7.5.3, and Section 4.7.6.1) and the Marine Birds VC (see Section 4.11)Visual Quality (Section 6.2) - Light-induced changes in wildlife movement patterns incorporate results from ambient light distribution presented in the Visual Quality VC (see Section 4.7.5.1, Section 4.7.5.2, Section 4.7.5.3, Section 4.7.5.4, Section 4.7.6.2, Section 4.7.6.2.3, Section 4.7.6.4, Section 4.7.6.5, Section 4.7.7, and Section 4.7.8).
87.1	round 1	CEAA	4.7.1	Wildlife Resources (Terrestrial)	**As a follow up to screening comment #87** Clarification: The AIR requires that inter-related VCs be reflected in the applicable VC chapters. Currently, there is no explanation as to HOW or WHY VCs were integrated into other chapters, apart from blanket statements referencing which VC chapters were considered. Issue remains outstanding.	As per the AIR, Aurora LNG has indicated for several VCs that the Application will identify the linkages between VCs and describe how the results of the assessment for individual VCs has been integrated where linkages were identified. An overview of how relevant information from other VCs has been integrated into the assessment for the VC in question has been presented in the Introduction section of each VC chapter. The bulleted listed presented in Section 4.7.1 specifically identified a) the valued components from which information was integrated to support the assessment for wildlife resources (i.e., acoustic environment, water quality, marine birds, and visual quality), b) for each valued component, how that information was integrated (e.g., results of the operational noise models, predicted acidification and eutrophication outputs), and c) why that information was integrated (e.g., to support the assessment of change in movement patterns and behaviour, assess how mortality risk is influenced by changes in acidification and eutrophication). Please refer to applicable sections within the individual VC chapters for an explanation on how information from other VCs was referenced and integrated.
88	screening	CEAA	4.7.2.4	Wildlife Resources (Terrestrial)	The measurable parameter for effects to wildlife from a change in mortality risk or change in movement are assessed qualitatively.	As per Table 4-10 of the AIR and as described in Table 4.7-3 of the assessment, the measurable parameter used to assess change in mortality risk is a qualitative estimate of change in wildlife mortality risk due to Project activities (i.e., interactions with vehicles and equipment, interactions with Project activities and infrastructure, and removal of nuisance animals). The measurable parameter used to assess change in movement is a qualitative discussion of Project effects on wildlife movement (e.g., newly created openings, sensory disturbance).

88.1	round 1	CEAA	4.7.2.4	Wildlife Resources (Terrestrial)	As **a folllow up to screening comment #88** It is the word "measurable" that is the issue here as it is synonymous with quantity and numbers rather than descriptive qualitative statements. Applying a qualitative assessment where a quantitative result is anticipated is confusing. Recommend revising to "indicative parameter" rather than " measurable parameter" for clarity.	Aurora LNG acknowledges this comment on use of measurable parameter terminology. The assessment followed guidance presented in the Guideline for the Selection of Valued Components and Assessment of Potential Effects (EAO 2013) in applying best practices for assessment of potential Project effects on valued components. Measurable parameters presented in the Table 4-10 of the AIR and Table 4.7-3 of the Application recognize that residual effects description criteria may incorporate quantitative or qualitative information in characterizing residual effects. Table 4.7-3 of the assessment specifies that change in mortality risk and change in movement used a qualitative approach. As per the guidelines, magnitude refers to the expected size or severity of a residual effect and may be described qualitatively where empirical data are limited. Accordingly, residual effects description criteria assigned to rank the magnitude of these effects apply qualitative assignments to the definitions of negligible, low, moderate, or high magnitude (see Table 4.7-5; EAO 2013). Reference: Environmental Assessment Office (EAO). 2013. Guideline for the selection of valued components and assessment of potential effects. Victoria, BC. 45 pp.
89	screening	Lax Kw'alaams Band	4.7.3	Wildlife Resources (Terrestrial)	As per comment above, key culturally important species have not been adequately described in the baseline. This information gap related to the status if ungulates, furbearers, eagles and other important species in local populations within preferred harvesting areas will limit the abiltiy of CEAA and EAO to determine significance of impacts to culture, rights and interests related to Project effects and cumulative effects, and for Lax Kw'alaams decision makers to make an informed decision about the Project. Please update the assessmetn to include key culturally important species. This must be carried forward into the effects assessment.	The assessment of potential effects of the Project on culturally important wildlife species (e.g., species of traditional use or spiritual importance) was based on information provided in Project-specific traditional use studies and publicly available sources, as summarized in Section 4.7.2.3 and Section 4.7.3 (e.g., LFN 2004). Existing conditions for terrestrial wildlife, including culturally important species is described in greater detail in Appendix J. Culturally important species including ungulates, large and mesocarnivores (e.g., furbearers), and eagles are referenced throughout Section 4.7, particularly in Section 4.7.5.2, Section 4.7.5.3, Section 4.7.5.4, Section 4.7.6.3, Section 4.7.6.4, Section 4.7.6.4, and Section 4.7.7. Information on existing conditions for terrestrial wildlife was also used to support the assessment of effects on traditional rights and interests related to terrestrial wildlife (e.g., hunting, harvesting, and cultural and spiritual values); this information is described in detail in Part B and Part C to facilitate consideration by CEAA, the EAO, and Lax Kw'alaams. Aurora LNG anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO. Lax Kw'alaams First Nation (LFN). 2004. Interim Land and Marine Resource Plan of the Allied Tsimshian Tribes of Lax Kw'alaams. 161 pp.
90	screening	CEAA	4.7.3	Wildlife Resources (Terrestrial)	Acoustic surveys for bats were not conducted. It isn't clear whether the information regarding bats within the assessment area has come from.	As noted in Section 4.7.3.2 of the Application, bats were recorded incidentally during marbled murrelet dawn audiovisual surveys using an Echo Meter Touch bat detector. Please refer to Section 5.8 of the Wildlife Resources (Terrestrial) Technical Data Report (Appendix J) for additional more details on incidental bat detections.
90.1	round 1	CEAA	4.7.3	Wildlife Resources (Terrestrial)	**As a follow up to screening comment #90** Little Brown Myotis is listed as endangered under the Species at Risk Act (SARA). Under Section 79 of SARA, the Agency must determine whether projects under assessment are likely to affect a listed wildlife species or its critical habitat, and take measures to avoid or lessen effects, and to monitor them. The Agency notes that the proponent identified preferred habitat for Little Brown Myotis within the local assessment area, including areas of high roosting habitat suitability within the project development area. In order to inform measures that would reduce effects to Little Brown Myotis at different times of the year, such as least risk timing windows for site clearing, it is likely that field studies (such as acoustic surveys) of bats would be required to identify both summer and winter roosting activities. Incidental sightings of bats in a survey conducted in June and July only is inadequate to inform such measures. Request that proponent follow up with ECCC/CWS regarding bat baseline requirements, adequacy of existing data, and validity of methodology. Please update this table with the results of that conversation.	Habitat suitability modelling and incidental information on bat occurrence collected during field studies in July 2015 indicated preferred maternal roosting habitat for, and the potential presence of, little brown myotis within the PDA. In accordance with SARA Section 79, Aurora LNG has identified residual effects, and the measures they are committed to undertaking to lessen those effects and to monitor them (see Section 4.7.5.5; Table 4.7-17). The Bat Management Plan will provide details on avoidance, reduction, mitigation, and monitoring measures to limit potential effects from change in habitat or mortality risk from Project construction and operation activities, and will include a description of the restricted activity period relevant to little brown myotis (as per mitigation 4.7-7). As per mitigation 4.7-17, the primary restricted activity period for bats was identified as May 1 through August 31 . To further improve understanding of bat species presence and occurrence, and to support the development and refinement of mitigation measures provided in the Bat Management Plan, additional information on seasonal activity patterns for bats has been prepared as a technical memo, entitled "Aurora LNG Project Bat Monitoring Program" and it will be filed with the BC EAO. Aurora LNG will consult with the appropriate regulatory agencies on the findings and outcomes of this memo as it pertains to the Bat Management Plan.
91	screening	CEAA	4.7.7	Wildlife Resources (Terrestrial)	With respect to the magnitude of residual effects, do the same definitions of low, moderate, high apply to species at risk as they do for other wildlife species that are not listed?	Determination of the magnitude of a residual effect is based on a measurable change from existing conditions and considers applicable legislation, management standards, or environmental and regulatory thresholds, and takes into account the viability of local or regional populations. With respect to the magnitude of residual effects (i.e., the amount of change to the Wildlife Resources [Terrestrial] VC relative to existing conditions), the definitions of the qualitative categories (i.e., negligible, low, moderate, and high) apply to all terrestrial wildlife species, including species of management concern and federally-listed species. For this assessment, magnitude is the amount of change to the Wildlife Resources (Terrestrial) VC relative to existing conditions. Accordingly, the magnitude of a potential Project effect may be larger for species at risk, in which case the assessment applies the most conservative (i.e., highest) magnitude to characterize potential Project effects to wildlife, overall. Additional information on species-specific determinations for potential Project residual effects and significance determinations is provided in Section 4.7.2.8 of the Application.
91.1	round 1	CEAA	4.7.7	Wildlife Resources (Terrestrial)	**As a follow up to screening comment #91** Explanation provided regarding the need for different definitions of magnitude for species at risk vs. other wildlife species is understood. However, the definition of 'moderate' magnitude for terrestrial wildlife remains problematic. The Application defines moderate magnitude residual effects as 'a measurable change from existing conditions above environmental or regulatory thresholds that will not affect the viability of the local or regional population'. If an effect was above a regulatory threshold, it would likely be in contravention to the regulation in question. Federal regulations, the rules used to carry out the intent of statutes enacted by Parliament, must legally be adhered to.	For clarity, reference to an environmental or regulatory threshold is intended to reference species' population and habitat management objectives, where defined, through regulatory guidance documents, such as a Recovery Strategy for a federally designated species at risk (for example). Aurora LNG is committed to adhering to protections afforded to wildlife resources through applicable legislation and regulations (i.e., those described in Table 4.7-1), and has described mitigation measures in Section 4.7 to demonstrate compliance.
92	screening	Health Canada	4.8	Freshwater Fish and Fish Habitat	No mention of integration into HH section	Human health in the context of this assessment is defined as the physiological health of a population resulting from exposure to chemicals in the environment. Potential residual Project and cumulative effects on freshwater fish and fish habitat include changes in habitat, change in mortality or health, and change in abundance or relative abundance. The assessment of these potential Project effects are based on vegetation clearing, excavation, grading and the placement of materials or structures in water which are not related to exposure to chemicals in the environment. Furthermore, most watercourses on Digby Island are small and do not support populations of adult fish typically consumed by humans. As a result, potential effects on fish and fish habitat would not influence human health in the context of chemical exposure in the environment and so there is no mention of human health in this section.
93	screening	CEAA	4.8.2	Freshwater Fish and Fish Habitat	The assessment of effects to acidification and eutrophication use the same spatial boundary as air quality (a 30 by 30 kilometre square around the project). However, the assessment of effects to freshwater fish and fish habitat use a much smaller spatial boundary. Shouldn't the air quality spatial boundaries be used for the assessment of effects to freshwater fish and fish habitat due to acidification and eutrophication?	The LAA and RAA for Freshwater Fish and Fish Habitat was developed to reflect the concerns and context relevant to this VC. The assessment areas for Freshwater Fish and Fish Habitat were chosen based on the Project location and the potential effects from the Project on the local and regional freshwater fish populations and health. As the project is on an island, the LAA (Section 4.5.2.5) represents the local area where potential Project effects (as defined in the AIR) on Freshwater Fish and Fish Habitat may occur; specifically this is the upstream and downstream reaches of the watershed connected to the Project Development Area. The RAA was chosen based on literature and recorded straying distances of CRA fish species that may frequent the freshwaters near the Project. The assessment areas for Water Quality (freshwater) were chosen to reflect concerns about acidification and eutrophication related to Project emissions to the air and subsequent deposition in water, and mirror the assessment areas used for the Air Quality VC. The results of the acidification and eutrophication assessment are directly relevant to freshwater fish and fish habitat, as the thresholds for effects were established to protect aquatic life, including fish. See section 4.5.6.3 and 4.5.7.2 for results on the assessment of Project cumulative effects on water quality and potential residual effect on aquatic biota. As a result, the LAA and RAA for the Freshwater Fish and Fish Habitat is sufficient for potential effects being assessed in this VC, where as the farther ranging effects associated with acidification and eutrophication from airborne deposition are addressed in the WQ/AQ assessment areas.
93.1	round 1	CEAA	4.8.2	Freshwater Fish and Fish Habitat	As a follow up to screening comment #93 Issue remains outstanding. Based on the proponent's modelling, critical load exceedances in lakes and streams are expected under both application and cumulative scenarios, including in water bodies that support CRA fisheries. As there are potential effects to fish and fish habitat from acid deposition outside of the local assessment area established for freshwater fish and fish habitat (as demonstrated in the proponent's assessment of water quality, which used a much larger spatial boundary), these effects must be assessed under Section 5(1)(a)(i) of CEAA 2012. For example, there are five lakes outside the freshwater fish and fish habitat local assessment area (but within the water quality local assessment area) that exceed critical loads under the cumulative effects scenario. While effects to water quality have been assessed, effects to fish and fish habitat have not.	The four emissions cases that were modelled are the Base case, Application case, Project case and Cumulative effects assessment (CEA) case. Under the Base case, three lakes (ADSW9, LAK12, LAK13) show a predicted critical load exceedance, indicating that at baseline conditions these lakes are acid sensitive (see Section 4.5 of the Application). Zero depositional input would result in a modelled critical load exceedance for these lakes due to low acid neutralizing capacity, low pH and alkalinity. Therefore, for the Project and Application case (which incorporate estimated deposition from Project and background emissions), these three lakes also indicate a modelled exceedance to the critical load. For the CEA case, (which incorporates estimated deposition from Project, background and reasonably foreseeable future regional industrial emissions) two additional lakes (NC309 and NC366) show a predicted critical load exceedance. During desktop review, lakes NC366 and ADSW9 were determined to contain CRA fish species; however, no fish presence or habitat surveys were conducted in these lakes, or within the other lakes outside of the LAA. For the CEA case, three watercourses (TT1, J6 and J1/2) have also been predicted to have a pH change above 0.3 units (conservative biological threshold). The model used to predict pH changes relates pH to acid neutralizing capacity, which was based on lake ecosystems, not stream ecosystems, as there is no model available that is specific to watercourses. Therefore the model may overestimate potential effects to watercourses. At existing conditions, these watercourses (TT1, J6 and J1/2) were not considered acid sensitive; therefore, they have buffering capacity against acid inputs. This buffering capacity should result in limited or no effects to the existing fish populations. Cumulative emissions can be considered conservative as they incorporate past, present and reasonably foreseeable future regional projects, although it is unlikely that all of these projects will be implemented. A more conservative threshold of 0.3 was chosen to align with previous regional studies; however, pH changes of up to 0.4, from existing water quality parameters in these non acid sensitive watercourses, are still considered protective of aquatic biota, and the modelled pH changes for these three streams are at or below the 0.4 threshold. It is anticipated that lakes and streams, where CRA fish are confirmed to inhabit, and models indicate predicted exceedances, will be assessed prior to start of project operation to document existing water quality, fish presence and conditions. The data collected will be used to inform future monitoring programs to monitor pH changes and complete necessary action plans to prevent fish mortality. Details of the proposed follow-up program on acidification and eutrophication (noted in Table 15-1 of the Application) will be developed in consultation with regulatory agencies, Aboriginal Groups and key stakeholders. It is expected this program would be regional in nature, coordinated by government agencies, and involve multiple participants to monitor and manage any changes that may occur during Project operations.
94	screening	EAO	4.8.2.4	Freshwater Fish and Fish Habitat	Disposal of contaminated marine sediment on land in soil storage area has not been identified as a project activity/interaction in the Freshwater or Marine Water Quality VC or Freshwater Fish Habitat VC. Please identify where in the Application the disposal of potentially-contaminated marine sediments on land is assessed/considered? If not, please provide rationale as to why this project activity was not assessed.	As noted in IR response #68, the Project has been designed to dispose of the upper 0.5 m of dredged sediment in a separate engineered storage area. Some of the sediment in the top 0.2 m contains PCDD/Fs at levels higher than the Canadian Council of Ministers of the Environment Interim Sediment Quality Guideline of 0.85 pg/g. However, the maximum PCDD/Fs concentration found was 2.86 pg/g, well below the Contaminated Sites Regulation (CSR) standard for disposal on agricultural land (10 pg/g), and more than two orders of magnitude lower than the CSR standard for relocation to non-agricultural land (300 pg/g). Volume weighted averages for the top 0.2 m were also calculated for PCDD/Fs, to determine suitability for ocean disposal, and to account for the vertical and horizontal variability in PCDD/F concentrations (5 of 15 samples analyzed in the top 0.2 m had concentrations higher than the CCME ISQG). The highest volume weight average recorded for the top 0.2 m layer was for sediment from Berth 2, with a value of 0.068 pg/g. The PCDD/Fs concentrations in sediment disposed of in the engineered storage area would be lower than this maximum volume weighted average because of mixing with sediment with lower PCDD/Fs concentrations from the entire 0.5 m depth horizon. Hence, the overall PCDD/F concentration in the engineered storage area would be well below the CCME ISQG and is not predicted to pose a risk to terrestrial or marine organisms. Due to the low PCDD/F levels, marine sediment proposed for disposal in the on land engineered storage area is not considered contaminated. As a result, the potential effect of on land disposal on freshwater and marine water quality and hence, freshwater fish and fish habitat, that was assessed was change in water quality through introduction of suspended sediment (TSS, turbidity) in surface water runoff. Potential effects to freshwater water quality and freshwater fish and fish habitat associated with the discharge of surface water runoff is assessed in the subsection 'Change in Fish Abundance or Relative Abundance' in Section 4.8.5.4.
95	screening	CEAA	4.8.2.4	Freshwater Fish and Fish Habitat	Table 4.8-2: There may be confusion regarding the definition of 'fish' and 'aquatic species' under CEAA 2012 - freshwater and marine shellfish, marine mammals and marine and aquatic plants, must be included in the assessment (see table 4.8-2).	Marine fish, shellfish, mammals and marine plants are assessed in the Marine Fish and Fish Habitat (Section 4.9) and the Marine Mammals (Section 4.10) chapters of the assessment. The Freshwater Fish and Fish Habitat assessment focused on CRA fish species, as defined in the Fisheries Act, to represent freshwater fish and their habitat. Aquatic plants and other aquatic life in the freshwater environment are considered as part of the freshwater habitat ecosystem and are not defined individually in the assessment. Freshwater shellfish were not encountered during the field assessments in the Project area.
95.1	round 1	CEAA	4.8.2.4	Freshwater Fish and Fish Habitat	**As a follow up to screening comment #95** Response understood in context provided. Summary table 11.2-2 on p. 11-9 indicates that information on aquatic plants is included in Section 4.10; however, Section 4.10 does not appear to contain any such information-- the assessment of impacts on aquatic plants is limited to sections 4.8 and 4.9. Red algae and surfgrass are mentioned to be present within the LAA at the beginning of Section 4.8 and in Table 11.2-2; however, there is no subsequent discussion about potential project impacts on these particular marine plants. Also, please note that the CEAA 2012 5(1)(a)(ii) requirement includes all aquatic species as defined in subsection 2(1) of the Species at Risk Act, and is not limited to those of commercial value.	The Freshwater Fish and Fish Habitat section (Section 4.8) of the Application does not assess potential effects on marine plants, including red algae or surfgrass. Marine plants, including red algae or surfgrass are assessed in Section 4.9 Marine Fish and Fish Habitat, and any reference to section 4.10 (Marine Mammals) for the assessment of Marine plants was an error. An errata document is being compiled that will capture these corrections and it will be filed with the BC EAO. The estuarine environment is assessed in Section 4.9 Marine Fish and Fish Habitat. As previously noted, freshwater aquatic plants are not individually defined within the Freshwater Fish and Fish Habitat section (Section 4.8). Rather, freshwater aquatic plants and other aquatic life in the freshwater environment are considered as part of the freshwater ecosystem. Freshwater shellfish were not encountered during the Project field assessments, and were not assessed separately from the freshwater ecosystem. Those species listed in the Species at Risk Act, and found to overlap within the Project boundaries, have been included in the assessment, regardless of their status as a commercial species.
96	screening	CEAA	4.8.3	Freshwater Fish and Fish Habitat	It isn't clear whether freshwater invertebrates were included in the baseline surveys of freshwatter fish and fish habitat.	Freshwater invertebrates were not included in the baseline surveys of Freshwater Fish and Fish Habitat for the Project as the assessment of Freshwater Fish and Fish Habitat focuses on CRA fisheries, as defined in the Fisheries Act. By identifying important fish that might be affected by the Project (CRA fish species) and developing mitigation measures to protect these resources, which includes protecting their habitat and the fish and invertebrate communities that live in it, the overall effects on the ecological function of the aquatic ecosystems can be reduced or avoided. Invertebrates and other aquatic life in the freshwater environment are considered as part of the freshwater habitat ecosystem and are not defined individually in the assessment.
96.1	round 1	CEAA	4.8.3	Freshwater Fish and Fish Habitat	**As a follow up to screening comment #96** Request that proponent follow up with DFO regarding acceptability of response and approach. Please update this table with the results of that conversation.	Aurora LNG met with DFO on January 27, 2016 to review the proposed freshwater and marine field programs. During this meeting DFO did not indicate there was a need to collect baseline information on freshwater invertebrates.

97	screening	MOE	4.8.4	Freshwater Fish and Fish Habitat	Surveys of WQ and Acidification/Eutrophication for streams have different identifiers than those in the fish and fish habitat surveys. The scale and resolution of the maps is not suitable for the reviewer and this information is effectively not available. This also applies to the scale of maps between the soils and vegetation assessment and the aquatic critical load assessment.	The surveys for Freshwater Fish and Fish Habitat and those for WQ were carried out separately and locations vary slightly between sampling locations; therefore, they have different identifiers. The data collected for the Freshwater Fish and Fish Habitat surveys are presented in subsection 4.8.3.2, Figure 4.8-2, as well as in the Technical Appendix (Appendix K). Information on the maps in question can be provided at a larger scale to facilitate regulator review, if required. Aurora LNG can discuss with MOE the scale and number of maps required to assist with review of the data.
98	screening	CEAA	4.8.4	Freshwater Fish and Fish Habitat	Table 4.8-14 - Only 'waste management' is listed as an effect to freshwater fish and fish habitat for the operations phase of the project. Given that there is an effect from LNG production through emissions of SOx/NOx, LNG production should likely be included in this table as well.	LNG Production was not listed as an interaction during operations in Table 4.8-14 due to the expected removal of the majority of the watercourses within the LAA. The effects of air emissions on freshwater quality are assessed in Section 4.5, and the streams that will remain following construction are included in the list of modelled streams and lakes. The assessment of potential acidification and eutrophication effects in the Water Quality VC are directly applicable to freshwater fish and fish habitat because the thresholds for identifying effects are based on protection of aquatic life, including fish.
98.1	round 1	CEAA	4.8.4	Freshwater Fish and Fish Habitat	**As a follow up to screening comment #98** The response is not clear as it refers to the Water Quality VC assessment regarding information on potential acidification and eutrophication, which is tacit acknowledgement that there may be potential effects on freshwater fish and fish habitat other than waste management. The response also acknowledges a connection between freshwater fish/fish habitat VC and Water Quality VC, so it remains unclear as to why the potential effects from operations emissions are not included in Table 4.8-14.	Aurora LNG acknowledges your comment about Table 4.8-14 and the effect from LNG Production during operations. This table will be updated in an errata document to recognize the potential project interaction between Freshwater Fish and Fish Habitat and LNG Production during operations to address the concerns about possible acidification and eutrophication. The predictions of the modelling do not indicate a relevant change in pH related to the biological threshold in fish and buffering capacity of existing watercourses, and this remains the case even after adding the potential interaction. An errata will contain the updated table, along with the clearer justification for why LNG Production is not considered to be a project interaction for Freshwater Fish and Fish Habitat during operations. An errata document will be created that will capture these corrections and it will be filed with the BC EAO.
99	screening	MOE	4.8.5	Freshwater Fish and Fish Habitat	The characterisation of residual effects for freshwater fish and fish habitat (Table 4-8-5 in Part B 04.08) describe what would be considered a low magnitude of effect could result in mortality or health effects to non-CRA (coarse) fish species in non-sensitive water courses within the LAA including a decrease in individuals but will not effect the population. It is not clear as to what the population of non-CRA fish includes. These comments are not about the streams within the PDA and compensation is not expected for coarse fish. Rather coarse fish and benthic invertebrates provide the best opportunity for determining long-term effects to the aquatic ecosystems that will ensure a healthy environment for CRA fish. This understanding of the layers in an aquatic ecosystem has not been included in the description of magnitude of effect and is a serious deficiency.	Fish are recognized as an important indicator of overall aquatic health. The assessment of Freshwater Fish and Fish Habitat focuses on CRA fisheries, as defined in the Fisheries Act and indicated in the AIR, and their habitat, which includes fish that support those fisheries. In addition to the Fisheries Act, BC's Water Sustainability Act establishes regulatory requirements for the protection of freshwater fish and fish habitat from which the potential effects from the Project were assessed.For this assessment, non-CRA fish are considered to be those that do not have a commercial, recreational, or Aboriginal fishery, and include coarse fish species. This was determined through literature research, consultation with local communities and field studies. By identifying important fish that might be affected by the Project (CRA fish species) and developing mitigation measures to protect these resources, which includes protecting their habitat and the fish and invertebrate community that lives in it, the overall effects on the ecological function of the aquatic ecosystems can be reduced or avoided.
100	screening	MOE	4.8.5	Freshwater Fish and Fish Habitat	Non-adromonous fish (coarse fish) have not been considered in this assessment. Coarse fish make up the majority of fish present in many of the streams and are resident whereas the adromonous fish are typically only in the streams at certain life stages. The coarse fish are usually territorial and have small areas of habitat so changes to their environment such as high levels of turbidity or lower pH, is likely to have a detrimental effect. Additionally, benthic invertebrate communities have not been inventoried or identified as needing assessment. These layers of freshwater ecosystems are not just essential for the residential organisms but also for the adromonous fish and their long-term viability and requires inclusion in the freshwater fish and fish habitat effects assessment.	Aurora LNG recognizes the complex nature of the freshwater ecosystem, including, but not limited to, trophic levels, water quality, and riparian areas. The assessment of freshwater fish and fish habitat focuses on CRA fish, as defined in the Fisheries Act and indicated in the AIR, but this focus considers CRA fish and the habitat that supports these fish (including food sources). By focusing on these fish and their habitat, the overall effects on the ecological function of the freshwater ecosystem (including that used by coarse fish) can be reduced or avoided.
101	screening	Dodge Cove	4.9.1	Marine Fish and Fish Habitat	Dodge Cove Improvement District had no previous knowledge of Table 15 Conceptual Fish Habitat Offsetting Plan: Conceptual Marine Offsetting Casey Cove, yet most of Casey Cove is in the Dodge Cove OCP. This area including the beach and water is used on an everyday basis by the residents of Dodge Cove, and has been outlined by the residents of Dodge Cove as a very important area to the community (public comment period) and visitors. It is our belief that the negative effects to the community has not been studied and addressed.	Table 15 of the Conceptual Fish Habitat Offsetting Plan characterizes and summarizes residual serious harm to fish resulting from permanent alteration or destruction of fish habitat. Aurora LNG recognizes that any such serious harm must be offset pursuant to the Canada Fisheries Act. The Conceptual Fish Habitat Offsetting Plan introduces Aurora LNG's early concepts for habitat offsetting to demonstrate capacity to counter-balance such serious harm to fish. The primary objective of these offsets is to provide habitat benefits to fisheries species harmed by the Project. Wherever possible, and through feedback and consultation from DFO, other regulators and stakeholders, offsets will be further refined and adjusted to improve the ecological benefits and yield additional benefits such as recreational and community value.
102	screening	CEAA	4.9.2	Marine Fish and Fish Habitat	In Section 4.9 of the Application, marine plants are only discussed insofar that they are fish habitat.	The Marine Fish and Fish Habitat VC considered potential effects to marine plants and algae, including habitat-forming species (e.g., eelgrass) as well as species of commercial, recreational, and Aboriginal importance (e.g., kelp). Potential effects to harvesting of marine plants and algae by Aboriginal Groups is assessed under Section 11.3 (Requirements under CEAA 2012) and considered in Section 12.5 (Aboriginal Interests).
102.1	round 1	CEAA	4.9.2	Marine Fish and Fish Habitat	As a follow up to screening comment #102 While the 5(1)(c) requirement is pointed out in the response, as per ID #95 above, further information/assessment is required on marine plants other than kelp and eelgrass which the Application identifies to occur within the project footprint area.	Information on marine plants (term used herein to refer to marine vegetation and algae) in areas potentially affected by the Project was gathered through a review of the literature, TEK, and Project-specific studies (see Appendix L, Marine Fish and Fish Habitat TDR). Marine plants in areas potentially affected by the Project were characterized during intertidal surveys (Section 5.1 of Appendix L), subtidal ROV surveys (Section 5.2 of Appendix L), and an eelgrass survey (Section 5.4 of Appendix L). The Marine Fish and Fish Habitat assessment considered this information to assess potential effects to marine plants, which applied the conservative assumption that marine algae of cultural importance (e.g., kelp) existed in areas where physical conditions are appropriate for its growth, but for which data was not available. Potential effects to marine plants were assessed and characterized under the 'change in habitat' effect (Section 4.9.5.2). Marine plants were identified as having the potential to be adversely affected through the following mechanisms: i) the loss or alteration of hard substrate during Project construction, since hard substrates serve as an attachment point for many species of plants, ii) the loss or alteration of soft substrate, which may affect species such as eelgrass, iii) shading from overhead marine infrastructure (e.g., the jetty), and iv) burial by the sediment disturbed during dredging activities and subsequently deposited onto areas with marine plants. The assessment concludes that, with the implementation of avoidance and mitigation measures, including habitat offsetting, residual effects of the Project on marine fish habitats (and by extension, marine plants) is not significant.
103	screening	CEAA	4.9.2	Marine Fish and Fish Habitat	The spatial scope of the marine fish and fish habitat is limited in comparison to other projects. A 500 metre buffer around the PDA and marine shipping lanes seems limited for the assessment of underwater noise in comparison to other projects. For example, the federal EA for the Pacific NorthWest LNG Project had a spatial scope that included a 10 kilometre buffer on either side of shipping routes.	Other similar projects typically lump marine habitats, marine fish, and marine mammals (among others) into one chapter or VC (e.g., Pacific NorthWest LNG). As such, these projects usually include a large LAA reflecting the broad extent to which some of these resources - notably marine mammals - could potentially be affected by project activities, including the production of underwater noise. Aurora LNG opted to separate these marine resources into two VCs (i.e., Marine Fish and Fish Habitat VC and Marine Mammals VC) and have appropriate spatial scales for each one. Consequently, marine mammals (Section 4.10) considers a larger LAA than marine fish and fish habitat (Section 4.9), reflecting the scales over which these different resources could potentially be affected by underwater noise.
103.1	round 1	CEAA	4.9.2	Marine Fish and Fish Habitat	As a follow up to screening comment #103 Please provide rationale for establishment of the 500 metre buffer around the PDA and marine shipping lanes, and clarify how this distance is sufficient for marine fish and fish habitat.	The LAA for the assessment of Marine Fish and Fish Habitat (Section 4.9) is defined as a 500 m buffer around the Project Development Area (PDA), and 500 m on either side of the centreline of the marine shipping route from the LNG jetty to the Triple Island pilot boarding station. Following finalization of the Application Information Requirements document for the Aurora LNG Project, the LAA was expanded to included the 1 nautical mile diameter boundary of the previously-used disposal at sea site at Brown Passage. The LAA was also expanded to include areas where total suspended solid (TSS) levels during dredging and disposal at sea are expected to exceed water quality guidelines (WQGs) for the protection of aquatic life (i.e, above 5 mg/L), based on modelling. The 500 m buffer around the PDA is consistent with other marine fish and fish habitat LAAs established for recent Environmental Assessments of marine development projects on the north coast of British Columbia. The 500 m buffer was selected in consideration of the proposed Project activities and the mechanisms of interaction with marine fish and fish habitat. Specifically, the LAA is expected to encompass the area within which potential Project effects on marine fish and fish habitat can be predicted or measured with a level of confidence that allows for assessment and where there is a reasonable expectation that those potential effects will be of concern. The 500 m buffer on either side of the marine shipping lane is considered appropriate for assessing potential effects associated with behavioural changes to marine fish from underwater vessel noise, based on research conducted on herring. Herring are a type-3 fish (as described in Popper et al. 2014), which means they have a swim bladder that is involved with hearing. Type-3 fish are considered the most sensitive to underwater noise (Popper et al. 2014). As described in Section 4.9.5.3 of the Marine Fish and Fish Habitat VC, herring have the ability to determine the location of a sound source within a distance of at least 400 m (Schwarz and Greer 1984). Furthermore, based on the results of a study by Misund et al. (1996), herring have been observed reorienting themselves to the path of an approaching research vessel, with the majority of individuals responding at a distance that aligns with the 400 m distance identified by Schwarz and Greer (1984). Given the results of these two studies, which focus on herring (considered to be a fish that is more sensitive to underwater noise), a 500 m buffer on either side of the shipping lane is expected to be sufficient to assess potential behavioural effects. References: Misund, O.A., J.T. Øvredal and M.T. Hafsteinsson. 1996. Reactions of herring schools to the sound field of a survey vessel. Aquatic Living Resources 9: 5-11. Popper, A. N., A. D. Hawkins, R.R. Fay, D. A. Mann, S. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P. H. Roger, B. L. Southall, D. G. Zeddies, and W.N. Tavolga. 2014. Sound Exposure Guidelines for Fishes and Sea Turtles. A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Published by the Acoustical Society of America. Schwarz, A. L. and G. L. Greer. 1984. Responses of Pacific herring, Clupea harengus pallasi, to some underwater sounds. Canadian Journal of Fisheries and Aquatic Sciences 41: 1183-1192.
104	screening	Lax Kw'alaams Band	4.9.2	Marine Fish and Fish Habitat	How long is the actual decommissioning period? What does decomissioning every 2-5 years actually mean?Best available information for modelling exercises (TSS, water quality etc.) - is this up to date recently acquired data from the area in question of the parameters being modelled?	The decommissioning period is anticipated to take between two to five years to complete and will not reoccur. The best available information was used to predict levels of underwater noise and TSS that may be generated by the Project. This information was collected from both publically available databases (e.g., local bathymetry) and site-specific field studies (e.g., marine sediment composition).
104.1	round 1	Lax Kw'alaams Band	5.2.2.1 5.2.2.2	Marine Fish and Fish Habitat	Building upon Screening Comment ID#104 - Using the best available sediment information would include the full utilization of the Lax Kw'alaams commissioned STA which is not the case. The STA has only been used as a passing reference.	Aurora LNG acknowledges the information in the STA report provided by Lax Kw'alaams Band. The STA report provides information on sediment transport in the Prince Rupert area, and identifies zones of net accretion, net erosion, dynamic equilibrium and total deposition. However, the STA report does not provide the level of detail required to assess sediment transport related to Project activities.
105	screening	Lax Kw'alaams Band	4.9.2.4	Marine Fish and Fish Habitat	More information on fish habitat offsetting required.Fish Habitat productivity metrics are missing from the Application. This information is needed to determine if the fish habitat offsets planned will indeed work and benefit the target fish species. If this information is not provided, then any fish habitat offsets planned will have no empirical value. This information is needed to determine significance of effect because building replacement fish habitats does not necessarily mean that fish will use these habitats. This information is needed by this point in the EA processto empirically determine whether offsetting measures will indeed benefit the intended fish species. The following steps are required to fill the gap: (i) empirically define fish habitat productivity and (ii) conclusively show how the intended offsetting measure will benefit/help the target fish species in question.	The conceptual fish habitat offsetting plan was developed based heavily on guidance provided by DFO (relevant documents are cited in the plan). It is not the case that productivity per se must be measured in order to demonstrate or infer benefits to fish; indeed, as per DFO's guidance, area is an appropriate and commonly used proxy. The Fisheries Act explicitly stipulates that serious harm to fish must be offset. DFO's guidance documents provide clear direction on how to design habitat offsetting plans to meet this obligation. A final habitat offsetting plan (and any resulting authorization) includes two key elements that reduce the risk of offsetting failure. First, a final fish habitat offsetting plan would include success criteria specific to the objectives of the offsetting. Success criteria would be stated in any Authorization provided by DFO. Should these success criteria not be met, alternative or additional offsetting will be required. Second, the final plan would also include a detailed monitoring plan, and any such monitoring requirements would also be included in any DFO Authorization. The objectives of this monitoring plan would be to collect the information required to satisfy DFO that success criteria have (or haven't) been met.
106	screening	CEAA	4.9.2.4	Marine Fish and Fish Habitat	While Brown Passage is assessed as the disposal at sea location for the Project, it is indicated earlier in the Application that it has not been definitively decided upon, and the site location may change. Please note that a disposal site must be chosen definitively for the purposes of the EA, as it may have a substantial impact on the environmental assessment of marine fish and fish habitat.	Brown Passage is currently the preferred disposal at sea site and was assessed in the Application. See Table 3-2 in Section 3 (Assessment Methods) for the VCs where there are potential interactions with dredging and disposal at sea activities.
106.1	round 1	CEAA	4.9.2.4	Marine Fish and Fish Habitat	**As a follow up to screening comment #106** Issue remains outstanding. See comment screening ID #5.	The Application Information Requirements (AIR) document for the Aurora LNG Project committed Aurora LNG to assessing potential effects associated with dredging and disposal at sea activities (see Table 3-7 of the AIR). A requirement to assess alternative sites for disposal at sea was not included in the final AIR. Aurora LNG acknowledges comments made by regulatory agencies and Aboriginal Groups regarding the selection of Brown Passage as the proposed disposal at sea location for the Project. Aurora LNG also acknowledges comments made during the Working Group meeting on February 7, 2017 by ECCC and DFO on the topic of disposal at sea and disposal site alternatives. In following, a meeting was scheduled by the BC EAO for Friday April 28, 2017 to discuss potential alternative disposal at sea sites for the Aurora LNG project. Various regulators and Aboriginal Groups attended that workshop. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
107	screening	MOE	4.9.2.4	Marine Fish and Fish Habitat	While the effects of sediment resuspension are identified, turbidity has not been evaluated. Water clarity has a large effect on many marine organisms, especially eelgrass. An evaluation of turbidity on eelgrass is needed for those beds that are outside of the dredging area or construction area.	The assessment of sediment resuspension is conducted using TSS, which can be predicted in a model, rather than turbidity, which cannot be modelled in that way. The results of the sediment dispersion model (Appendix G) suggest that the TSS plume generated during dredging activities will overlap with some eelgrass beds located outside of the dredge footprint; however, TSS levels in those are expected to be relatively low (generally less than the 5 mg/L water quality guideline at the MOF, Berth 1 and Berth 2) and return to background levels when dredging stops each day. Furthermore, with the installation of silt curtains, where practicable, the extent of the TSS plume is expected to be even smaller than predicted (the dredging modeling did not assume the use of silt curtains). As a result, potential effects to eelgrass beds located outside of the dredge footprint were not further assessed in the Marine Fish and Fish Habitat VC. Potential effects associated with exposure of marine fish to elevated TSS levels generated during Project activities are assessed under the 'change in health' effect (Section 4.9.5.5). Turbidity levels will be monitored in real time during dredging, with results compared to water quality guidelines and to predicted TSS levels (through use of site-specific turbidity-TSS relationship).
107.1	round 1	MOE	4.9.2.4	Marine Fish and Fish Habitat	As a follow up to screening comment #107 This should have been explained in the document to acknowledge that turbidity as well as TSS was considered and how it will be managed to prevent impacts to eelgrass. While the response should be sufficient, i.e.. using a TSS/turbidity curve and modelling TSS only, it should be understood that other coastal sites in the area have shown that due to the silt/clay fraction, TSS/turbidity curves can be constantly changing.	Comment noted. Prior to the start of dredging, a TSS-turbidity curve will be established to relate the observed baseline turbidity levels to TSS levels (measured and predicted). The calibration curve will be updated periodically, when moving to areas of recognized differences in particle size distribution (i.e., from one dredge pocket to another, and from one depth to another). For real-time monitoring of construction-related effects, turbidity will be a sensitive indicator of the fine sediment fraction (clay and silt), as proportions change throughout the dredge footprint and from one dredge area to another.

108	screening	Gitga'at First Nation	4.9.2.4	Marine Fish and Fish Habitat	Potential impacts of invasive species colonization from Project shipping (e.g., hull fouling and ballast water exchange) was not assessed (see Gitga'at First Nation's Comment 33 in Public dAIR Tracking Table).	The release of ballast water, a pathway through which aquatic invasive species could be introduced into the marine environment, is regulated by Transport Canada through the Ballast Water Control and Management Regulations (SOR/2006-129), under the Canada Shipping Act (2001). Further discussion is provided in Section 4.5.15.3 (Water Quality VC). The regulations attempt to avoid the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. LNG shipping activities will adhere to these regulations, as identified in Mitigation Measure 4.5.7 (Section 4.5.15.3 of the Water Quality VC). With respect to introducing aquatic invasive species through hull fouling, there are currently no formal regulations in place to manage this concern, which is a global-wide issue that needs international and industry-wide initiatives. However, the Prince Rupert Port Authority (PRPA) is a standing member of the Green Marine Program (https://www.green-marine.org), which encourages international ship owners to implement anti-fouling measures to reduce the risk of introducing aquatic invasive species carried on vessel hulls. The PRPA is also part of the Plate Watch Program and monitors the establishment of aquatic invasive species within the Prince Rupert harbor. The PRPA has reported that no aquatic invasive species have been documented in the Prince Rupert harbor to date (http://www.rupertport.com/port-authority/sustainability/invasive-species).
108.1	round 1	Gitga'at First Nation	4.9.2.4	Marine Fish and Fish Habitat	"As a follow up to screening comment #108 Will Aurora LNG be engaged in the initiatives mentioned for the PRPA?"	Aurora LNG would expect to be invited by PRPA to participate in these programs.
109	screening	CEAA	4.9.3	Marine Fish and Fish Habitat	While baseline surveys of marine fish and fish habitat took place between 2014 and 2016, it doesn't appear that one full year of data (4 seasons) was collected. For example, a survey of marine vegetation, algae, and invertebrates was conducted in July 2014, September 2014, and August 2015. A survey of distribution and abundance of marine fish was conducted in October 2015, February 2016, and May 2016.	The main component of marine habitats that exhibit seasonality are areas of vegetation (seaweed or kelp stands, and eelgrass). These habitats reach peak extent during the summer, when light levels promote growth and expansion. For this reason, these habitats were surveyed during the summer, which yielded precautionary high estimates of vegetation density and extent. Other aspects of fish habitat are not seasonal. Therefore, one full year of marine-habitat data is not needed to adequately (and precautionary) characterize this aspect of marine resources. Fish communities (as opposed to fish habitat) exhibit seasonality, and require multiple surveys to capture variability in species assemblage and relative composition (i.e., dominant species). Major shifts in fish assemblages are associated with the upstream and downstream migration of anadromous Pacific salmon and eulachon, and seasonal migration of other species, such as herring. Aurora LNG undertook six fish surveys spanning two years (2014-2016). In addition to the dates listed in the IR (October 24–29, 2015; February 8–15, 2016; May 5–10, 2016), surveys were also conducted in April and August 2014, and March 2015 (see Table 22 of Appendix L Marine Fish and Fish Habitat Technical Data Report). These field surveys, combined with the literature review (which provided a broad overview of patterns in fish communities in the project area), provided adequate information on major seasonal shifts in fish communities.
109.1	round 1	CEAA	4.9.3	Marine Fish and Fish Habitat	As a follow up to screening comment #109: The baseline data collected seems inadequate for the purposes of informing mitigation measures such as timing windows of least risk. While the Application states that six surveys took place over two years, each survey took place over a short period of time, and in some instances there were large time periods where no data were collected (such as between August 2014 and March 2015). Data was not collected in four seasons of one year, but instead four seasons over multiple years, and therefore the resulting data does not properly account for potential interannual variability in fish populations. The Agency requests that the proponent to follow up with Fisheries and Oceans Canada to confirm adequacy of the baseline. Please update this table with the results of that conversation.	Comment noted. Aurora LNG conducted extensive baseline surveys of marine fish and fish habitats in areas potentially affected by the Project (see Appendix L, Marine Fish and Fish Habitat TDR). Specifically, Aurora LNG conducted six marine fish surveys over four seasons (i.e., fall [October 2015], winter [March 2015, February 2016], spring [April 2014 and May 2016], and summer [August 2014]), and while these surveys were completed over the span of two years, the surveys do capture patterns of seasonality and variability in species assemblage and relative composition (i.e., dominant species). Aurora LNG is of the opinion that the level of information collected during Project-specific studies is sufficient to support the assessment and characterization of potential effects on marine fish and fish habitats, and to identify appropriate mitigation measures. Aurora LNG met with DFO on January 27, 2016 to discuss the various baseline field surveys being completed for the Project. During this meeting, DFO did not indicate that the level of effort or the types of surveys were inadequate to support the assessment of potential effects on marine fish and fish habitat. Aurora LNG also met with DFO on April 25, 2017 regarding results of the assessment, specifically in relation to mitigation measures and offsetting of fish and fish habitat. No concerns related to baseline data were identified. Regarding least risk timing windows for in-water works, Aurora LNG has committed to completing all dredging, disposal at sea, and underwater blasting works within the DFO least-risk work window for Area 4 - Lower Skeena, which is from November 30 to February 15. No other timing windows are currently proposed.
110	screening	EAO	4.9.4	Marine Fish and Fish Habitat	Disposal of contaminated marine sediment on land in soil storage area has not been identified as a project activity/interaction in the Freshwater or Marine Water Quality VC or Freshwater Fish Habitat VC. Please identify where in the Application the disposal of potentially-contaminated marine sediments on land is assessed/considered? If not, please provide rationale as to why this project activity was not assessed.	The interaction of disposal of marine sediment on land with water quality is captured in the Table 4.5-25 (site preparation [clearing, grubbing, grading, leveling, on-land disposal, and construction, operations, and decommissioning of temporary facilities). Further information has been provided in Section 4.5.15.3 on the assessment of sediment disposal on land. The top 0.5 m of dredged marine sediment will be disposed of on land within an engineered disposal cell within the PDA. Some of this sediment (mostly in the top 0.2 m) contains PCDD/Fs at levels higher than the Canadian Council of Ministers of the Environment Interim Sediment Quality Guideline, but well below the Contaminated Sites Regulation (CSR) standard for disposal on agricultural land and more than two orders of magnitude lower than the CSR standard for relocation to non-agricultural land. The marine sediment proposed for disposal on land is therefore not considered contaminated. This sediment has the potential to interact with the marine and freshwater environment through the introduction of suspended sediment in surface water runoff. Potential effects to marine water quality and marine fish and fish habitat associated with the discharge of surface water runoff is assessed under the 'change in physical and chemical composition of marine waters' effect (Water Quality VC, Section 4.5.15.3) and the 'change in health' effect (Marine Fish and Fish Habitat VC, Section 4.9.5.5). Potential effects to freshwater water quality and freshwater fish and fish habitat associated with the discharge of surface water runoff is assessed under the 'change in fish mortality or health' and the 'change in fish abundance and relative abundance' effects (Freshwater Fish and Fish Habitat VC, Section 4.8.5.3 and 4.8.5.4).
110.1	round 1	ECCC	4.9.4	Marine Fish and Fish Habitat	"ECCC follow up comment to EAO screening comment #110 : CWS Revised Rationale: ECCC notes that the Proponent has committed to following ECCC's guidelines for disturbance to marine bird colonies, and that "LNG carriers transiting between Triple Island and the LNG Facility will maintain a distance of greater than 500 m from known marine bird colonies, including Lucy Islands" (Application, Table 4.11-9, pdf pg 25) Information Request: ECCC request that the Proponent commit to consulting with the department regarding avoiding and reducing disturbance to marine birds in the context of vessel traffic. "	As outlined in Section 4.11.5.4 of the Application, Environment and Climate Change Canada recommends that large vessels maintain distances greater than 500 m from breeding colonies to reduce potential disturbance effects while transiting. Because the Project's shipping route is located more than 1 km from the nearest known marine bird colony, the distance maintained by LNG carriers for the Project will reduce the potential for disturbance, including flushing of breeding adults from active nests at breeding sites. Aurora LNG has committed to limited potential for wake effects in foreshore habitats by maintaining a distance of greater than 500 m from known marine bird colonies (mitigation 4.11.1) and limiting transiting speeds of LNG carriers, tugs, and barges within BC-controlled marine waters, to 16 knots or less, with slower speeds on approach to the marine terminal. Aurora LNG will continue to consult with Environment and Climate Change Canada on the development of the Marine Activities Plan, which would include the proposed mitigations for avoiding and reducing disturbance to marine bird colonies from Project-related marine vessel traffic.
111	screening	Lax Kw'alaams Band	4.9.4	Marine Fish and Fish Habitat	Opportunistic crab sampling provides very little data value a 'presence/absence' determination - more refined crab surveys will be needed to meaningfully characterize potential project effects on local crab populations.	The assessment of potential effects on local crab populations considered information about crab life history, habitat preferences, and presence in the Project area, collected from scientific literature and site-specific field studies. Using this information, potential interactions with the Project were identified and assessed under the 'change in mortality risk' effect, the 'change in behaviour' effect, and the 'change in habitat' effect. This information was sufficient to characterize and assess potential effects on local crab populations.
112	screening	Gitxaala Nation	4.9.4	Marine Fish and Fish Habitat	Information regarding potential effects of cooling tower effluent have not been identified.	The temperature of wastewater discharged through the deep water marine outfall (which may include cooling tower effluent) will be determined during FEED, and will meet regulatory guidelines, outside of a small mixing zone, for the protection of aquatic life.
113	screening	Metlakatla First Nation	4.9.4	Marine Fish and Fish Habitat	Information regarding potential effects of cooling tower effluent have not been identified.	The temperature of wastewater discharged through the deep water marine outfall (which may include cooling tower effluent) will be determined during FEED, and will meet regulatory guidelines, outside of a small mixing zone, for the protection of aquatic life.
113.1	round 1	Metlakatla First Nation	4.9.4	Marine Fish and Fish Habitat	**As a follow up to screening comment #113** Please indicate the size and extent of the mixing zone and the fisheries exclusion zone surrounding the outfall	Modelling will be conducted as part of Project design to determine the size and extent of the outfall effluent mixing zone and the results will inform the Project permitting stage. No fishery exclusions zones around the cooling water outfall are anticipated because there are no health or safety concerns associated with the effluent. See the "Discharges to the Marine Environment" technical memo for more details. The technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
114	screening	Lax Kw'alaams Band	4.9.5	Marine Fish and Fish Habitat	See comments above on fish habitat offsetting and crab sampling.	Comment noted. See responses to other comments as appropriate.
115	screening	Lax Kw'alaams Band	4.9.5	Marine Fish and Fish Habitat	A qualified yes - Habitat must be examined in terms of productivity (e.g. exact function of habitat and to what species; also what food sources for fish come from a specific habitat type) not just from a physical area metric.	Such a function approach was adopted in the conceptual fish habitat offsetting plan. This offsetting plan was developed based heavily on guidance provided by DFO (relevant documents are cited in the plan). It is not the case that productivity per se must be measured in order to demonstrate or infer benefits to fish; as per DFO's guidance, area is an appropriate and commonly used proxy. DFO's guidance documents provide clear direction on how to design habitat offsetting plans to successfully counter-balance serious harm to fish. DFO advocates framing assessments of serious harm on the type of habitat use and degree of dependency by specific species and life stage in a specific area. This approach would capture the functional perspective described in the comment, whereby functionality in area affected is echoed in the offset area. As the offsetting plan is further developed into a final version, this focus on 'habitat use and dependency' will be used to refine the type, location and design of habitat offsets. A similarly functional approach was used in the assessment of effects on fish habitat by identifying project mechanisms through which habitat impacts will affect fish. This approach allowed focus on specific species, or types of species, most likely to be harmed.
116	screening	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	In some cases, mitigation measures are not described in sufficient detail to evaluate their efficacy. This will be addresssed further at review stage.	The mitigation measures identified in the Marine Fish and Fish Habitat VC are based on an understanding of existing conditions, expected construction methods and timing, professional experience with similar projects in the Pacific North Coast of BC, and industry-accepted best management practices. In most cases, mitigation measures proposed for marine fish and fish habitat are standard and have been proven to be effective. As per the Application Information Requirements, each mitigation measure was described in terms of how it will mitigate potential effects on marine fish and fish habitat (i.e., the mechanism), why it was chosen (i.e., rationale), its expected success, potential risks and uncertainties associated with the measure (if any), the time required for it to become effective, and the Project phase during which the measure will be implemented. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan.
117	screening	Metlakatla First Nation	4.9.5	Marine Fish and Fish Habitat	Mitigation measures have not been described in adequate detail to justify the significance determination made in the Application.	The mitigation measures identified in the Marine Fish and Fish Habitat VC are based on an understanding of existing conditions, expected construction methods and timing, professional experience with similar projects in the Pacific North Coast of BC, and industry-accepted best management practices. As per the Application Information Requirements, each mitigation measure was described in terms of how it will mitigate potential effects on marine fish and fish habitat (i.e., the mechanism), why it was chosen (i.e., rationale), its expected success, potential risks and uncertainties associated with the measure (if any), the time required for it to become effective, and the Project phase during which the measure will be implemented. In most cases there is a high degree of confidence in the effectiveness of proposed mitigation measures and the resultant ability to predict the significance of residual environmental effects. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan and are also provided through the preliminary habitat offsetting planning. These measures are also part of the regulatory permitting process and subject to further government review and approval.
117.1	round 1	Metlakatla First Nation	4.9.5	Marine Fish and Fish Habitat	As a follow up to screening comment #117 The proponent indicates a methodology (mechanism, rationale, expected success, risks, uncertainties) in the response provided. It is Metlakatla's position that the details regarding mitigation (the "how") are insufficient to be able to evaluate the success of the measures proposed. In the absence of details regarding implementation, it is not possible for external reviewers to test the hypothesis that the mitigation will be sufficiently successful to justify a determination of "no significant effect following mitigation." Metlakatla therefore reiterates its request for a description of detailed mitigation measures that include, among other things, thresholds for adaptive management.	The details provided for each mitigation measure identified in Section 4.9 (Marine Fish and Fish Habitat VC) were consistent with the Application Information Requirements document for the Aurora LNG Project, which was approved by the EAO. Aurora LNG is of the opinion that the level of information provided for each measure, and the types of measures identified to reduce effects on marine fish and fish habitat, are adequate to support a conclusion that the Project is not expected to threaten the long-term persistence of a marine fish population (i.e., Project effects are predicted to be not significant). In most cases, mitigation measures proposed in the Marine Fish and Fish Habitat VC are considered standard, are often recommended by regulators (e.g., by DFO to avoid contraventions of the Fisheries Act), and/or have been proven through scientific literature to be effective at reducing effects to the marine environment. For example, bubble curtains are identified by DFO as an appropriate mitigation measure to limit potential injury or mortality of marine fish during underwater blasting (DFO 2013e), and, according to Nutzel (2008), as cited in Maxon and Mikkelsen (2013), bubble curtains can reduce peak pressure levels by approximately 15 dB. Additional information, including the details around how mitigation measures will be implemented during construction activities, and the role of adaptive management, will be developed during preparation of the Marine and Freshwater Resources Management Plan (see Section 14, Summary of Proposed Environmental and Operational Management Plans). Furthermore, follow up programs will be implemented to assess the accuracy of the predictions made in the Environment Assessment report and the effectiveness of the proposed mitigation measures. Mitigation measures are also part of the regulatory permitting process and subject to further government review and approval. References: Fisheries and Oceans Canada (DFO) 2013e. Measures to Avoid Causing Harm to Fish and Fish Habitat. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html. Accessed: July 2016. Maxon, C. M. and D. M. Mikkelsen. 2013. Extension of Harbour in Nuuk Underwater Noise from Blasting. Ramboll, Copenhagen, Denmark. 22 pp. Available at: http://naalakkersuisut.gl/~/media/Nanoq/Files/Attached%20Files/Infrastruktur/DK/Havne/1271001 -6712-005-1%20Underwater%20Noise.pdf. Accessed: August 2016.

118	screening	Lax Kw'alaams Band	4.9.5	Marine Fish and Fish Habitat	A qualified yes - Habitat must be examined in terms of productivity (e.g. exact function of habitat and to what species; also what food sources for fish come from a specific habitat type) not just from a physical area metric.	Such a functional approach was adopted in the conceptual fish habitat offsetting plan, a key mitigation for potential effects to fish habitat. This offsetting plan was developed based heavily on guidance provided by DFO (relevant documents are cited in the plan). It is not the case that productivity per se must be measured in order to demonstrate or infer benefits to fish; as per DFO's guidance, area is an appropriate and commonly used proxy. DFO's guidance documents provide clear direction on how to design habitat offsetting plans to successfully counter-balance serious harm to fish. DFO advocates framing assessments of serious harm on the type of habitat use and degree of dependency by specific species and life stage in a specific area. This approach would capture the functional perspective described in the comment, whereby functionality in area affected is echoed in the offset area. As the offsetting plan is further developed into a final version, this focus on 'habitat use and dependency' will be used to refine the type, location and design of habitat offsets. A similarly functional approach was used in the assessment of effects on fish habitat by identifying project mechanisms through which habitat impacts will affect fish. This approach allowed focus on specific species, or types of species, most likely to be harmed.
119	screening	Lax Kw'alaams Band	4.9.5	Marine Fish and Fish Habitat	These four factors also relate to fish habitat offsetting measures being proposed by Aurora LNG/Stantec. Other than altogether avoiding the destruction or damage of fish habitats none of the conceptual fish habitat offsetting measures have any proven success in mitigating impacts to fish habitats, fish and the fisheries they support. Beyond quantifying the area of fish habitat to be altered or destroyed Aurora LNG/Stantec need to quantify what fish habitat function would be lost because of a given project impact.	Aurora LNG recognizes that any serious harm to fish must be offset pursuant to the Canada *Fisheries Act* . The Conceptual Fish Habitat Offsetting Plan introduces Aurora LNG's early concepts for habitat offsetting to demonstrate capacity to counter-balance such serious harm to fish. The primary objective of these offsets is to provide habitat benefits to fisheries species harmed by the Project. Aurora LNG anticipates that the type, location and design of offsets will be further refined and adjusted to improve their ecological function, based on feedback received during consultation with DFO and Aboriginal Groups. The conceptual habitat offsetting plan was developed based heavily on guidance provided by DFO (relevant documents are cited in the plan).DFO's guidance documents provide clear direction on how to design habitat offsetting plans to successfully counter-balance serious harm to fish. DFO advocates framing assessments of serious harm on the type of habitat use and degree of dependency by specific species and life stage in a specific area. This approach would capture the functional perspective described in the comment, whereby functionality in area affected is echoed in the offset area. As the offsetting plan is further developed into a final version, this focus on 'habitat use and dependency' will be used to refine the type, location and design of habitat offsets. Promotion of offsetting success is a key focus of Authorizations issued by DFO (and, as such, of final habitat offsetting plans).A final habitat offsetting plan includes success criteria specific to the objectives of the offsetting. Success criteria would be stated in any Authorization provided by DFO. Should these success criteria not be met, alternative or additional offsetting will be required. The final plan would also include a detailed monitoring plan, and any such monitoring requirements would also be included in any DFO Authorization. The objective of this monitoring plan would be to collect the information required to satisfy DFO that success criteria have (or haven't) been met. Consequently, risk associated with offsetting is greatly reduced through the stipulation of these success criteria and monitoring requirements.
120	screening	Lax Kw'alaams Band	4.9.6	Marine Fish and Fish Habitat	Using a ROV to 'sample' for mobile fish species is not a highly effective technique - sample bias is an issue because mobile organisms are highly likely to avoid an ROV and thus not be sampled effectively by this technique.	Aurora LNG acknowledges that video surveys by ROV have inherent limitations; these are discussed in Section 5.2.2 of Appendix L (Marine Fish and Fish Habitat Technical Data Report). Additional information on fish species (including highly mobile species) was collected during the marine fish field surveys (using tangle nets and beach seines) as well as from the scientific literature.
121	screening	Lax Kw'alaams Band	4.9.7	Marine Fish and Fish Habitat	Again a qualified yes. As far as fisheries issues and fish habitat issues are concerned Aurora and their environmental consultant Stantec are essentially just meeting the requirements of the Fisheries Act as enforced by DFO. Unfortunately, the fisheries act does not go far enough in truly protecting fish and their habitats. Thus to truly make this section relevant and meaningful empical information needs to be presented that allows a quantification of the impacts that the Aurora LNG project may have on the entire ecosystem.	Aurora LNG has a legal obligation to meet regulatory requirements. The requirements of the Fisheries Act - i.e. to avoid, mitigate, and counterbalance any residual, serious harm to fish - are integrated into the assessment of effects on fish habitat. They do not, however, comprise the entire assessment. For example, a residual effect on fish habitat could occur without it constituting serious harm to fish (and requiring offsetting). In addition to the requirements to complete habitat offsetting, Aurora LNG has committed to completing a suite of construction environmental monitoring plans and follow-up monitoring plans (See Part B, Chapters 14 and 15). These plans include (but are not limited to), marine water quality monitoring, marine sediment deposition monitoring, invasive plant monitoring, marbled murrelet management, erosion and sediment control, and monitoring of in-water blasting, pile driving and dredging. Moreover, as per Part B, Chapter 15, additional follow-up programs may be identified through further consultation and engagement with regulators and Aboriginal groups.
122	screening	Gitxaala Nation	4.9.7	Marine Fish and Fish Habitat	Significance determination has been provided in text. Summary tables should be provided to facilitate review.	Aurora LNG provided clear, stand-alone significance statements for each VC (e.g., section 4.9.7). The objective of this approach was to collate all significance determinations into one section for each VC, thereby helping the reader to quickly find the significance determination, rather than have to piece together information from multiple sections or tables. Significance determinations across all VCs are then summarized in Table 4.12‑8 Summary of Project Residual Effects on Marine Fish and Fish Habitat.
123	screening	Metlakatla First Nation	4.9.7	Marine Fish and Fish Habitat	It is standard practice to provide significance determinations in tabular format for each VC for ease of review. Please add tables to supplement the textual description.	Aurora LNG provided clear, stand-alone significance statements for each VC (e.g., section 4.9.7). The objective of this approach was to collate all significance determinations into one section for each VC, thereby helping the reader to quickly find the significance determination, rather than have to piece together information from multiple sections or tables. Significance determinations across all VCs are then summarized in Table 4.12‑8 Summary of Project Residual Effects on Marine Fish and Fish Habitat.
124	screening	Lax Kw'alaams Band	4.9.6.2	Marine Fish and Fish Habitat	Lax Kw'alaam's has pointed out in previous EA's (PNW LNG and Canpotex for example) that current cumulative effects concept as practiced by EA regulators, project proponents and their environmental consultants is not comprehensive enough to provide any kind of meaningful analysis. For a cumulative effects assessment to be truly meaningful the ideas of a strategic or comprehensive EA needs to be pursued. In the case of the Prince Rupert area where multiple natural gas project proposals are being considered the use of a strategic or comprehensive EA for all project proposals would provide the most scientifically robust cumulative effects assessment.	Aurora LNG completed a cumulative effects assessment to meet guidance provided by the provincial and federal government and industry standards. Should the provincial or federal government choose to conduct a strategic or comprehensive environmental assessment Aurora LNG would be willing to support where possible.
125	screening	Lax Kw'alaams Band	4.9.9	Marine Fish and Fish Habitat	Currently there appears to be no quantitative aspect to the follow-up and monitoring program. This makes it impossible to actually determine empirically what effects the project may be having on fish populations and their habitats as well as the true effectiveness of any mitigation measures. Additionally, the proponent is only committing to the standards of the Fisheries Act as currently practiced/enforced by DFO which does not address fish ecosystems issues and thus is unacceptable to Lax Kw'alaams.	The purpose of Section 4.9.9 is to identify what aspects of the Project effects require monitoring or follow up. Details, including experimental design, will be subsequently developed and included in the final version of relevant plans. With regards to marine fish and fish habitat follow up plans, several construction environmental monitoring plans and follow-up monitoring plans are included (See Part B, Chapters 14 and 15) that extend beyond the requirements of the Fisheries Act. These plans include, marine water quality monitoring, marine sediment deposition monitoring, invasive plant monitoring, erosion and sediment control, and monitoring of in-water blasting, pile driving and dredging. As per Part B, Chapter 15, additional follow-up programs may be identified through further consultation and engagement.
126	screening	Lax Kw'alaams Band	4.9.10	Marine Fish and Fish Habitat	"...Residual effects on marine fish and fish habitat are not expected to affect the long-term persistence of any marine fish populations, and are therefore predicted to be not significant." Currently the proponent does not have enough information (nor have they comprehensively presented what information they have) to make this conclusion with any kind of veracity. Also given the dubious effectiveness of fish habitat offsetting projects the conclusion of 'residual effects predicted to be not significant' is not defensible.	The information collected, considered, and presented; the mitigations presented - including habitat offsetting; the construction environmental monitoring plans; and the follow-up monitoring programs adequately supports the conclusion that the long-term persistence of any marine fish populations will not be affected, and therefore the conclusion of no significant residual effects on marine fish and fish habitats. The Fisheries Act stipulates that serious harm to fish must be offset. DFO's guidance documents provide clear direction on how to design habitat offsetting plans to meet this obligation. A final habitat offsetting plan (and any resulting authorization) includes two key elements that reduce the risk of offsetting failure. First, a final fish habitat offsetting plan would include success criteria specific to the objectives of the offsetting that must be met in order for the offsets to be considered "successful". Success criteria would be stated in any Authorization provided by DFO. Should these success criteria not be met, alternative or additional offsetting will be required. Second, the final plan would also include a detailed monitoring plan, and any such monitoring requirements would also be included in any DFO Authorization. The objectives of this monitoring plan would be to collect the information required to satisfy DFO that success criteria have (or haven't) been met. Through the specification of success criteria and monitoring requirements, Aurora LNG will counterbalance serious harm to fish, pursuant to the Canada Fisheries Act.
127	screening	Health Canada	4.10	Marine Wildlife - Marine Mammals	No mention of integration into HH section	Human health in the context of this assessment is defined as the physiological health of a population resulting from exposure to chemicals in the environment. Potential residual Project and cumulative effects on marine mammals include changes in health, changes in behaviour, and changes in mortality risk. Effects on marine mammals are not expected to influence the assessment of human health in the context of exposure to chemicals in the environment. For this reason, there is no mention of the Human Health section in Section 4.10 of the Application.
128	screening	Dodge Cove	4.10.1	Marine Wildlife - Marine Mammals	Under "marine construction - impact pile driving" the application says pile supported structures will be used for the LNG jetty, MOF and pioneer facility. There is a lack of information about the pioneer facility and the effects of the pioneer facility on the environment, human health, marine mammals, marine navigation, social effects to the community of Dodge Cove Improvement District and any other VC's that the pioneer facility would interact with.	The pioneer facility is described in Section 1.2.5.4 of the Application. With respect to marine mammals, as noted in Section 4.10.5.1, predicted underwater sound levels during construction of the pioneer facility were not modelled, but this activity is expected to include installation of 8 piles of lesser diameter than those required for the MOF. The assessment of marine mammals therefore assumed that the modelled pile-and-deck option at the MOF conservatively represents the maximum levels and duration of underwater noise that might be expected during any impact pile driving activity required at the MOF (i.e., including construction of the pioneer facility). With respect to marine fish and fish habitat, Section 4.9 assesses potential effects of the pioneer facility during construction and operation 'change in habitat', 'change in mortality risk', 'change in behavior', and 'change in health' effect (Section 4.9, Marine Fish and Fish Habitat VC). The assessment includes a breakdown of potential alteration or loss of fish habitat associated with the pioneer facility (see Table 4.9-13). Section 6.4 (Land and Resource Use) assumes that access and use of all areas overlapped by the PDA (inclusive of that occupied by the pioneer facility) will be restricted for the duration of construction and operations and therefore accounts of adverse effects associated with the pioneer facility. With respect to Section 6.5 (Marine Navigation and Use) effects of the pioneer facility are not assessed but rather, full buildout and operation of the MOF is assumed to occur during early stages of Phase 1 construction (see Section 6.5.5.1 subsection "Assumptions") when the pioneer facility would be constructed and operated. This conservative approach assumes that higher magnitude effects associated with construction and operation of the MOF apply to the period of time construction and operation of the pioneer facility would occur and therefore overstate effects. Section 6.6 (Community Health) integrates conclusions from Section 6.4 (land and Resource Use) and 6.5 (Marine Use and Navigable Waters) into the assessment of change in community health and wellbeing and change in harvested foods and therefore accounts for effects of the pioneer facility; as stated above, conclusions from these referenced sections are conservative in nature and assume higher magnitude effects associated with the MOF and access restrictions. Additionally, Sections 13.5.1 (Quality of Life/Community Identity) and 13.5.2 (Social Cohesion) further draw on conclusions from Sections 6.4, 6.5 and 6.6 to describe social effects on the community of Dodge Cove. There were no effects pathways for the pioneer facility that were identified in the AIR that would affect human health.
129	screening	MOE	4.10	Marine Wildlife - Marine Mammals	Not sure of the means that will get 3rd party natural gas to Digby Island. If it involves construction in the marine environment from Prince Rupert to Digby Island and has the potential to change water quality during construction, it should be included in the cumulative effects to marine animals.	In accordance with the Section 11 Order, the scope of the Project for the purpose of the environmental assessment does not include transportation of natural gas to the LNG facility, which is anticipated to be provided by a third party owned pipeline. The third-party pipeline provider is yet to be determined.
130	screening	Gitxaala Nation	4.10.2.5	Marine Wildlife - Marine Mammals	Spatial boundaries have been selected on the basis of the project footprint. Regualtory guidance for scoping suggests that VC-centred scoping involves selecting boundaries appropriate to the VC in question, not the project footprint itself, in order to ascertain the true effect of the project on wide ranging species like marine mammals. This will be discussed further at review stage.	The spatial boundaries of the regional assessment area for marine mammals were developed to encompass the area within which potential Project-related effects on marine mammals could act cumulatively with effects from other past, present and reasonably foreseeable future projects and activities. Designation of spatial boundaries incorporated feedback received during consultation and is consistent with the approach taken on other recent environmental assessments in northern British Columbia.
131	screening	Metlakatla First Nation	4.10.2.5	Marine Wildlife - Marine Mammals	Regulatory guidance for scoping recommends that boundaries for VCs be selected on the basis of VC function and requirements. Boundaries selected for the Aurora project are based on the project footprint, which may result in incorrect assessment of effects to VCs.	The spatial boundaries of the regional assessment area for marine mammals were developed to encompass the area within which potential Project-related effects on marine mammals could act cumulatively with effects from other past, present and reasonably foreseeable future projects and activities. Designation of spatial boundaries incorporated feedback received during consultation and is consistent with the approach taken on other recent environmental assessments in northern British Columbia.
132	screening	Lax Kw'alaams Band	4.10.3	Marine Wildlife - Marine Mammals	The proponent has not sufficiently described marine mammal abundance or characterized important habitat within the assessment areas. With the exception of harbour porpoise and humpback whale, the proponent has not undertaken a sufficient number of marine mammal surveys to make abundance calculations for the majority of species observed, including common species like Stellar sea lions, harbour seals, and killer whales. Without information on how many individuals are in the area in which the proponent is predicting significant adverse effects, it is impossible to effectively predict the magnitude of the effects as the proportion of the population experiencing these adverse effects cannot be determined, as required by the definition of "magnitude" in Table 4.10-4. The proponent undertook 8 marine mammal surveys, while other similar projects in the nearby area, Pacific Northwest LNG and LNG Canada, both undertook 12 surveys for their respective EAs and were able to provide abundance estimates for more species. Aurora LNG should meet this industry standard.	Months with insufficient sighting numbers (i.e., < 3) cannot be modelled to estimate relative abundance, and this is a common limitation when undertaking distance sampling for marine mammals. Some species (e.g., grey whales) are migratory and thus are not expected to be present or available for detection in the RAA during all surveys, regardless of the number of surveys completed. Other species (e.g., killer whales) travel in small groups over broad areas and are not uniformly distributed in the survey area, and thus may also go unobserved during systematic sampling despite their known occurrence in the region. Finally, some species (e.g., sea otters) are expected to occur in such low numbers in the RAA that sufficient sighting numbers are likely to be unobtainable for relative abundance estimation. For these common reasons, the referenced other project that surveyed a similar geographical footprint to Aurora LNG (i.e., PNW LNG) was only able to predict relative abundance estimates for one additional species (i.e., harbour seal) beyond what was possible for Aurora LNG and these estimates were not possible in all months of the year. The environmental assessment considers other data and information on marine mammal presence within the RAA (e.g., BCCSN data), in addition to the data collected during the marine mammal surveys. As a result, understanding of marine mammal occurrence and relative abundance within the RAA is considered to be sufficient for the purposes of the environmental assessment and conservative assumptions have been applied in the formulation of conclusions.
133	screening	Gitxaala Nation	4.10.3	Marine Wildlife - Marine Mammals	It is not clear that critical habitat areas, such as upwelling areas important for feeding, have been adequately identified or that the effect of increased shipping on marine mammal use of these areas has been addressed. This will be discussed further at review stage.	There is currently no designated critical habitat for marine mammals in the RAA. Identified DFO Important Areas for marine mammals were considered in the assessment of potential Project residual and cumulative effects. Both designated critical habitat and DFO Important Areas are referred to under Administrative Boundaries (Section 4.10-2-5) and, where applicable, are shown in Figure 4.10-2.
134	screening	Metlakatla First Nation	4.10.3	Marine Wildlife - Marine Mammals	Critical habitat areas include upwelling areas such as those believed to be present around Triple Islands. These do not appear to have been identified or assessed. Please indicate where they are assessed in the application or provide a rationale for their exclusion.	There is currently no designated critical habitat for marine mammals in the RAA. Identified DFO Important Areas for marine mammals were considered in the assessment of potential Project residual and cumulative effects. Both designated critical habitat and DFO Important Areas are referred to under Administrative Boundaries (Section 4.10-2-5) and, where applicable, are shown in Figure 4.10-2.

134.1	round 1	Metlakatla First Nation	4.10.3	Marine Wildlife - Marine Mammals	As a follow up to screening comment #134 Upwelling areas are understood to be important as feeding areas for baleen whales. The area around Triple Islands is understood to be an upwelling area and grey whales have been identified feeeiding in this area. Has the proponent done any baseline work to undestand the value of the area around Triple Island as an upwelling/feeding area relative to other areas in the region? Has the proponent assessed the effect to baleen whale feeding/health of increased vessel traffic leading to reduced access or avoidance of this area?	The LAA is based on a 6 km buffer around the marine terminal and a 6 km buffer extending on either side of the shipping route, which extends from the marine terminal to the Triple Island pilot boarding station. The RAA extends from the marine terminal to west of the Triple Island pilot boarding station and encompasses Prince Rupert Harbour and most of Chatham Sound. Triple Island is therefore considered within both spatial boundaries used in the assessment of marine mammals (see Figure 4.10-1). The waters around Triple Island were surveyed as part of the marine mammal survey programs for the Aurora LNG Project (see Marine Mammals Technical Data Report - Appendix N), the PNW LNG project (Stantec 2016), and the LNG Canada project (LNG Canada 2014), results of all three of which were considered in the assessment. Maps showing predictions of hotspots of high marine mammal density, as referenced in Section 4.10.7.1, are presented in Stantec (2016), which is available at the link below. The assessment of change in behaviour (including potential for adverse effects to foraging patterns and foraging success) considered the potential residual and cumulative effects of LNG shipping throughout the RAA (including at Triple Island). The marine mammal assessment was also informed by potential changes in the distribution or availability of prey resources as a result of Project-related activities, as identified in the marine fish and fish habitat assessment (see Section 4.9). LNG Canada. 2014. LNG Canada Export Terminal. Marine Resources Technical Data Report. 236 pp + Appendices. Stantec Consulting Ltd. (Stantec). 2016. Pacific NorthWest LNG Project Marine Mammal Program Final Report. Prepared for Pacific NorthWest LNG Limited Partnership. Burnaby, BC. 154 pp. Available at: http://www.pacificnorthwestlng.com/media/Marine%20Mammal%20Final.pdf.
135	screening	Gitxaala Nation	4.10.5	Marine Wildlife - Marine Mammals	In some cases, mitigation measures are not described in sufficient detail to evaluate their efficacy. This will be addresssed further at review stage.	The mitigation measures identified in the Marine Mammal VC are based on an understanding of existing conditions, expected construction methods and timing, professional experience with similar projects on the Pacific North Coast of BC, and industry-accepted best management practices. As per the AIR, each mitigation measure was described in terms of how it will mitigate potential effects on marine mammals (i.e., the mechanism), why it was chosen (i.e., rationale), its expected success, potential risks and uncertainties associated with the measure (if any), the time required for it to become effective, and the Project phase during which the measure will be implemented. Aurora LNG is of the opinion that this level of information is sufficient to support the assessment of Project residual effects on marine mammals. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan. As noted in the Application, where uncertainty remains over the exact nature of these mitigation measures, this was accounted for in the assessment's prediction confidence and in the determination of significance. Aurora LNG looks forward to working with Gitxaala during the review stage to address additional concerns associated with the proposed mitigation measures.
136	screening	Metlakatla First Nation	4.10.5	Marine Wildlife - Marine Mammals	Mitigation measures have not been described in adequate detail to justify the significance determination made in the Application.	The mitigation measures identified in the Marine Mammal VC are based on an understanding of existing conditions, expected construction methods and timing, professional experience with similar projects on the Pacific North Coast of BC, and industry-accepted best management practices. As per the AIR, each mitigation measure was described in terms of how it will mitigate potential effects on marine mammals (i.e., the mechanism), why it was chosen (i.e., rationale), its expected success, potential risks and uncertainties associated with the measure (if any), the time required for it to become effective, and the Project phase during which the measure will be implemented. Aurora LNG is of the opinion that this level of information is sufficient to support the assessment of Project residual effects on marine mammals. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan. As noted in the Application, where uncertainty remains over the exact nature of these mitigation measures, this was accounted for in the assessment's prediction confidence and in the determination of significance. Aurora LNG looks forward to working with Metlakatla during the review stage to address additional concerns associated with the proposed mitigation measures.
136.1	round 1	Metlakatla First Nation	4.10.5	Marine Wildlife - Marine Mammals	As a follow up to screening comment #136 Metlakatla reiterates its request for a description of detailed mitigation measures that include, among other things, thresholds for adaptive management.	It is difficult for Aurora LNG to provide additional details concerning the proposed mitigation measures without greater clarity from Metlakatla concerning explicitly which mitigation measures and what details are considered lacking. Mitigation measures proposed for the Project are in keeping with industry standards and BMPs for reducing potential adverse effects of marine construction projects on marine mammals in Canadian waters. The Marine and Freshwater Resources Management Plan will be developed through engagement with regulators (i.e., DFO, the BC Oil and Gas Commission) and Schedule B Aboriginal Groups. This plan will further describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA. Aurora LNG continues to look forward to working with Metlakatla to address additional concerns associated with the proposed mitigation measures. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
137	screening	MOE	4.10.5	Marine Wildlife - Marine Mammals	Marine WQ was interpreted in combination with marine animals and marine fish. No mention in either of sewage waste discharge and it's potential effects to the marine environment. The are times when up to 5000 people could be at the camp which is over a 1/3 of the Prince Rupert population. This sewage discharge and Prince Rupert waste discharges should be included as a cumulative effect in assessing water quality along with other waste discharges.	The management and treatment of sewage waste generated during construction and operation of the Project is described in Section 1.2.5 (Project Overview). Potential effects associated with the discharge of treated sanitary wastewater during construction and operation of the Project are assessed under the Water Quality VC (Section 4.5.15.3) and the Marine Fish and Fish Habitat VC (Section 4.9.5.5). The potential for Project-related discharges to interact cumulatively with those of other projects (including municipal outfalls in Prince Rupert) are assessed under the Water Quality VC (Section 4.5.16.3) and the Marine Fish and Fish Habitat VC (Section 4.9.6.6). Both assessments anticipate no residual effects associated with the discharge of treated sanitary wastewater. As a result of these conclusions, potential interactions with marine mammals were therefore not further assessed under the Marine Mammal VC (Section 4.10).
137.1	round 1	MOE	4.10.5	Marine Wildlife - Marine Mammals	"As a follow up to screening comment #137 The EA says no effects as all industries follow the BC MWR; however, at this time the City of Prince Rupert has no treatment and multiple discharge locations. Prince Ruperts waste water was not included in the list of Projects in the cumulative effects to marine fish and marine habitat."	In general, small and non-point source discharges, as well as other small projects and activities, are not explicitly carried forward in EA Inclusion Lists for the purpose of cumulative effects assessments. Existing discharges (e.g., sewer outfalls) are captured within the baseline conditions included for marine water quality, which also contributes to the cumulative effects assessment.
138	screening	CEAA	4.10.5	Marine Wildlife - Marine Mammals	The proponent indicates that noise levels of 160db will occur up to 6km away. The Pacific NorthWest LNG Project had a requirement that the proponent ensure that noise levels do not exceed 160 db outside of a 1000m radius around the sound source. It is likely that the proponent of Aurora LNG would be held to a similar standard. Therefore, additional mitigation measures may be required. Why are no mitigation measures at all proposed to reduce noise emissions from rocket socket drilling? If none are technically/economically feasible, this should be indicated. Timing windows are not proposed for pile installation. It should be noted that the PNW conditions required the proponent to adhere to a timing window for impact pile driving, or implement additional mitigation measures if pile driving outside the window.	As noted, with currently modelled mitigation measures, the Project is predicted to result in an increase in underwater noise above 160 dB over a distance of up to 6 km from the MOF and 3 km from the LNG jetty during impact pile driving. A marine mammal monitoring program will be implemented to enforce an exclusion zone during this activity. Monitoring of a predefined area (i.e., the exclusion zone) is used to allow stopping of in-water impact pile driving activities when a marine mammal is observed within this zone. The ultimate size of the exclusion zone will be determined during consultation with DFO and confirmed during field verification studies at the onset of impact pile driving. Rock socket drilling will introduce a non-impulsive source of underwater noise to the marine environment, which is generally considered less injurious than impulsive noise sources such as impact pile driving. Based on results of acoustic modelling, the potential for residual effects of change in health to marine mammals resulting from rock socket drilling is considered low. In a report of underwater noise measurements taken during rock socket drilling at offshore windfarms, Nedwell et al. (2003) concluded that while tonal noise could be detected at distances of up to 7 km, rock socket drilling is a relatively low level noise source, with "little likelihood of the noise from the drilling causing an environmental effect". Industry does not normally implement mitigation measures for rock socket drilling and no additional mitigation measures have been recommended for this Project with respect to rock socket drilling. Pile installation procedures will follow the Best Management Practices for Pile Driving and Related Operations (BC Marine and Pile Driving Contractors Association and DFO 2003). During impact pile driving, an enclosed bubble curtain will be installed around piles to provide noise attenuation and to reduce underwater sound levels emitted into the marine environment. Additional monitoring protocols and procedures to be implemented during in-water construction activities, including pile driving, will be outlined in the Marine and Freshwater Resources Plan (Section 14). Aurora LNG is committed to working with DFO on further developing and refining mitigation measures, as necessary, to reduce the likelihood and degree of adverse residual effects on marine mammals and marine fish. References: Nedwell, J., J. Langworthy and D. Howell. 2003. Assessment of sub-sea acoustic noise and vibration from offshore wind turbines and its impact on marine wildlife; initial measurements of underwater noise during construction of offshore windfarms, and comparison with background noise. COWRIE. Subacoustic Ltd. London, England.
138.1	round 1	CEAA	4.10.5	Marine Wildlife - Marine Mammals	**As a follow up to screening comment #138** It is neither realistic nor feasible to monitor a 6 kilometre exclusion zone for marine mammals. Given that 160 dB (re 1 µPa rms SPL) is a commonly used threshold above which behavioural disruption can be expected from impulsive noise (such as impact pile driving), it is likely that the proponent would be expected to implement an exclusion zone based on this level of sound. In order to protect marine mammals and prevent significant effects, the Agency recommends that the proponent consider additional mitigation measures to reduce underwater noise due to pile driving activities. With respect to rock socket drilling, it is expected to be 170 dB at the source, and is expected to exceed behavioural disturbance thresholds up to 3.9 kilometres away. Therefore, while the Agency agrees with the characterization that 'rock socket drilling is less injurious than impulsive noise sources such as impact pile driving', this method still has the potential to cause significant behavioural disturbance. The Agency requests that the proponent follow up with Fisheries and Oceans Canada to confirm whether additional mitigation measures should be recommended. Please update this table with the results of that conversation.	Nexen met with DFO on April 25,2017 to discuss mitigation and monitoring for impact pile installation and the potential residual effects of underwater noise for marine mammals. As discussed during the meeting,further mitigation measures (e.g., double bubble curtain, hydrosound dampener) will be explored to reduce the extent of underwater noise that exceeds the NOAA interim behavioural threshold for impulsive noise (160 dB re 1 µPa SPLrms) as a result of impact pile driving. As noted in the Application, impact pile driving will occur during daylight hours, and an underwater noise field verification program will be conducted to verify predicted sound pressure levels and the size of the exclusion zone.Ramp-up procedures for impact pile driving will also be used and involve the steady and gradual build-up of underwater acoustic energy output from a lower energy level to full output. As part of the Marine and Freshwater Resources Management Plan a monitoring program will be developed and implemented to enforce and effectively monitor the exclusion zone during in-water impact pile driving.Rock socket drilling was also discussed with DFO during the April 25, 2017 meeting. As discussed during the meeting, rock socket drilling will produce lower underwater noise emissions than impact pile driving and is similar in nature to vibratory pile installation. Typically, the application of mitigation measures and subsequent monitoring of a marine mammal exclusion zone during construction is required due to the potential for an activity to result in the injury of marine mammals. Due to the similarity between rock socket drilling and vibratory pile installation, for which specific mitigation and monitoring are typically not required, and underwater noise modeling that reports an exceedance of marine mammal injury thresholds at a distance of <0.01 km, additional mitigation measures specific to rock socket drilling have not been recommended.
139	screening	Lax Kw'alaams Band	4.10.5	Marine Wildlife - Marine Mammals	The proponent as not adequately characterized residual effects on marine mammal health. The proponent has determined the impact of the project on marine mammal food sources to be non-significant as the residual effects characterized in the Marine Fish and Fish Habitat section were assessed as non-significant. However, the Marine Fish and Fish Habitat section only assessed impact to fish captured in commercial, recreational, and aboriginal fisheries and fish that support those fisheries. Marine mammals do not rely solely on CRA species as food sources. Many small fish species that are not harvested in fisheries are food sources for marine mammals, and other marine mammals like baleen whales rely heavily on non-fish marine organisms as food sources. A complete effects assessment to marine mammal health should include an assessment of the availability of all food sources. Without doing so, a potential important impact pathway cannot be assessed. Additionally, the residual impacts to behaviour and potential mortality from ship strikes have not been adequately described. The DFO Sufficiency Review of the Trans Mountain Expansion Project from the Canadian Science Advisory Secretariat Science Response 2015/007 outlines the importance of quantitative descriptions of ship-strikes, a noise model that captures the entire ship track, and models of cumulative and additive underwater noise to a sufficient characterization of residual effects and its requirement for a significance determination. As a similar project with similar potential impacts, there is no reason why these are any less important for the Aurora LNG environmental assessment and the proponent should likewise be required to address these deficiencies.	The scope of the marine fish and fish habitat assessment captured a range of species guilds, including (but not limited to) benthic, demersal, and pelagic species; short- and long-lived species; anadromous and purely oceanic species; migratory and non-migratory species; and invertebrate and fish taxa. The assessment also considered prey species of CRA fish and their habitats. Aurora LNG maintains that residual effects to marine mammal health with respect to the availability of prey species have been adequately characterized. As noted in the IR, Aurora LNG has taken a qualitative approach to the assessment of change in mortality risk effect by describing the estimated change in qualitative likelihood of mortality or injury to marine mammals resulting from Project-related increases in marine traffic (i.e., increased potential for vessel strike). This approach is consistent with the approach taken for the recently approved Pacific NorthWest (PNW) LNG project, that will occur in the same region of BC. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized. The approach taken for assessing potential residual and cumulative effects of underwater noise is in keeping with the approach taken for the recently approved PNW LNG Project, and included the use of quantitative underwater noise modelling of a number of construction and operations scenarios at different locations. Please also refer to the response to IR 140 with respect to the assessment of potential combined cumulative effects. Aurora LNG maintains that residual and cumulative effects to marine mammals from underwater noise have been adequately characterized.
140	screening	Lax Kw'alaams Band	4.10.6	Marine Wildlife - Marine Mammals	The proponent has not adequately characterized residual effects on marine mammal behaviour. The acoustic monitoring indicated that current activities in the area result in the threshold for marine mammal disturbance being exceeded 8.2% of the time, and the description of existing conditions cites existing research that found that various species of whales lose significant amounts of their communication space (from 25-100% depending on species) within the RAA due to current anthropogenic activities. The potential for the Aurora LNG project to have a cumulative effects with these activities is not described in these qualitative terms, let alone a qualification of additional noise from reasonably forseeable projects. The cumulative effects on marine mammal behaviour are predicted to be significant, it is therefore important that they be adequately described in a quantitative manner in order for a significance determination to be made. Underwater noise modelling is available and published for several of the reasonably proposed projects that are likely to result in cumulative effects through underwater noise, that data should be included in the cumulative assessment	While a quantitative analysis of the potential combination of all current, proposed, and reasonably foreseeable underwater acoustic inputs to the RAA has not been undertaken, the combined residual cumulative effects on marine mammals were assessed, and are anticipated to be high in magnitude. While not explicitly referenced, the assessment was undertaken with consideration given to the modelling results of proposed future projects as well as the research on reduction in communication space. As noted in the IR, combined residual cumulative effects will occur in an already disturbed area of active human development that continues to grow. A suite of mitigation measures has therefore been developed to reduce adverse residual effects of the Project on marine mammals. Other proposed projects consider similar mitigation measures to reduce the potential adverse effects of underwater noise on marine mammals.

141	screening	Lax Kw'alaams Band	4.10.7	Marine Wildlife - Marine Mammals	See responses to 4.10.5 and 4.10.6, which describe the information that is lacking that is necessary for a significance determination	Please see responses to IRs 139 (re: Section 4.10.5) and 140 (re: Section 4.10.6).
142	screening	Gitxaala Nation	4.10.7	Marine Wildlife - Marine Mammals	Significance determination has been provided in text. Summary tables, by effect, should be provided to facilitate review.	Summaries of Project residual effects and residual cumulative effects on marine mammals are provided in Tables 4.10-11 and 4.10-14, respectively. A summary of significance determinations for each effect is provided in Table 4.12.9 (Summary of Potential Environmental Effects).
143	screening	Metlakatla First Nation	4.10.7	Marine Wildlife - Marine Mammals	It is standard practice to provide significance determinations in tabular format for each VC for ease of review. Please add tables to supplement the textual description.	Summaries of Project residual effects and residual cumulative effects on marine mammals are provided in Tables 4.10-11 and 4.10-14,respectively.A summary of significance determinations for each effect is provided in Table 4.12.9 (Summary of Potential Environmental Effects).
144	screening	Lax Kw'alaams Band	4.10.6 4.10.7.2	Marine Wildlife - Marine Mammals	See responses to 4.10.5 and 4.10.6, which describe the information that is lacking that is necessary for an assessment of the project's contribution to the residual cumulative effects	Please see responses to IRs 139 (re: Section 4.10.5) and 140 (re: Section 4.10.6).
145	screening	ECCC	4.11	Marine Wildlife - Marine Birds	Note that the Proponent has selected Marine Birds as its own separate VC. Originally in the AIR, "Marine Birds" was a subcomponent under "Marine Wildlife".	For clarity, the assessment included Marine Birds and Marine Mammals as separate VCs because the regulatory and policy setting, spatial boundaries, associated measurable parameters, potential Project effects, and relevant significance thresholds vary for each VC due to the nature of Project effect mechanisms. The assessment of potential Project effects on marine birds was conducted based on the information requirements described in the AIR.
146	screening	Lax Kw'alaams Band	4.11.2 4.11.3	Marine Wildlife - Marine Birds	Assessment of impacts to marine birds must consider the culturel value of marine birds. This is missing from the Application and is needed to ensure marine bird conservation efforts take into account cultural values (i.e. maintain a harvestable surplus of marine birds and eggs to ensure these values can be maintained). This steps is also necessary to ensure the information is relevant for Section 11.3 and Section 12. Project and cumulative effects may include habitat loss from construction of the terminal and increases in vessel traffic within the LAA, among other pathways. Please include consideration of cultural values throughout all VCs including marine birds, factoring this perspective into the assessment of residual effects and significance determination.	The assessment of potential effects of the Project on culturally important species (e.g., species of traditional use or spiritual importance) was based on information provided in Project-specific traditional use studies and publicly available sources, as summarized in the 'Traditional Knowledge and Traditional Use Incorporation' and the 'Traditional Ecological Knowledge' sections in each VC (for wildlife these are Sections 4.11.2.3 and Section 4.11.3 respectively). Where relevant, this information is carried through all aspects of the assessment including the significance determination. Potential Project residual effects to culturally important marine bird species are referenced throughout Section 4.11, particularly in Sections 4.11.5.2, 4.11.5.3, and 4.11.5.4 (for Project residual effects) and Sections 4.11.6.3, 4.11.6.4, and 4.11.6.4 (for cumulative effects). For terrestrial wildlife, existing conditions, including culturally important species, is described in greater detail in Appendix Q. Information on existing conditions and potential Project residual effects for change in habitat, change in mortality risk, and change in behaviour for marine birds was also used to support the assessment of effects on traditional rights and interests related to marine birds (e.g., harvesting, and cultural and spiritual values). This information is described in detail in Part B and Part C to facilitate consideration by CEAA, the EAO, and Lax Kw'alaams. Aurora LNG anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO. Lax Kw'alaams First Nation (LFN). 2004. Interim Land and Marine Resource Plan of the Allied Tsimshian Tribes of Lax Kw'alaams. 161 pp.
147	screening	Lax Kw'alaams Band	4.11.2.5	Marine Wildlife - Marine Birds	LAA for marine birds is missing from the Application. Please either extend the LAA to include Project effects from shipping, including sensory disturbances and risk of spills within the shipping route, or a detailed rationale for why this is excluded from the Application.This information is needed to justify the selected size of the LAA for the shipping route.If this information is not provided, Lax Kw'alaams will not have confidence in assessment of marine birds, particularly the behavior of pelagic / diving species in relation to noise and light effects ffrom the changes in marine traffic associated with this project. The absence of this information poses an unacceptable level of risk of missing a significant adverse impact. This information is required before the application review period, to determine whether additional baseline information, assessments, mitigations or monitoring is required to discuss adequacy of the assessment of shipping on marine birds.	Section 4.11.2.5 (Table 4.11-4) provides a description of the spatial boundaries for the LAA for marine birds. The spatial extent of the LAA accounts for the expected extent of potential effects of physical and sensory disturbances from the Project on marine birds at the marine terminal and along the shipping route. The LAA is illustrated in Figure 4.11-1. The assessment of potential Project residual effects to marine birds is inclusive of this area and considers effects to all bird species that rely on portions of the marine environment for some or all of their life requisites (including pelagic and diving species known or with potential to be present in the LAA).
148	screening	ECCC	4.11.2.5	Marine Wildlife - Marine Birds	While the Proponent has identified the spatial boundaries for the marine bird assessment, the current LSA and RSA boundaries of the "Marine Bird" VC do not capture northern portion of Digby Island, where the Project has the potential to impact. Including the northern portion of Digby Island would more comprehensively capture the potential impacts on marine birds from Project-related activities.	The spatial extent of the LAA accounts for the expected extent of potential Project effects on marine birds due to infrastructure and physical activities in the marine environment (e.g., at the marine terminal, material offloading facility, pioneer facility, and along the shipping route). Based on the anticipated extent of physical and sensory Project effects on marine birds, a 1 km buffer was applied to the marine terminal, and a 500 m buffer was applied along the western shore of Digby Island parallel to the PDA, and the area of the Prince Rupert Harbour that is within a 1 km buffer of the material offloading facility. Potential Project effects are not expected to extend to marine habitats around the northern portion of Digby Island. Potential Project effects to marine bird species that rely on terrestrial portions of Digby Island for some of their life requisites (e.g., great blue heron) are considered in Section 4.7 of the Application.
149	screening	Lax Kw'alaams Band	4.11.3 4.11.5	Marine Wildlife - Marine Birds	More information is required to determine if the extent of vessel-based surveys within the RAA and the LAA are sufficient for Application review. More details on marine bird sampling within the LAA and RAA is needed to determine sufficiency of sampling. At this time it is not clear if surveys are missing large numbers of marine birds that are using the LAA. Please provide maps of the area surveyed in both the LAA and RAA (vessel and shoreline), provide a discussion on sufficiency of survey considering existing survey standards for both vessel and shoreline surveys.	Existing conditions for marine birds are characterized from a combination of information sources, Project specific field studies, regional datasets, and traditional ecological knowledge. The Marine Birds Technical Data Report (Appendix Q) provides a detailed description of the existing conditions for marine birds, including the temporal and spatial extent of vessel and shore-based surveys completed for the Project. Appendix Q also provides a detailed description of the standard methodology used to complete marine bird surveys, along with illustrations of the extent of field surveys by season (see Figures 2 through 5 of Appendix Q). Based on the combined Project and regional data, near shore and far shore areas within the LAA provide habitat for more than 100 species of marine bird; 50 species recorded were during Project specific field studies, including 15 species of management concern. Results of field studies are consistent with existing regional data, showing patterns of increased bird abundance and richness across fall, winter, and spring seasons with lower marine bird activity during summer months. Please refer to Appendix Q for complete details.
150	screening	Lax Kw'alaams Band	4.11.4	Marine Wildlife - Marine Birds	An assessment of effects from Project-related and cumulative increases in noise, light, and risk of a deleterious spill from the proposed Project on marine birds is missing from the Application. No consideration of whether or not marine birds are likely to be affected through behavior change, mortality risk, or other impacts is provided in the Application. Without this information, it is not possible to discuss mitigation adequacy during Application review. Please provide an assessment of Project and cumulative effects of shipping / vessel movement on marine birds, including effects from underwater/above water noise and light on behaviour changes, mortality risk, among other outcomes	Potential Project and cumulative residual effects from noise and light are assessed in Sections 4.11.5.2, 4.11.5.3, 4.11.5.4 (for Project residual effects) and Sections 4.11.6.3, 4.11.6.4, and 4.11.6.5 (for cumulative effects). Sections 4.11.5.3 and 4.11.6.4 discuss Project residual and cumulative effects for change in mortality risk. Sections 4.11.5.4 and 4.11.6.5 discuss Project and cumulative effects for change in behaviour. The assessment of change in habitat and change in behaviour for marine birds considers potential effects from in-air and underwater acoustic emissions, light, and vessel wake (from vessel movement) along the shipping lanes. Potential effects from a deleterious spill is described for multiple scenarios in Section 9 (Accidents or Malfunctions).
151	screening	CEAA	4.11.5.1	Marine Wildlife - Marine Birds	Bulleted listed under the "Assumptions" subheading within 4.11.5.1 are additional qualifying factors or considerations pertaining to methodology/analytical assessment techniques rather than assumptions. There may be assumptions contained within these statements; however, those would need to be appropriately described in order to convey a logical connection to the stated analytical consideration.	The assessment for marine birds is based on the list of assumptions or considerations listed in Section 4.11.5.1. The assessment for marine birds assumes that the information described in each bulleted item is accurate and representative of best-available information, existing conditions, or the potential for or extent of Project residual effects at the time of submission (as applicable for each bulleted item).
151.1	round 1	CEAA	4.11.5.1	Marine Wildlife - Marine Birds	**As a follow up to screening comment #151** Response acceptable - issue has more to do with the heading label as the bulleted list contains a composite of true assumptions with predominantly key considerations. While the response explains the intent of the bullets, this intent is not immediately evident to the reader and should be made explicit or the heading should be modified to include both assumptions and considerations to better guide expectations and for clarity.	Aurora LNG acknowledges the comment from CEAA. The section 4.11.5.1 heading is consistent with other valued component chapters in the Application as well as the AIR.
152	screening	Gitga'at First Nation	5.1	Economic Conditions	Given Gitga'at First Nation's reliance between the communities of Hartley Bay and Prince Rupert, Hartley Bay must be assessed for all parameters assessed for the Economic Valued Component. This assessment is essential for Gitga'at First Nation to evaluate the potential Project impacts on Gitga'at's Aboriginal Interests.	The community of Hartley Bay was considered to be too physically distant from the Project location to be part of the LAA (the area with greatest potential for direct project effects) . However, it is recognized that Hartley Bay, along with other communities in the region, such as Terrace and the Aboriginal communities in the Terrace area have economic ties to the Prince Rupert area, and are therefore included within the RAA. Gitga'at members living in Prince Rupert are included in the assessment of project effects.
152.1	round 1	Gitga'at First Nation	5.1	Economic Conditions	As a follow up to screening commnet #152 It is not a matter of Hartley Bay being ""too physically distant from the Project location to be part of the LAA"". The concern relates to the residents of Hartley Bay's connection and direct socio-economic reliance on Prince Rupert. Gitga'at has voiced this concern repeatedly (e.g., see dAIR comment #27 in the Public Tracking Table, dated October 1, 2015), and Nexen's continual ignorance is inappropriate at this stage of the EA process. The community of Hartley Bay must be assessed within the LAA for all socio-economic parameters and the Application must be revised. See further comments in the economic and social sections below made by an external socio-economic expert."	Aurora LNG acknowledges that the Gitga'at First Nation feel that Hartley Bay should have been included in the LAA for the assessment of potential socio-economic Project effects. The LAA boundaries are established over an area where the Project is reasonably predicted to have potential direct effects. The Project is not predicted to directly interact with the community of Hartley Bay or call upon services at that community; therefore the Project is not expected to have direct socio-economic effects on the community of Hartley Bay. However, it is understood that residents of Hartley Bay regularly travel to Prince Rupert or immediately surrounding areas where they may experience socio-economic effects due to the Project. Those Hartley Bay residents that experience Project effects while in Prince Rupert or immediately surrounding areas are, in fact, included in the assessment of Project effects in the LAA.
154	screening	Lax Kw'alaams Band	5.2.2.4	Economic Conditions	Measureable parameters in Table 5.2-2 are generally reasonable with one key deficiency: none of them were collected in relation to Lax Kw'alaams to date. For example, no data is provided on preferred harvesting areas, harvest amounts and types, or even the role of country foods at the baseline level for Lax Kw'alaams. As a result, the effects assessment on "subsistence economies" is completely inadequate in the Application. This is an overarching comment that applies to all sections relevant to "subsistence economies" in the draft Application. Please provide this information in the updated Application.	Limited economic information specific to Lax Kw'alaams was available for the assessment of economic effects. The most recent census data (2011) does not provide a breakdown of economic statistics for Lax Kw'alaams 1 IR (the census subdivision that includes the Lax Kw'alaams community). However, as indicated in Section 5.2.2.3 Aurora LNG anticipates receiving specific socio-economic information from the Lax Kw'alaams community during the Application review period. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.
155	screening	Gitga'at First Nation	5.2.2.5	Economic Conditions	Given Hartley Bay's direct reliance on Prince Rupert, potential Project economic impacts to Hartley Bay can also occur because of "change in labour supply and demand" and "Change in activities for commercial businesses affected by Project spending". For Gitga'at to evaluate the potential Project adverse effects on the community, the effects need to be assessed for Hartley Bay as well. (See Gitga'at First Nation's Comment #27 in the dAIR Public Tracking Table).	The community of Hartley Bay was considered to be too physically distant from the Project location to be part of the LAA (the area with greatest potential for direct project effects) . However, it is recognized that Hartley Bay, along with other communities in the region, such as Terrace and the Aboriginal communities in the Terrace area have economic ties to the Prince Rupert area, and are therefore included within the RAA. Gitga'at members living in Prince Rupert are also included in the assessment of project effects.
155.1	round 1	Gitga'at First Nation	5.2.2.5	Economic Conditions	As a follow up to screening comment #155 It is not a matter of Hartley Bay being ""too physically distant from the Project location to be part of the LAA"". The concern relates to the residents of Hartley Bay's connection and direct socio-economic reliance on Prince Rupert. Gitga'at has voiced this concern repeatedly (e.g., see dAIR comment #27 in the Public Tracking Table, dated October 1, 2015), and Nexen's continual ignorance is inappropriate at this stage of the EA process. The community of Hartley Bay must be assessed within the LAA for all socio-economic parameters and the Application must be revised. See further comments in the economic and social sections below made by an external socio-economic expert."	Aurora LNG acknowledges that the Gitga'at First Nation feel that Hartley Bay should have been included in the LAA for the assessment of potential socio-economic Project effects. The LAA boundaries are established over an area where the Project is reasonably predicted to have potential direct effects. The Project is not predicted to directly interact with the community of Hartley Bay or call upon services at that community and as such the Project is not expected to have direct effects on the community of Hartley Bay. However, it is understood that residents of Hartley Bay regularly travel to the Prince Rupert or immediately surrounding areas and they may experience potential Project effects. Those Hartley Bay residents that experience in Project effects while in Prince Rupert or immediately surrounding areas are already included in the assessment of Project effects in the LAA.
156	screening	Lax Kw'alaams Band	5.2.3	Economic Conditions	In general, Section 5 does not include disaggregated Lax Kw'alaams data for on-reserve, off-reserve populations, or for the wage economy, education and training levels, or subsistence economies. As a result, no confidence can be placed in the effects assessment until such time as this baseline and trend-over-time data can be integrated into a revised assessment. Data related to employment, unemployment, participation rates, earnings and income, reliance on country foods (subsistence economies) all are relevant to consideration of differential exposure to effects of changes to the environment on individual First Nations, as required under CEAA 5(1)(c). Without this disagregation of data, however, this effects analysis is impossible. most tables in Section 5 simply have holes where Lax Kw'alaams data needs to be integrated. It is also important to remember that Lax Kw'alaams' population represents some 80% of Coast Tsimshian and almost half of all RAA First Nations peoples (see for example Table 5.2-8); the lack of data on this substantial rights and title holding population is not conducive to meaningful assessment on the most sensitive human receptors. In addition, data from other First Nations, including our Metlakatla Coast Tsimshian neigbours, cannot be used as a proxy for assessment of effects on Lax Kw'alaams, which has a larger population with more members living on a more remote rural reserve, among other differences. Please update Application with missing information.	Limited economic information specific to Lax Kw'alaams was available for the assessment of economic effects. The most recent census data (2011) does not provide a breakdown of economic statistics for Lax Kw'alaams 1 IR (the census subdivision that includes the Lax Kw'alaams community). However, as indicated in Section 5.2.2.3 Aurora LNG anticipates receiving specific socio-economic information from the Lax Kw'alaams community during the Application review period. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.
157	screening	Lax Kw'alaams Band	5.2.3	Economic Conditions	None of the listed activities have occurred in relation to Lax Kw'alaams to date.	As indicated in Section 5.2.2.3 Aurora LNG anticipates receiving specific socio-economic information from the Lax Kw'alaams community during the Application review period. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.

158	screening	City of Prince Rupert	5.2.3	Economic Conditions	No primary research is referenced in the application for section 5	Primary research is cited in Section 5.2.3.1 of the Application. Relevant primary research undertaken by QRG regarding the effects of large infrastructure and industrial projects on local businesses is discussed on page 5.2-72.
159	screening	Dodge Cove	5.2.3.2	Economic Conditions	table- 5.2-28. pg. 5.2-45 Resource-Based Economies-Forestry. Contribution value to economy has not been included. No data provided. Section 5.2.3.1 sources for quantitative fisheries landings and value: no representitive data relating to sportfishing landings and value of this sector to the Existing Resource-based economy of this region. Nor anywhere can be found quantitative value of tourism for the region.	As noted in the text following Table 5.2-28 and also discussed on page 6.4-26, there are no active timber tenures overlapped by the PDA or LAA; therefore there was no basis for estimating potential economic effects on forestry activities. The assessment of potential change in Resource-Based Primary and Subsistence Economies (Section 5.2.5.3) subsection "Commercial Fishing" draws on data from DFO and the British Columbia Marine Conservation Analysis (BCMCA) as described in Section 5.2.3 Existing Conditions for Economic Conditions, subsection "Commercial Fishing and Fish Processing". Quantitative data (e.g., landings, value, and licensing information) on existing conditions for CRA fisheries were received from DFO (DFO 2016). Available DFO information was limited to commercial fishing data, and did not include statistics on sportsfishing landings. Spatial data used to describe existing conditions for marine fisheries were downloaded from the BCMCA online database (BCMCA 2016) and supplemented with information from reports and other relevant project assessment applications from the region. Source information for the BCMCA and DFO data is provided below. Potential effects on recreation and tourism are addressed in Section 6.4 (land and resource use) and Section 6.5 (marine use and navigable waters) of the Application. Reference British Columbia Marine Conservation Analysis (BCMCA). 2016. Marine-related spatial data. Published database online at the British Columbia Marine Conservation Analysis website. Accessed: January, 2016. Fisheries and Oceans Canada (DFO). 2016. Marine Fisheries Data. Unpublished Database on File at Fisheries and Oceans Canada. Nanaimo, BC.
159.1	round 1	Dodge Cove	5.2.3.2	Economic Conditions	There is still no economic value presented quantifiablyfor the sportfishing sector. Sportfishing contributes significantly to the economy of the region and numbers need to be found and presented here in order to assess the potential negative impact of this project on already existing local economies.	The assessment of potential economic Project effects on marine-based primary economies (which includes sport or recreational fishing) relied on the assessment of marine fisheries completed in Section 6.5 of the Application. The assessment of marine fishing determined that, as a result of the location of recreational fishing grounds (i.e., limited overlap with the shipping route or proposed marine infrastructure) and gear types used (e.g., trolling, jigging, trap, etc.), potential Project effects on recreational fishing would not be significant. The assessment did not rely on assigning a valuation to the recreational fishing sector. Rather, it focused on understanding the mechanisms by which a negative interaction might occur and from that assessment outcome determining if mitigation needed to be considered.
160	screening	Lax Kw'alaams Band	5.2.3.2	Economic Conditions	As outlined in the comment above, Section 5 does not include disaggregated Lax Kw'alaams data for on-reserve, off-reserve populations, or for the wage economy, education and training levels, or subsistence economies.	Limited economic information specific to Lax Kw'alaams was available for the assessment of economic effects. The most recent census data (2011) does not provide a breakdown of economic statistics for Lax Kw'alaams 1 IR (the census subdivision that includes the Lax Kw'alaams community). However, as indicated in Section 5.2.2.3 Aurora LNG anticipates receiving specific socio-economic information from the Lax Kw'alaams community during the Application review period. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.
161	screening	Lax Kw'alaams Band	5.2.4	Economic Conditions	It is premature to identify all potential Project interactions until Lax Kw'alaams baseline and trend over time data is available. Without prejudice to the many different potential effects pathways, an example missing effect is the ability to access reasonable business services for trades (e.g., plumbing, electrical, construction) in the remote Lax Kw'alaams community, if a hyper-activity LNG construction phase is occuring near Prince Rupert. Please update the Application with this additional information and re-assess this VC.	As indicated in Section 5.2.2.3 Aurora LNG anticipates receiving specific socio-economic information from the Lax Kw'alaams community during the Application review period. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.
162	screening	Metlakatla First Nation	5.2.4	Economic Conditions	During the AIR process, Metlakatla noted the importance of addressing the systemic social challenges undermining successful training and employment for Aboriginal populations. Nexen indicated it would address such issues in s. 12.4 but it is not clear how/whether that was done and how it gets incorporated into the relevant VC (s. 5, economic condidtions). Though the Aurora project is not solely responsible for systemic social challenges / barriers, it can ease or worsen the challenge, depending on its approach. Metlakatla also noted the importance of disaggregating project effects on Aboriginal and non-Aboriginal populations. It is not clear how Metlakatla comments were addressed. The existing conditions section shows Aboriginal data separated from non-Aboriginal populations but it is not clear how that is carried forward into the assessment.	Section 12.5.5.11 includes an assessment of Metlakatla First Nation's ability to enjoy the highest attainable standard of mental and physical wellbeing. This Aboriginal Interest was included as a result of pre-Application consultation with Metlakatla First Nation. Although this section does not explicitly assess systemic challenges undermining access to training and employment, it does address several related topics identified by Metlakatla First Nation, including: Loss of community fabric Loss of access to leisure and recreational activities Loss of access to healthcare or social services Increased rates of substance abuse or addictions. Systemic challenges related to securing employment is addressed in Section 6.6 (Community Health) in several places, including under "Income and Social Status" (Section 6.6-68) and "Personal Health Practices and Coping Skills" (pp. 6.6-71 - 6.6-72). As described in Mitigation 5.2.5 Aurora LNG will work with Aboriginal Groups to increase opportunities for Aboriginal community members to obtain training required for Project participation.
163	screening	Dodge Cove	5.2.5	Economic Conditions	5.2.6.5., pg.5.2-94, cumulative effects proposed mitigation for change in resource based primary and subsitence economies. omission of proposed mitigation measures for this sector which they admit will be changed by most physical activities related to project components (See table 5.3-32, pg.5.2-53-4)	It is concluded in Section 5.2.5.3 under "Characterization of Residual Effects for Change in Resource-Based Primary and Subsistence Economies" that, with application of mitigation measures, the Project will have a low effect on primary and subsistence economies, generally because of the low degree of potential overlap between the project and such economic activities in the region. As discussed in Section 5.2.6.5 it is anticipated that other proponents of large projects will also implement measures to mitigate adverse effects on commercial fishers and marine users, as have been proposed for both the LNG Canada project and Pacific Northwest LNG project (see discussion on page 5.2-95). Because large projects will be individually addressing such effects, additional measures to address cumulative effects are not required.
164	screening	Metlakatla First Nation	5.2.6	Economic Conditions	During the AIR, Metlakalta promoted the use of pre-determined thresholds (aka management triggers) that indicate when a value's condition is beyond a pre-determined level of acceptability to stakeholders and/or ecological function. The use of thresholds ensures conditions don't already exceed an acceptable level to FNs/stakeholders or that the proposed project doesn't cause thresholds to be surpassed. Thresholds also allow assessors to avoid undergoing a subjective significance determination because significance is determined by the threshold itself. Metlakatla urges the proponent to adopt the use of thresholds -- determined collaboratively with stakeholders and FNs -- in determining significance and undertaking a CEA.	Aurora LNG is not proposing pre-determined thresholds for economic effects for a number of reasons, including the lack of empirical data supporting their application, the potential difficulty in developing consensus between various interested groups as to what the appropriate thresholds may be, potential substantial variation in economic activities due to supply/demand cycles or fluctuations in the quantity of natural resource stocks (as is the case with fisheries), as well as potential difficulties in attributing some economic effects to one project or set of activities. It is for these reasons that a more generic threshold definition is used; that if the project is clearly causing an adverse effect distinguishable from current conditions and trends, and for which the effect cannot be managed or mitigated, it is considered significant.
164.1	round 1	Metlakatla First Nation	5.2.6	Economic Conditions	**As a follow up to screening comment #164** All of the reasons given for not identifying indicator-specific thresholds are fairly well-known challenges but surmountable. As a matter of emerging good practices, we urge Nexen to work closely with Metlakalta and other communities and stakeholders to identify pre-determined thresholds for the reasons given in our original comment. Thresholds are a key instrument to avoid what are otherewsie subjective and debatable significance determinations.	Absent any well established quantitative thresholds for determining a significant economic effect (or most other socio-economic effects) the determination of significance is based on a assessment of whether there is a material and adverse change in the condition of the valued component, net of consideration of mitigation and management measures. "Distinguishable" in the context of the economic significance threshold definition, means distinct from current conditions or trends. In other words, the condition can be reasonably attributed to the Aurora LNG project rather than due to other economic factors, such as seasonal variations or structural changes affecting the economy (including such factors as in-migration, out-migration, closure and opening of other businesses and projects). The significance definition allows us to first characterize effects post mitigation, and based on this characterization determine if the significance threshold has been passed. If it is evident that there will be material un-mitigated residual adverse economic effects attributable to the Project then it may be considered significant. However, this conclusion will need to be made with appropriate consideration of the local economic context. For example, businesses may be both positively affected (through increased commercial activity) and adversely affected (through higher labour costs) by the presence of the Project.
165	screening	Lax Kw'alaams Band	5.2.9 5.2.10	Economic Conditions	Conclusions presented in this Section are not supporable and need to be revised based on inclusion of new information, as per previous comments.The Proponent's conclusion at pg. 5.2-96, that "there is a low likelihood that there will be adverse cumulative effects for change in resource-based primary and subsistence economies due to the limited interaction between reasonably foreseeable projects and primary and subsistence economic activities..." is not supported by adequate study, and must be held in the lowest confidence at this time.	Aurora LNG maintains that its conclusion related to adverse cumulative effects on resource-based primary and subsistence economies is supported by the information included in Section 5.2. As discussed in Sec. 5.2.6.5, other projects proposed in the RAA, in combination with the Project, will affect a relatively small proportion of the land base available for primary and subsistence economic activities. It is also recognized that while shipping volume will increase substantially in the cumulative effects case, there is no evidence of an adverse correlation between shipping volume and marine harvesting in the area.
166	screening	Lax Kw'alaams Band	5.3	Economic Conditions	Generally, there are serious gaps in this Section of the Application. Overall, this section provided no credible economic data on wage or subsistence economies of Lax Kw'alaams, no examination of the role of the project affected area in the preferred subsistence economy of Lax Kw'alaams, non-credible and non-conservative cumulative effects estimation, an inadequate number of effects pathways, and no consideration of impact or distributional equity or ability to take advantage. It is therefore not credible as a supportable economic effects assessment for Lax Kw'alaams.	As indicated in Section 5.2.2.3 Aurora LNG anticipates receiving specific socio-economic information from the Lax Kw'alaams community during the Application review period. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO. The effects pathways are based on potential interactions for the three effects assessed in this section, identified in Table 5.2-32, and further discussed under the "Project Mechanisms" sub-sections within Section 5.2.5.2, Section 5.2.5.3, and Section 5.2.5.3. The potential effects align with the AIR, and were developed with input from the Working Group. Economic-related topics are also addressed elsewhere in the Application, including income and social status and income inequity within Section 6.6.5 (Assessment of Residual Effects on Community Health), and cost of living, addressed in Section 13.5.4.
167	screening	Gitga'at First Nation	6.1	Social Background	Given Gitga'at First Nation's reliance between the communities of Hartley Bay and Prince Rupert, Hartley Bay must be assessed for all parameters assessed for the Social Valued Components. These assessments are essential for Gitga'at First Nation to evaluate the potential Project impacts on Gitga'at's society and Aboriginal Interests.	Hartley Bay is included in the LAA for change in harvested foods under Section 6.6, Community Health. In addition, Gitga'at First Nation's use of infrastructure and services within Prince Rupert as well as use of lands and waters near the Project is included in the assessment of residual adverse effects (in aggregate-population form) through the assessment of Visual Quality (Section 6.2), Infrastructure and Services (Section 6.3), Land and Resource Use (Section 6.4), Marine Use and Navigable Waters (Section 6.5) and Community Health (change in community health and wellness – Section 6.6). Gitga'at First Nation is additionally included in the RAA for all social VCs and therefore included (in aggregate-population form) in cumulative effects assessments. Section 11 (Summary of Statutory Requirements Under CEAA 2012) assesses effects as defined by CEAA 2012 [5(1) and 5(2)] on Gitga'at First Nation while Section 12 (Aboriginal Consultation) assesses Aboriginal Interests (Section 12.3) and other matters of concern (Section 12.5).
167.1	round 1	Gitga'at First Nation	6.1	Social Background	As a follow up to screening comment #167 Nexen's continual ignorance on the reality of Hartley Bay residents socio-economic reliance on Prince Rupert is inappropriate at this stage of the EA process. The community of Hartley Bay must be assessed within the LAA for all socio-economic parameters and the Application must be revised. See further comments in the economic and social sections below made by an external socio-economic expert. "	Aurora LNG's understanding of Gitga'at First Nation's comments requesting the inclusion of Hartley Bay in the LAA to be as follows: Members who either move to Prince Rupert for work, live in both Prince Rupert and Hartley Bay, as well as those members who work in Prince Rupert and send money to family members in Hartley Bay could experience adverse residual effects of the ProjectMembers living in Hartley Bay who draw upon goods and services in Prince Rupert, Terrace and Kitimat could experience adverse effects related to changes in the cost of goods and services due to the ProjectThat member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectOut-migration of members from Prince Rupert to Hartley Bay due to changes in the affordability and/or availability of housing in Prince Rupert could increase demand for housing in Hartley Bay (of which limited capacity exists to absorb increased demand).Socio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following economic and social VCs: Sections 5.2 Economic Conditions, 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2) and 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 5.2, 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions, infrastructure and services, and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.

168	screening	Dodge Cove	6.2.1	Visual Quality	Table 6.2-10 This section should have also contained the view facing south from the north shore of Casey Cove. This area is adjacent to the proposed MOF and is used extensively by locals and visitors. The community of Dodge Cove has used this area over time for various community functions day and night. Any alteration to the southern view by the MOF will have impact.	The viewpoint facing south from Casey Cove was not identified as a viewpoint of concern during engagement with Dodge Cove residents prior to Application submission. As such this rendering was not included. Aurora LNG did include the viewpoint from Mount Comblain in the assessment as a result of feedback received from Dodge Cove residents.
169	screening	Lax Kw'alaams Band	6.2.2.1 6.2.2.2	Visual Quality	Comments made by Lax Kw'alaams in relation to the dAIR were not adhered to by the Proponent. For example, Lax Kw'alaams requested that "the AIR should identify whether/how Aboriginal viewpoints and visual quality/perspectives will be considered and integrated. The assessment must include all industrial shipping, not just LNG carriers" in dAIR comments. Neither of these requirements are met in section 6.2. Reference is also made to engaging Metlakatla in the identification of viewpoints of significance to the community, but no discussion is provided of any efforts to engaged Lax Kw'alaams in same. Please update this section accordingly.	Aboriginal viewpoints and visual quality perspectives were considered and integrated in several places in Section 6.2. Community specific TK and socio-economic studies were reviewed to help identify relevant visual quality perspectives and Aboriginal viewpoints. Lax Kw'alaams Band was invited to, and participated in, the technical workshop on March 16-17 2016 in which Aurora LNG discussed the viewpoints for visual quality analysis. Viewpoints considered and selected for the assessment were based partially on this review (see Table 6.2-10). With respect to shipping effects on visual quality, LNG shipping would have the largest effect on visual quality due to the frequency of ship movements and the size of the carriers, relative to other marine vessels associated with the project. Nevertheless, renderings prepared for the project also show other marine vessels, including the MV Blue Marlin, a heavy lift marine vessel which would be used during Project construction, at anchorage in Casey Cove in Photo 6.2-8.
170	screening	City of Prince Rupert	6.2.2.1 6.2.2.2	Visual Quality	Best management practices for Visual Quality are not described. This information is needed to establish reasonable standards for action on the part of the proponent with regards to preserving or maintaining visual quality.	Best Management Practices (BMP) for Visual Quality, while not identified explicitly as such within Section 6.2, have been incorporated. The methodology used to assess change in existing visual condition (see "Visual Quality Class Analysis" within Section 6.2.3.1 and "Existing Visual Condition" within Section 6.2.5.1) was adapted from the methodology developed by the BC Ministry of Forests (now Ministry of Forests, Lands and Natural Resource Operations) to assess visual quality from forestr operations. The use of a vegetated buffer (Mitigation 4.5.1) is a commonly cited BMP for reducing visual impacts. Mitigation measures to reduce effects of Project lighting reference standards described by the Commission Internationale de l'éclairage (CIE), an international lighting standards organization.
171	screening	Gitga'at First Nation	6.2.2.1 6.2.2.2	Visual Quality	This section does not include the description that Gitga'at requested to be consulted to identify "high value viewpoints" (see Gitga'at First Nation's Comment #26 in dAIR Public Tracking Table). Gitga'at community members were never consulted to identify high value viewpoints.	The LAA for the assessment of visual quality is limited to lands within an 8 km buffer of the Project site. At the time that Aurora LNG was developing its database of viewpoints, Gitga'at First Nation was categorized (by the EAO) as a Schedule D Aboriginal Group (notification only). As such, Gitga'at First Nation was not included in the March 2016 technical workshop in which viewpoints were discussed with Aboriginal Groups. Therefore, visual quality was not included in discussions with Gitga' regarding potential Project effects. However, during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (to be submitted on Day 30), Aurora LNG would be pleased to discuss any concerns that Gitga'at First Nation may have regarding visual quality.
171.1	round 1	Gitga'at First Nation	"6.2.2.1 6.2.2.2"	Visual Quality	"As a follow up to screening comment #171 Since being added to Schedule B, Aurora LNG has consulted Gitga'at in a formula-driven approach. Due to this, and to Gitga'at's experience with consultation regarding this Project so far, Nexen has yet to fully demonstrate they are prepared to work with us to catch-up and/or resolve issues. That said, at this time we welcome any invitation to work on this issue and others. "	Due to the timing of Gitga'at First Nation's addition to Schedule B (requiring consultation in relation to the EA for the Project), Gitga'at First Nation did not participate in Technical Workshops #1 and #2 held with the other Aboriginal Groups. As such, Aurora LNG worked with Gitga'at First Nation to develop a workshop on October 13-14, 2016. The topics covered during these workshops included topics that were covered with the other Aboriginal Groups as part of Technical Workshops #1, #2, and #3. Gitga'at First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 13-14, 2016. The views provided by Gitga'at First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR (see Tables 11.3-6 and 12.9-1). As noted in Table 12.9-1, in many cases feedback received from Gitga'at First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitga'at First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 29, 2017, Aurora LNG's wildlife and marine fish subject matter experts accompanied Gitga'at First Nation on a field visit to review the work completed in support of baseline field studies for the Project. On March 30, 2017, Aurora LNG held Technical Workshop #5 with Gitga'at First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. As a result of Gitga'at First Nation's Working Group comment submissions and subsequent discussion at Technical Workshop #5, Aurora LNG changed some of the characterizations of effects on CEAA 2012 Section 5(1)(c) factors. These changes have been recorded in an errata document that will be filed with the BC EAO. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitga'at First Nation opinions, concerns and feedback. Aurora LNG is committed to continuing consultation with Gitga'at First Nation during the Application review phase.
172	screening	Gitxaala Nation	6.2.2.2 6.2.2.3	Visual Quality	This description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken.	Concerns related to visual quality/aesthetics identified in available TK/TLU studies, and how they were addressed, are summarized in Section 6.2.2.2 (Influence of Consultation on the Assessment).
173	screening	Metlakatla First Nation	6.2.5	Visual Quality	The effects of lighting were not assessed for the viewpoint at Dodge Cove. Though the application states that natural barriers will shield Dodge Cove from visual effects, lighting and skyglow may increase visibility of the project in darkness. This element should be assessed.	Because Dodge Cove residents are not within a direct line of sight of Project components they will not experience potential direct effects of Project lighting, such as glare or light spill. However, as acknowledged within the assessment of "Ambient Light" (see page 6.2-46), Dodge Cove residents may experience effects related to change in sky-glow due to proximity to the Project. Mitigation measures 4.7.9 and 6.2.1 (see Table 6.2-13) mitigate sky-glow by reducing excess exterior lighting (including portable lighting) and by requiring the selection and use of directional lighting or shielded "dark sky" fixtures, where appropriate.
173.1	round 1	Metlakatla First Nation	6.2.5	Visual Quality	**As a follow up to screening comment #173** What is the predicted change to sky-glow associated with the project? How was this assessed? On what basis has a significance determination been made?	It is acknowledged throughout Section 6.2 - Visual Quality that the Project will contribute to skyglow in the Prince Rupert area. In particular: "With the application of mitigation measures, the Project is predicted to have low to moderate effects on ambient light levels. Because there is no anticipated direct line of sight between Project components and residences in Port Edward or Dodge Cove, Project lighting should not be directly visible from those locations. The Project will increase the amount of facility lighting visible from some Prince Rupert residences. However, because of the distance to these receptors, with the application of mitigation measures, it is predicted that there will be no measurable adverse effects related to glare or light trespass. The Project may contribute to annoyance effects resulting from Project lighting, but the nighttime view from Prince Rupert will continue to be dominated by lighting from Fairview Terminal in the foreground (Photo 6.2-10). The Project will also likely contribute to skyglow effects, particularly during periods of low overcast, and this increase in skyglow may be more noticeable to Dodge Cove residents because of their proximity to the Project". Methods for determining existing conditions for ambient light, including skyglow, and analysis of potential Project effects, are included in section 6.2.3 and 6.2.5, respectively. The analysis of skyglow effects was qualitative, and the significance thresholds for overall effects on visual quality did not incorporate skyglow considerations. Through the use of shielded and directional "dark sky" lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow in the Prince Rupert area will be limited. Skyglow effects may also occur during Project flaring. A supplemental memo titled "Additional Visual Quality Renderings" provides renderings of emergency flaring of the LNG plant.
174	screening	Lax Kw'alaams Band	6.2.2.4	Visual Quality	Visual quality effects related to shipping is missing from the Application. Lax Kw'alaams' concern here is not that the information requirement has not been met, but that the information requirement reflects a self-fulfilling prophecy as accepted in the AIR, rejecting the impacts of Project shipping traffic as a visual disturbance before any assessment was even conducted. The Proponent suggests that evidence from the PNW LNG EA is compelling in eliminating visual impacts of Project-related shipping as a valid effects pathway, in part because these effects will only be encountered 3.5 hours a day. This is a large continuous or even intermittent portion of the daylight hours for Lax Kw'alaams' harvesters, in fact, and is evidence that in fact shipping will be a visual change, an adverse effect pathwy that must be considered. Lax Kw'alaams calls for Project-related shipping to be including in the revised visual quality assessment.	As indicated in Section 6.2.2. of the AIR, the Application is to provide a description of potential effects of shipping, and indicate why these are not anticipated to be a concern (including providing references to other recently completed EAs in the area). Section 6.2.2.4 of the Application describes the potential effects of shipping on visual quality and explains why such effects have not been assessed in detail. It is reasonable to cite the visual quality analysis from the PNW LNG project with respect to project shipping because the two projects will use similar LNG carrier types(Q-Flex size), which will follow similar routes, at similar shipping frequencies.
175	screening	Metlakatla First Nation	6.2.2.4	Visual Quality	Though the application did provide a justification for not including visual impacts from ships, Metlakatla has repeatedly required the proponent to include shipping when assessing visual quality impacts, (as provided though dAIR comments and comments directly to the proponent). Using the assessment by PNW is insufficient given that ships approaching and docking at the Aurora marine berth and MoF will be visible from Prince Rupert, which would not be the case for PNWLNG.	It is reasonable to cite the visual quality analysis from the PNW LNG project with respect to project shipping (along the Project shipping route) because the two projects will use similar LNG carrier types (Q-Flex size), which will follow similar routes, at similar shipping frequencies. As noted by Metlakatla, vessels docking at the MOF, as well as LNG carriers docking at the marine terminal will be visible from viewpoints in and near Prince Rupert. For this reason, the assessment of change in visual quality assesses effects of the LNG facility and supporting infrastructure, the marine terminal with docked LNG carriers, and the MOF with a docked vessel (conservatively a larger vessel than those expected to frequent the MOF is modeled). Focusing on these elements, the assessment of change in visual quality models an overly conservative scenario from viewpoints in and near Prince Rupert.
175.1	round 1	Metlakatla First Nation	6.2.2.4	Visual Quality	**As a follow up to screening comment #175** Metlakatla's concern largely stems from the changes in visual quality from marine viewpoints, which the application did not assess.	Please see the technical memo "Additional Visual Quality Renderings" that will be filed with the EAO. This supplemental technical memo includes the following information:Additional "before and after" renderings of the Project including views of Casey Cove and from marine viewpoints near the Project site. Additional night time rendering from VP01An additional day and night-time rendering of the Project that includes a flare event.
176	screening	Gitga'at First Nation	6.2.2.4	Visual Quality	Shipping effects on visual quality were not assessed (e.g., night-time vessel lighting was not included on page 6.2-5). Section 6.2.2.4 lists findings from PNW LNG, which is a different project with different project components (e.g., 3 trains compared to Aurora LNG's proposed 4 trains). Similar to Gitga'at's comments in the Public Tracking Table on the Draft AIR, visual quality of Aurora LNG's shipping components should be assessed by the Proponent. This is required for Gitga'at to evaluate the potential impacts of the Project (including cumulatively with other Projects).	As indicated in Section 6.2.2. of the AIR, the Application is to provide a description of potential effects of shipping, and indicate why these are not anticipated to be a concern (including providing references to other recently completed EAs in the area). Section 6.2.2.4 describes the potential effects of shipping on visual quality and explains why such effects have not been assessed in detail. It is reasonable to cite the visual quality analysis from the PNW LNG project with respect to Project shipping (along the Project shipping route) because the two projects will use similar LNG carrier types (Q-Flex size), which will follow similar routes, at similar shipping frequencies. As vessels docking at the MOF and LNG carriers docking at the marine terminal will be visible from viewpoints in and near Prince Rupert, the assessment of change in visual quality assesses effects of the LNG facility and supporting infrastructure, the marine terminal with docked LNG carriers, and the MOF with a docked vessel (conservatively, a larger vessel than those expected to frequent the MOF is modeled). Focusing on these elements, the assessment of change in visual quality models an overly conservative scenario from viewpoints in and near Prince Rupert.
177	screening	Lax Kw'alaams Band	6.2.2.4	Visual Quality	Measurable parameters are not complete. The proportion of Lax Kw'alaams marine users who will be highly annoyed by the visual effects of the Project, including shipping, must be added as a measureable parameter. In addition, the amount of time it takes, at regular boating speeds, to move through the area where the Project can be seen, entering or leaving Prince Rupert Harbour, must be calculated. Please update Application accordingly.	The measurable parameters for the assessment of visual quality identified in Section 6.2.2. of the AIR - visibility, and existing visual condition - were used in the assessment. The duration of potential visibility of Project shipping will be similar to that calculated for the PNW LNG project - approximately 3.4 hours per day - please see Section 6.2.2.4 of the Application.
178	screening	Gitga'at First Nation	6.2.2.5	Visual Quality	The LAA and RAA should be extended to include the shipping route, especially due to the potential Cumulative Effects of shipping with other projects shipping along the same route from Triple Island.	The LAA and RAA used in the assessment were established during the development of the AIR, and focuses on potential effects of visual quality due to the LNG facility and marine terminal. As discussed during development of the AIR, the LAA and RAA for visual quality does not include the shipping route because effects of shipping on visual quality were considered negligible (see Section 6.2.2.4). This determination was based on the following factors related to visibility of LNG vessels: vessels transiting the marine terminal will not be visually prominent from most viewpoints; they will only be visible for part of each day; and they will not introduce new visual elements into the area (because the Port of Prince Rupert is already visited frequently by large commercial ships). Further to this, the assessment of effects of shipping along virtually the same shipping route was undertaken for the Environmental Assessment Certificate Application for the Pacific Northwest LNG Project and concluded that the contribution of LNG vessels to change in visual quality within the LAA would be negligible for the same reasons as listed above.
179	screening	Gitxaala Nation	6.2.3	Visual Quality	Data gaps and field surveys not described.	The assessment of visual quality was supported by available secondary information related to visual quality attributes and objectives within the assessment area, as well as primary research, as described in Section 6.2.3. In general, it was considered that there was sufficient information to undertake the assessment with no obvious "gaps." Of the eight candidate viewpoints originally considered for the assessment, and for which photo-documentation information was collected (see Table 6.2-10) four viewpoints were selected for further analysis and assessment. It was considered that the viewpoints selected were adequate to represent potential effects on visual quality within the LAA, based on feedback from engagement activities. While a detailed description of photo-documentation techniques is not included in the application, it is indicated within Section 6.2.3.1 that photo-documentation involved field-work.
180	screening	NCRD	6.2.3 6.2.5	Visual Quality	This section should also contained the view facing south from the north shore of Casey Cove. This area is adjacent to the proposed MOF and is used extensively by locals and visitors. The community of Dodge Cove has used this area over time for various community functions day and night. Any alteration to the southern view by the MOF will have impact.	The viewpoint south from Casey Cove was not identified as a viewpoint of concern during engagement with Dodge Cove residents prior to Application submission. As such this rendering was not included. Aurora LNG did include the viewpoint from Mount Comblain in the assessment as a result of feedback received from Dodge Cove residents.
181	screening	Lax Kw'alaams Band	6.2.3 6.2.5	Visual Quality	No evidence of consultation with Lax Kw'alaams on identification of viewpoints, conduct of assessment, visual quality objectives, among other parameters is provided in this section. Lax Kw'alaams' AIUS will likely identify additional critical viewpoints, including from marine viewpoints. Please update Application with new information.	Aboriginal viewpoints and visual quality perspectives were considered and integrated in several places in Section 6.2. Lax Kw'alaams Band was invited to, and participated in, the technical workshop on March 16-17 2016 in which Aurora LNG discussed the viewpoints for visual quality analysis. Community specific TK and socio-economic studies were reviewed to help identify relevant visual quality perspectives and Aboriginal viewpoints. Viewpoints considered and selected for the assessment were based partially on this review (see Table 6.2-10). If additional information on viewpoints is provided in the AIUS report anticipated to be provided on or before January 31, 2017 Aurora LNG will discuss this with Lax Kw'alaams during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30). It should be noted that the Application focuses on the effects of changes to visual quality due to the LNG facility with carriers docked, though a discussion of potential effects related to shipping is provided in Section 6.2.2.4.

182	screening	Lax Kw'alaams Band	6.2.4	Visual Quality	As noted in comment above, Application must include the effect pathway / Project interaction between visual quality and marine shipping.	As discussed in Section 6.2.2.4 effects from shipping were not carried forward in the assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not be visibly prominent from most viewpoints along the shipping route.
183	screening	Lax Kw'alaams Band	6.2.5.1	Visual Quality	Viewpoints ust be added to locations close to the facility. Assumptions at pg. 6.2-33 that seek to justify this ommission are not sufficient. By not adopting an assumption that many users/viewers will be moving through the area, many - indeed most - of the visual effects and their lenght of time encountered and magnitude of effects - are in fact under estimated. By not adopting any viewpoints close to the facility (e.g., in traditional use areas south of Deception Bay), this too underestimates magnitude of effect. Please update Application accordingly.	Aurora LNG selected viewpoints that were considered representative of potential views to the Project, with the viewpoints ranging in distance from approximately 500 m to 2.5 km from Project infrastructure (i.e. within foreground or near-mid-ground). Viewpoint selection incorporated information and feedback from Aboriginal Groups. The view towards the Project from south of Deception Bay has been represented by VP01 (see Photo 6.2-6, page 6.2-43), which lies to the SE of the Project. Viewers passing through the channel between Digby and Kaien Islands, while being closer to Project infrastructure, would not necessarily experience a greater degree of visual impact because the maintenance of a marine riparian buffer will partially screen Project infrastructure. By contrast, viewers at VP02 (Mount Hays), while further away, will likely experience a higher degree of visual impact due to their elevation and viewing angle down towards the Project (see Photo 6.2-7, page 6.2-43).
184	screening	CEAA	6.2.5.2	Visual Quality	To limit night-time lighting lighting effects, the timing of activities throughout each project phase should be considered as another key potential mitigation (i.e.: limiting construction activities to daylight hours to the extent possible, running minimal lighting schemes at night especially when there are no vessels at berth or incoming until daylight hours, etc.). Such mitigation would be applicable to both potential social effects and effects to wildlife.	To reduce potential effects associated with night-time lighting Aurora LNG has committed to limiting exterior lighting, including portable lighting, selecting lighting to reduce spill-over light, including shielded "dark-sky" fixtures where appropriate, and directional lighting. These mitigations will reduce the horizontal and vertical distribution of light which in turn decreases the likelihood of light trespass to nearby receptors and potential effects on wildlife.
184.1	round 1	CEAA	6.2.5.2	Visual Quality	**As a follow up to screening comment #184** Response understood but remains outstanding as it does not answer the question of whether timing of activities has been considered as another potential mitigation strategy for this VC. For comparison, refer to mitigation 4.7.17 for the Terrestrial Wildlife Resources VC which considers restrictions on activity periods.	In the context of wildlife, limiting construction activities (e.g., clearing) to certain periods (e.g., outside of the breeding bird or amphibian periods), where practicable, is an effective way to reduce potential interference with sensitive wildlife stages. Project-lighting (e.g., lights on land-based infrastructure or the marine terminal) is essential to public safety and not readily amenable to seasonal or diurnal adjustment. Adequate lighting must be provided to maintain a safe working environment. For example, while some lights may be programmed to turn on only when natural light levels decrease below a certain threshold, other fixtures will be required to be illuminated 24 hours a day as a safety precaution (e.g., navigational aids). Aurora LNG is committed to reducing stray lighting through best management practices and design plans (see Table 6.2-13 of Mitigation Measures Proposed to Avoid or Reduce Reduction in Visual Quality). Aurora LNG will also conduct a lighting assessment when the front end engineering designs are available (also see the "Navigational Sight Lines and Glare Effects" technical memo that will be filed with the BC EAO), which will determine if additional mitigation measures are required to reduce potential effects from stray lighting.
185	screening	Lax Kw'alaams Band	6.2.6	Visual Quality	Due to missing information in this section noted in comments above, conclusions must also be revised. As a result of not integrating Lax Kw'alaams perspectives and a variety of other concerns raised above and in our cover letter, the Proponent's suggestion that the "substantial change" to the visual environment, in an area it recognizes has stringent visual quality objectives (see pg. 6.2-20), somehow translates into anything less that a significant adverse effect on visual quality, is an artifact of an inadequate significance threshold, not an actual absence of significance. This must be subject to reassessment once Lax Kw'alaams' inputs are sought.	Aurora LNG maintains that its conclusions on significance of potential effects on visual quality presented in Section 6.2.7 is supported by the characterization of residual effects (Section 6.2.5.2) in consideration of the significance thresholds provided in Section 6.2.2.8. Aurora LNG acknowledges that the Project will result in substantial change in visual quality for priority viewpoints with a view to the LNG facility and marine terminal. These changes will substantially affect the visual attributes of some visually sensitive areas included within the province's visual landscape inventory (see Table 6.2-14). While the Project will affect these viewpoints, it was concluded that its overall affect on visual quality within the LAA was below the threshold for significance. An important contextual consideration for this conclusion, was that while the Project would bring industrial development and associated altered views to south Digby Island, the development would not be changing the overall visual quality within the LAA, which currently includes the substantially altered Prince Rupert waterfront.
186	screening	Gitga'at First Nation	6.2.6	Visual Quality	Cumulative effects on visual quality along the shipping route should be assessed; therefore, all of the projects listed in Table 6.2-16 that have overlapping (or within close proximity) shipping lanes should be assessed (e.g., LNG Canada and Kitimat LNG).	As discussed in Section 6.2.2.4, visual effects from shipping were not carried forward in the assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited regularly by large marine traffic), and based on the EAC Application results for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) Project shipping will not be visibly prominent from most viewpoints along the shipping route. Because effects of shipping on visual quality was not assessed, such effects were not carried into the cumulative effects assessment. This is consistent with the requirements outlined in the AIR.
187	screening	Lax Kw'alaams Band	6.2.7	Visual Quality	Until the multiple problems with this assessment can be fixed, no confidence can be placed in the estimation of significance of residual effects drafted by the Proponent.	Aurora LNG maintains that its conclusions on significance of potential effects on visual quality presented in Section 6.2.7 is supported by the characterization of residual effects (Section 6.2.5.2) in consideration of the significance thresholds provided in Section 6.2.2.8. Aurora LNG acknowledges that the Project will result in substantial change in visual quality for priority viewpoints with a view to the LNG facility and marine terminal. These changes will substantially affect the visual attributes of some visually sensitive areas included within the province's visual landscape inventory (see Table 6.2-14). While the Project will affect these viewpoints, it was concluded that its overall affect on visual quality within the LAA was below the threshold for significance. An important contextual consideration for this conclusion, was that while the Project would bring industrial development and associated altered views to south Digby Island, the development would not be changing the overall visual quality within the LAA, which currently includes the substantially altered Prince Rupert waterfront.
188	screening	Gitxaala Nation	6.2.9 6.2.10	Visual Quality	Section 6.2.9 does not provide a summary of proposed follow and monitoring programs, noting that standard mitigation is sufficient.	As noted in Section 6.2.9, with the implementation of mitigation measures and BMPs the potential adverse effects of Project activities on visual quality are expected to be not significant. As a result, no follow-up programs are proposed.
189	screening	Gitga'at First Nation	6.3.1	Infrastructure and Services	Given Gitga'at First Nation's reliance between the communities of Hartley Bay and Prince Rupert, Hartley Bay must be assessed for all parameters assessed of the Infrastructure and Services Valued Component. This assessment is essential for Gitga'at First Nation to evaluate the potential Project impacts on Gitga'at's society and Aboriginal Interests.	Hartley Bay is included in the LAA for change in harvested foods under Section 6.6, Community Health. Additionally, Gitga'at First Nation's use of infrastructure and services within Prince Rupert as well as use of lands and waters near the Project is included in the assessment of residual Project effects (in aggregate-population form) through the assessment of Visual Quality (Section 6.2), Infrastructure and Services (Section 6.3), Land and Resource Use (Section 6.4), Marine Use and Navigable Waters (Section 6.5) and Community Health (change in community health and wellness – Section 6.6). Gitga'at First Nation is additionally included in the RAA for all social VCs and therefore included (in aggregate-population form) in cumulative effects assessments. Section 11 (Summary of Statutory Requirements Under CEAA 2012) assesses effects as defined by CEAA 2012 [5(1) and 5(2)] on Gitga'at First Nation while Section 12 (Aboriginal Consultation) assesses Aboriginal Interests (Section 12.3) and other matters of concern (Section 12.5).
189.1	round 1	Gitga'at First Nation	6.3.1	Infrastructure and Services	As a follow up to screening comment #189 Nexen's continual ignorance on the reality of Hartley Bay residents socio-economic reliance on Prince Rupert is inappropriate at this stage of the EA process. The community of Hartley Bay must be assessed within the LAA for all socio-economic parameters and the Application must be revised. See further comments in the economic and social sections below made by an external socio-economic expert."	Aurora LNG's understanding of Gitga'at First Nation's comments requesting the inclusion of Hartley Bay in the LAA to be as follows: Members who either move to Prince Rupert for work, live in both Prince Rupert and Hartley Bay, as well as those members who work in Prince Rupert and send money to family members in Hartley Bay could experience adverse residual effects of the ProjectMembers living in Hartley Bay who draw upon goods and services in Prince Rupert, Terrace and Kitimat could experience adverse effects related to changes in the cost of goods and services due to the ProjectThat member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectOut-migration of members from Prince Rupert to Hartley Bay due to changes in the affordability and/or availability of housing in Prince Rupert could increase demand for housing in Hartley Bay (of which limited capacity exists to absorb increased demand).Socio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following economic and social VCs: Sections 5.2 Economic Conditions, 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2) and 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 5.2, 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions, infrastructure and services, and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.
190	screening	Northern Health	6.3.1 6.3.2	Infrastructure and Services	Partially missing (Influence of consultation on assessment): While this section refers back to section 13 (Public consultation), it is missing detail on how public, regulator and stakeholder consultation was conducted specific to Infrastructure and Services and how this was incorporated into the effects assessment. For instance, what were the interview/meeting questions that were posed? How were representatives identified and how were the meetings facilitated? How was the raw data summarized and incorporated into the assessment. Which stakeholders were contacted specifically for this portion of the assessment? Detail of how raw data was obtained and then converted to the effects assessment for the purpose of this section should be provided in this section. Raw/detailed data should also be provided in an appendix. These methods can significantly impact the value of the information that was obtained.	Section 6.3.2.2 of the Application provides a high-level overview of how consultation influenced the assessment. As noted by Northern Health, section 6.3.2.2 refers readers to Section 13 (Public Consultation) for additional information on the influence consultation had on the Application. In addition to directing readers to Section 13, readers are also directed to Section 12 (Aboriginal Consultation) for additional information. Northern Health is also encouraged to review the Public Consultation Plan dated July 14, 2015 as well as the Public Consultation Report prepared October 2015 on BC EAO's e-PIC website as both documents establish overarching consultation principles and identify lists of stakeholders to be consulted. Section 6.3.3.1 (Existing Conditions for Infrastructure and Services – Methods) provides a high-level overview of primary and secondary data collection methods but does not provide the level of detail (i.e., interviewee identification, lines of questioning or how interview transcripts were reviewed) noted by Northern Health. While this level of detail is not provided in this section of the Application, an overview of interview methods specific to Infrastructure and Services are summarized below. Specific to the assessment of Infrastructure and Services, interviewees were selected for in-person interviews following a thorough review of publicly available information (including that obtained during Project consultation) to determine the adequacy of existing data. Where it was determined that a lack of up-to-date or authoritative information on a given community infrastructure or service rendered an inadequate description of existing conditions, available capacity, and/or did not adequately describe potential management challenges associated with industrial development, key informants were identified (by contacting the service provider in question) and in-person interviews were scheduled. In-person interviews were conducted in the offices of selected service providers with semi-structured closed and open ended questions. Each interviewee was provided an update on the status and description of the Project, asked to provide a brief description of their role with their organization and to describe in their own words the current condition of infrastructure and/or services managed by their organization. Interviewers asked a series of questions regarding available capacity, how the organization may be affected by the Project, management challenges currently faced by the organization in delivering services and/or maintaining infrastructure and if, from their point of view, the Project could increase current management challenges. Interviewees were also asked if they knew of any mitigation measures or actions the Project could implement to reduce potential adverse effects (as determined by the interviewee) or enhance benefits of the Project. Interviewees were also asked if they knew of any additional service providers or community representatives that should be interviewed. Following the completion of interviews, audio recordings were reviewed. To protect the privacy of interviewees and/or at the request of interviewees, the raw data was not provided in appendix form. In general, three themes were sought in the interviews: 1) descriptive information on infrastructure and services including capacity information and current management challenges without the Project (to be integrated into Section 6.3.3); 2) Potential Project interactions with the given infrastructure or service and a description of foreseen management challenges (to be integrated into Sections 6.3.4, 6.3.5 and 6.3.6); and 3) potential mitigation and/or enhancement measures (to be integrated into Section 6.3.5 and 6.3.6).
191	screening	Northern Health	6.3.2.2 6.3.2.3	Infrastructure and Services	Partially missing: See comments above. While a reference to aboriginal consultation was provided, details of how information from aboriginal consultation was obtained, assessed and incorporated into this specific section is missing; as is reference to the detailed information that was provided.	Sections 6.3.2.2 and 6.3.2.3 of the Application provide a high-level overview of how consultation influenced the assessment (Section 6.3.2.2) and how traditional knowledge and traditional use information was incorporated into the assessment (Section 6.3.2.3). Specifically, Section 6.3.2.3 provides a high-level overview of how TK/TLU information was obtained, assessed and incorporated into the assessment of Infrastructure and Services. Detailed methodological information regarding the review and incorporation of this information is not provided and was not a requirement of the AIR. Reference to information provided by Aboriginal Groups is provided where relevant throughout Section 6.3.3. Additional Information on Aboriginal consultation is provided in Section 12 (Aboriginal Consultation).

192	screening	Gitxaala Nation	6.3.2.2 6.3.2.3	Infrastructure and Services	This description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken.	Sections 6.3.2.2 and 6.3.2.3 of the Application provide a high-level overview of how consultation influenced the assessment (Section 6.3.2.2) and how traditional knowledge and traditional use information was incorporated into the assessment (Section 6.3.2.3). Stated in section 6.3.2.3, where possible TK/TLU information was directly incorporated into the assessment. Methodologically this means that publicly available and Gitxaala Nation-provided TK/TLU information was reviewed and presented at the same level as other data sources for a given topic. However, it is important to note that several technical limitations exist with respect to TK/TLU information and built environments (as is assessed in the noted Section 6.3 Infrastructure and Services). In particular, limited TK/TLU information (and associated measurable parameters) is available for infrastructure and services . Due to this limitation, direct reference to TK/TLU information in Section 6.3 is not as distinguishable as is the case in biophysical VCs where a greater amount of TK/TLU information is available.
193	screening	Gitga'at First Nation	6.3.2.5	Infrastructure and Services	Given Gitga'at First Nation's reliance between the communities of Hartley Bay and Prince Rupert, Hartley Bay must be assessed for all parameters assessed of the Infrastructure and Services Valued Component. This assessment is essential for Gitga'at First Nation to evaluate the potential Project impacts on Gitga'at's society and Aboriginal Interests. Therefore, Hartley Bay should be included the LAA.	Hartley Bay is included in the LAA for change in harvested foods under Section 6.6, Community Health. In addition, Gitga'at First Nation's use of infrastructure and services within Prince Rupert as well as use of lands and waters near the Project is included in the assessment of residual Project effects (in aggregate-population form) through the assessment of Visual Quality (Section 6.2), Infrastructure and Services (Section 6.3), Land and Resource Use (Section 6.4), Marine Use and Navigable Waters (Section 6.5) and Community Health (change in community health and wellness – Section 6.6). Gitga'at First Nation is additionally included in the RAA for all social VCs and therefore included (in aggregate-population form) in the cumulative effects assessments. Section 11 (Summary of Statutory Requirements Under CEAA 2012) assesses effects as defined by CEAA 2012 [5(1) and 5(2)] on Gitga'at First Nation while Section 12 (Aboriginal Consultation) assesses Aboriginal Interests (Section 12.3) and other matters of concern (Section 12.5).
193.1	round 1	Gitga'at First Nation	6.3.2.5	Infrastructure and Services	As a follow up to screening comment #193 Nexen's continual ignorance on the reality of Hartley Bay residents socio-economic reliance on Prince Rupert is inappropriate at this stage of the EA process. The community of Hartley Bay must be assessed within the LAA for all socio-economic parameters and the Application must be revised. See further comments in the economic and social sections below made by an external socio-economic expert."	Aurora LNG's understanding of Gitga'at First Nation's comments requesting the inclusion of Hartley Bay in the LAA to be as follows: Members who either move to Prince Rupert for work, live in both Prince Rupert and Hartley Bay, as well as those members who work in Prince Rupert and send money to family members in Hartley Bay could experience adverse residual effects of the ProjectMembers living in Hartley Bay who draw upon goods and services in Prince Rupert, Terrace and Kitimat could experience adverse effects related to changes in the cost of goods and services due to the ProjectThat member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectOut-migration of members from Prince Rupert to Hartley Bay due to changes in the affordability and/or availability of housing in Prince Rupert could increase demand for housing in Hartley Bay (of which limited capacity exists to absorb increased demand).Socio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following economic and social VCs: Sections 5.2 Economic Conditions, 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2) and 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 5.2, 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions, infrastructure and services, and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.
194	screening	Northern Health	6.3.2.5	Infrastructure and Services	We would recommend that a differentiation be made between early works (before the construction camp is constructed) and construction as well as regular operations versus turnarounds as impacts will be different for each phase of this project.	While not identified as a specific temporal boundary in Section 6.3.2.5, differentiation between Phase 1 and Phase 2 Project buildout, site preparation (early works), peak construction, peak operation and minor and major turnarounds has been made throughout Section 6.3.5 where relevant. Assumptions regarding the timing, required workforce, and accommodation of workers for each Phase and construction and operation stage is detailed in Section 6.3.5.1 subsection "Assumptions".
195	screening	NCRD	6.3.3	Infrastructure and Services	addition to section above: Lack of information for emergency services. Relying on Prince Rupert's Fire Department for an industrial emergency is likely not providing the necessary level of safety to nearby communities. Public safety beyond the project footprint needs to be considered in this application.	Section 6.3.3 subsection "Emergency and Protective Services" provides information in sufficient detail to describe the existing services and capacity of the Prince Rupert Fire Department from which Project-related demand is characterized. The assessment of change in community infrastructure and services (Section 6.3.5.2), which assesses increased demand on emergency and protective services, does not consider Project reliance on the Prince Rupert Fire Department for an industrial emergency as Project-design includes on-site fire protection and safety equipment. The following is provided in Section 6.3.5.2, "Fire protection and safety measures will be implemented at the Project site to protect personnel and equipment. Response equipment, such as fire and gas detection systems, alarms, fire extinguishers, foam systems, firewater pumps, fire response vehicles, and personal protective equipment, monitors and passive protection, will be provided onsite." These measures will reduce Project effects on local firefighting services and infrastructure. Rather, the assessment of change in community infrastructure and services (Section 6.3.5.2) considers Project-related population effects (e.g., increased demand on fire and protective services from in-migrating workers and their families) within local communities. This assessment therefore focuses on local communities (those within the LAA) not the PDA. The assessment noted that response times in the LAA indicate that fire services are operating within capacity and can accommodate additional demands created by an increase in the temporary and permanent populations.
196	screening	Northern Health	6.3.3	Infrastructure and Services	Partially missing: Existing conditions for some potential project effects are missing (see below) and for some project effects, only a desktop review was conducted. Qualitative data sources appear to be limited. For a number of project effects, the existing conditions did not fully characterize and identify the existing conditions that have manifested over recent years as a result of the "LNG planning boom". See additional comments below.	Information provided in Section 6.3.3 was obtained through the review of readily available public information, government databases and reports, environmental assessments for other Projects within the RAA, information provided to Aurora LNG during Project consultation, and obtained during in-person interviews. While it is possible that not all information sources have been cited, Aurora LNG is confident that the information provided in Section 6.4.3 portrays a robust description of existing infrastructure and service conditions within the LAA and RAA. Limitations with respect to the timeliness of some authoritative information (i.e., Statistics Canada data from the 2011 Census and 2011 National House Hold Survey as well as BC MOTI traffic count data) is described in Section 6.3.2.5 subsection "Technical Boundaries".
197	screening	Northern Health	6.3.3	Infrastructure and Services	(Part 1 of 2) Partially Absent (missing important components) Education infrastructure and services - does not include information on early childhood education and childcare services - does not include information on post secondary education - does not include baseline information for the RAA (Terrace) - appears to rely solely on desktop information. Anecdotally, we have been told that Terrace school district has lost the equivalent of two classrooms of school children due to the rising cost of living/housing costs that had resulted from the "LNG Planning boom". It would be important and relevant to confirm or refute this information and to carry this information forward into the "Community Health " assessment, given the importance of education as a determinant of health - additional information would be required with relevant results forwarded into the "Community Health" VC for the rationale to exclude "Education and Literacy" on page 6.6-15 to hold true. Health care infrastructure and service - Generally good but missing some important qualitative information provided by Northern Health to Stantec, especially as it relates to overall capacity, NHA's vs. private physician roles, primary care, per-capita funding model, etc. Available health practictioner data is quite old and likely to over-represent capacity in Prince Rupert. This information should have been supplemented by more recent up-to date information that more accurately reflects capacity in Prince Rupert (e.g. physician FTE, available from Northern Health, and physician vacancies: https://physicians.northernhealth.ca/PracticeHere/PracticeOpportunities.aspx) Social services - did not review in detail but baseline information appeared very limited	(Part 1 of 2) Education Infrastructure and Services Information on educational facilities within the LAA from kindergarten to grade 12 is provided in Section 6.3.3.2 subsection "Education Infrastructure and Services" and meets the requirements of the AIR. For the most part these educational institutions are publicly funded and cannot quickly adjust to market pressures (i.e., increased demand); these educational institutions are therefore included in the assessment of residual and cumulative effects. Early childhood education is outside of the scope of the assessment and has not been assessed. Project design (95% of the peak construction workforce and 20% of the operations workforce is estimated to be comprised of fly-in/fly-out [FIFO] workers with an additional 68% of the operations workforce in-migrating to the LAA). Project workforce demand-skills matching (which suggests local employment will be greatest in trades, site preparation, security services and similar roles - see Section 5.2 Economic Conditions) and known specialized skills requirements will be addressed by post-secondary educational institutions that are responsive to market pressures (i.e., will respond to increased demand by adjusting capacity). It is therefore not expected that increased demand for post-secondary skills training will result in adverse effects on these institutions. Potential adverse effects on post-secondary educational institutions has not been addressed. Aurora LNG has committed to skills and training-related mitigation measures (see Section 5.2 and 6.3.5) to increase benefits of the Project on local employment. Health Care Infrastructure and Services Information provided in Section 6.3.3.2 subsection "Health Care Infrastructure and Services" incorporates all data provided to Stantec by Northern Health for the Aurora LNG Project. While publicly available information on the number of available health practitioners per 100,000 population (as provided by the Provincial Health Services Authority) for Prince Rupert may over-represent capacity due to the reporting period of 2009-2010 of the dataset, Northern Health's expressed description of existing capacity as described in other environmental assessments in Northwest BC (that there currently exists challenges related to under staffing as well as recruiting and maintaining qualified staff) has been incorporated into the assessment of residual effects (see Section 6.3.5.5). It is understood that little capacity exists at local hospitals (including those in the RAA) to accommodate additional demand. This assumption has been integrated into the assessment of health care infrastructure and services in Section 6.3.5. This understanding is carried through the residual and cumulative effects assessments. Social Services Baseline information on available social services within the LAA is provided in Section 6.3.3.2 subsection "Social Services". While this information is limited, it is acknowledged in this section that there currently exists limited available capacity to meet existing demand. This description is carried forward through residual and cumulative effects assessments (see Section 6.3.5 and 6.3.6).
197	screening	Northern Health	6.3.3	Infrastructure and Services	(Part 2 of 2) Transportation infrastructure - did not include transportation service information (e.g. information on public transportation) - did not include the important link between limited transportation services and the Highways of Tears/Missing and Murdered Aboriginal Women. this would be important to consider vulnurabilities it the community, especially given that resource development has been tied to the vulnurability of First Nations and women at a recent "Community and Construction Camp" dialogue in Prince George and the Amnesty International report: A Point of No Return https://www.amnesty.ca/sites/amnesty/files/Canada%20Site%20C%20Report.pdf - this additional information would be required and would need to be carried forwarded into the "Community Health" VC for the rationale to exclude "Physicial environments" on page 6.6-15 to hold true. Housing and Accommodations (including measures of core housing need) - baseline information is missing qualitative information on the "renoviction" phenomenon that has resulted from the "LNG Planning Boom" and what this has meant for vulnurable populations. Anecdotal information provided to Northern Health suggests that there groups that have resorted to living in trailers/campers in the Terrace Walmart parking lot and/or have had to re-located back to smaller aboriginal communities or to places like Houston and Prince George where lower cost housing or increased social services are available. This type of community-level qualitative information would be an important component of baseline conditions. - baseline information does not link housing statistics to what is driving these recent trends in vacancies, housing costs, etc. Qualitative information would likely identify the "LNG planning boom" as the cause which is an important detail to incorporate into the baseline. - while an attempt to identify aboriginal renters as a vulnurable population, additional/other vulnurable populations were not considered. For instance, the housing memo for the Pacific Northwest LNG project in the same community, identified "those that make less than $39,999 and have a household structure as either lon-parent family or non-family one person". - this additional information would be required with relevant results from the assessment forwarded into the "Community Health" VC for the rationale to exclude "Physicial environments" on page 6.6-15 to hold true.	(Part 2 of 2) Transportation Services Assessment of Project effects on public transportation services with implications on the 'Highways of Tears/Missing and Murdered Aboriginal Women' phenomena is not included in the scope of the Application and was not addressed. Housing and Accommodations Information on 'renoviction' is not included in the Section 6.3.3.2 subsection "Housing and Accommodations" and is not included in the assessment of residual and cumulative effects. However, based on the anecdotal evidence provided by Northern Health (this comment), much of this trend is captured through measures of CORE housing need (i.e., housing adequacy and suitability) which is provided in Section 6.3.3.2 and brought forward into the assessment of residual and cumulative effects. Under the subsection "Housing Availability" of Section 6.3.3.2 the KPMG (2015) report commissioned by the City of Prince Rupert is quoted as stating that an additional 300 affordable housing units are estimated to be required by 2015 to offset LNG-related demand for housing. While a direct link between all housing metrics presented in this subsection and LNG development has not been attempted (as numerous other development projects and market forces influence housing availabily and affordability), the notion that LNG development can and has affected housing and accommodations in the LAA is established. This understanding is carried forward through the assessment of residual and cumulative effects. Please see Section 6.3.3.2 subsections "Core Housing Need" (specifically the paragraph dealing with housing affordability -a threshold measure of 30% of household income) and "Salary-to-Income Ratio (STIR) for income-related considerations related to the affordability of housing. These measures are accepted by the Canadian Mortgage and Housing Corporation (as well as lending institutions) as threshold measures for housing affordability.

198	screening	Transport Canada	6.3.4	Infrastructure and Services	Transport Canada has recently received three reports from Nexen's consultant related to the potential for impacts on Air Navigation from the project. Since TC received one of these reports the day our comments were due to the EAO and the other two, two days prior to when our screening comments were due to the EAO, it is difficult to make any determinations on whether or not this information meets those committments outlined in rows 662, 671 and 689 of the AIR tracking table. TC, Nav Canada, Prince Rupert Airport Authority (City of Prince Rupert) and Nexen will discuss these reports in a technical meeting the week of Dec 12, 2016 after which time we may be in a better position to provide this feedback to the EAO.	Aurora LNG is willing to have further discussions with Transport Canada during the Application review phase to discuss the studies provided.
198.1	round 1	Transport Canada	6.3.4	Infrastructure and Services	As a follow up to screening comment #198 TC is awaiting answers to our IR and the updated Plume Rise Assessment Report from Aurora LNG. TC understands that the PRA report should arrive for review and comment on February 22, 2017."	The Plume Rise Assessment Report was submitted to Transport Canada on February 17, 2017 and to other concerned Working Group members on February 21, 2017.
199	screening	Northern Health	6.3.4	Infrastructure and Services	Change in Health Care Infrastructure and Services would be impacted by more than just "employment and expenditures". Any accidents, malfunction, exposures and changes in community health could impact health services and infrastructure. ARe we correct to assume that all of these have been considered under "Changes in health care infrastructure and services"?	The identified interaction between "employment and expenditures" and change in health care infrastructure and services in Table 6.3-20 is interpreted to include consideration of additional demands on healthcare infrastructure and services due to changes in population (temporary and permanent), potential injuries from additional highway traffic, potential workplace injuries, and potential negative interactions between the resident and non-resident population (as informed through the assessment of change in community health and wellness completed in Section 6.6 Community Health). Increased demand from accidents or malfunctions is not considered part of construction or operations but is rather considered through a series of credible worst-case scenarios in Section 9 (Accidents or Malfunctions).
200	screening	Metlakatla First Nation	6.3.5	Infrastructure and Services	Metlakatla noted the importance of disaggregating project effects on Aboriginal and non-Aboriginal populations. It is not clear how Metlakatla comments were addressed. The existing conditions section shows Aboriginal data separated from non-Aboriginal populations but it is not clear how that is carried forward into the assessment.	Disaggregated information for existing conditions within Aboriginal and non-Aboriginal communities within the LAA is provided in Section 6.3.3, where possible. Taken together, information on existing conditions for Aboriginal and non-Aboriginal communities for a given topic (e.g., health care infrastructure and services) forms an aggregate description of existing conditions that is carried forward in the assessment of residual and cumulative effects. Assessment of residual effects is completed at the LAA level in accordance with assessment methods described in Section 3; separate or disaggregated residual and cumulative effects assessments specific to Aboriginal and non-Aboriginal populations (or other subpopulations) was not completed.
200.1	round 1	Metlakatla First Nation	6.3.5	Infrastructure and Services	**As a follow up to screening comment #200** Metlakatla expects to continue these discussions with Nexen in the coming months and for the issue to be resolved by day 90	Aurora LNG has been committed to ongoing consultation with Metlakatla First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 20, 2017, Aurora LNG held Technical Workshop #5 with Metlakatla First Nation to further discuss thecharacterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C.Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documentedMetlakatla First Nationopinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Metlakatla First Nationfor the issues/concerns recorded during all phases of the EA (in table format), including those identified inAboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5.The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order).
201	screening	Northern Health	6.3.5.1	Infrastructure and Services	Partially absent: - No information was provided on how primary and qualitative data was collected and incorporated in the assessment. Both the baseline and effects assessment is missing the importance of qualitative and quantitative data collected at the community level in collaboration with the community. Incorporating community level, disaggregated and qualitative data is very important to getting a true understanding of project baselines and anticipated effects. - while information was provided on the assumptions that were used, it is not clear how robust these assumptions are and whether there will be a committment for the project to align with these assumptions. We have concerns as similar assumptions were used for the assessment of the Pacific Northwest Project (e.g. workers will be housed in camp with minimum numbers residing in the LAA) which were changed a few weeks before submitting the referral package to the Minister for approval (e.g. workers will be housed in an open camp in the community). We recommend that the assessment of impacts include a sensitivity analysis that will consider impacts under different assumption scenarios (e.g. what would happen if 30% decided to reside in the community or only 5% could be hired from the LAA?, what would happen if workers were housed in an open versus closed camp?, etc.).	Section 6.3.3.1 Methods provides an overview of primary and secondary data collection methods. Please also see the response to comment 190 for additional information on primary research (interview) methods. Assumptions provided in Section 6.3.5.1 subsection "Assumptions" are conservative in nature and therefore err on the side of overstating an effect. As such a sensitivity analysis is not warranted. A sensitivity analysis is not within the scope of the Application.
202	screening	Northern Health	6.3.5	Infrastructure and Services	(Part 1 of 2) Partially absent: This section should reference additional guidance documents and best practices for mitigating social impacts of projects of this size and nature and justify why the mitigations that are proposed align with these practices and are sufficient to manage impacts to as low as possible. For instance, we were just notified of two documents developed by the Community Development Institute for the BC Natural Gas Workforce Strategy Committee that talk about best practices and guidance for industrial camps. these would be pertinent to incorporate: Lessons Learned in Work Camp – Community Relations: Practices Making a Positive Difference http://www.unbc.ca/sites/default/files/news/40513/lessons-learned-work-camp-community-relations-practices-making-positive-difference/lessons_learned_in_work_camp-community_relations_-_final_march_2015.pdf Best Practices Guiding Industry-Community Relationships, Planning, and Mobile Workforces http://www.unbc.ca/sites/default/files/news/40513/lessons-learned-work-camp-community-relations-practices-making-positive-difference/best_practices_guiding_industry-community_relationships_and_mobile_workforces_final_-_march_2015.pdf	(Part 1 of 2) Mitigation measures proposed in Tables 6.3-21, 6.3-22, 6.3-23, and 6.3-26 are based on guidance documents and industry best practices (see column "Rationale for Selection" in each table). Aurora LNG acknowledges receipt of the referenced documents. Following the review of these documents it has been determined that conclusions of the residual effect assessments completed in Section 6.3.5 and cumulative effect assessments completed in Section 6.3.6 remain unchanged.
202	screening	Northern Health	6.3.5	Infrastructure and Services	(Part 2 of 2) 6.3.5.2 – Assessment of Change in Community Infrastructure and Services - Mechanisms for Community Infrastrucure and Services is focused on quantitative information and missing important qualitative information. - It is also missing information on major turnarounds and the impacts during early works before the camp is constructed: where will workers be housed and how will infrastructure needs be managed for these times? - to appropriately reflect its purpose, the Social Management Plan should be changed to a "Infrastructure and Services Management Plan" as many important social changes will not be captured if it focuses only on "managing potential direct proejct-related effects on community level infrastructure and services". 6.3.5.3 – Assessment of Change in Accommodations - Project mechanism only looked at project demands and did not consider the LNG industry driven "speculation" impacts on housing and accommodation costs - project mechanism also did not consider accommodation demands during turnaround and early works (before the construction camp is constructed) - Mitigation does not identify what elements will be in the Worker Lodging Plan and whether this will also include details on camp and worker policies (e.g. will workers be given per-diems if they choose not to stay in camp?). Without knowing the details of this Worker Lodging Plan, it is difficult to know whether this mitigation strategy will be successful. 6.3.5.4 – Assessment of Change in Transportation Infrastructure - does not include information of what components will be contained in the Transportation Management Plan. Will it focus mostly on managing volumes or also on ensuring safety (both from a community and worker's perspective), including safety for vulnurable groups beyond traffic accidents? For instance, the "Construction Camps in Communities" provided a snapshot of several easy to implement mitigation strategies that could be used to minimize risks to vulnurable groups and community members which should be explored and incorporated, where possible. 6.3.5.5 – Assessment of Change in Health Care Infrastructure and Services Present	(Part 2 of 2) Change in Community Infrastructure and Services Section 6.3.5.2 Assessment of Change in Community Infrastructure and Services is based on both quantitative capacity information, population modeling and qualitative information such as that obtained during secondary research and key-informant interviews. Varying stages of Project construction and operations (e.g., early works, Phase 1 and Phase 2, peak construction and peak operations) are considered in the assessment of change in community infrastructure and services. The housing of workers during varying stages of Project development is assessed in the subsection "Change in Accommodations". While the proposed social management plan will address effects on infrastructure and services, its proposed design and use in this Application extends beyond mitigating adverse effects on just infrastructure and services (see Section 14); renaming this mitigation measure would prove inaccurate. Change in Accommodations Consideration of industrial development on property values and cost of living is provided in Section 13.5 (Concerns and Issues Not Addressed in Part B of the Application). The fourth paragraph of Section 6.3.5.3 subsection "Characterization of Residual Effects for Change in Accommodations" assesses short-term demand during early works (site preparation and prior to the establishment of an on-site accommodation camp). The sixth paragraph assesses effects on accommodations related to turnarounds during operations. Please see Section 14.1 (Introduction) and 14.12.2 (Worker Lodging Plan) for additional information on the level of detail provided for environmental management plans proposed in the Application and an overview of the Worker Lodging Plan. Change in Transportation Infrastructure Please see Sections 14.1 (Introduction) and 14.12.3 (Transportation Management Plan) for additional information on the level of detail provided for environmental management plans proposed in the Application and an overview of the Transportation Management Plan.
203	screening	Northern Health	6.3.5	Infrastructure and Services	(Part 1 of 2) Partially absent: 6.3.5.2 – Assessment of Change in Community Infrastructure and Services - not clear if emergency and protective services would have the resources to deal with potential industry related accidents and malfunctions. The recent experience with the barge sinking near Bella Bella or the Mount Polley breach has exemplified some of the limitations that exists at the community level to manage major industry related emergencies. While these are low likelihood, high magnitude events, this section should touch upon whether adequate resources exist at the local level to respond to these potential demands. - focus tends to be on whether the existing infrastructure can manage additional demands and does not consider the more complex question around whether services levels and/or quality will stay the same for the local population - impacts from turnarounds were not considered 6.3.5.3 – Assessment of Change in Accommodations - Effects assemssment was only done on the demand and availability of housing and not on important measurable parameters that were included in the "existing Conditions" section, such as cost of accommodation, shelter-to-income ratio and measures of core housing needs. While increased demand can impact these parameters, other factors (like speculation, increased wage inequities, increased costs of living, etc.) would also factor in - missing potential and already realized impacts of speculation - effects assessment and characterization of resiliency does not identify and consider impacts to vulnurable populations - does not include information on the impact that would (and already have been) felt in the RAA, especially Terrace. This should be captured in Table 6.3-27 as well (currently geographic extent is only to LAA) - does not consider the social impacts resulting from a rapid rise, likely to be followed by a rapid fall in housing prices as the project construction ramps up, then down. - this additional information would be required and would need to be carried forwarded into the "Community Health" VC for the rationale to exclude "Physicial environments" on page on page 6.6-15 to hold true.	(Part 1 of 2) Change in Community Infrastructure and Services Potential Project effects on emergency and protective services are addressed in Section 9 Accidents and Malfunctions. Mitigation 6.3.5 and Mitigation 6.3.8 will be used to reduce potential demands on local emergency and protective services. At this time, it is unknown if service levels, or the quality of services will stay the same for the local population. Mitigation measures 6.3.1 and 6.3.4 will be used to monitor and adapt the suite of mitigation measures proposed to appropriately address changes in potential effects over the course of construction. Change in Accommodations The assessment of change in accommodations draws on the description of existing conditions (see Section 6.3.3) which includes consideration of speculation in the overall discussion of the availability and affordability of accommodations within the LAA and RAA. Recognizing the strong relationship between supply and demand of housing and affordability, Section 6.3.5.3 focuses on Project-related changes in population (change in demand) in consideration of Project design (i.e., lodging of Project workers in accommodation camps onsite for the duration of their shifts during all Project phases) and the likelihood of new temporary accommodations within the LAA (together representing changes in supply) to characterize adverse residual effects. While the assessment of change in accommodations provided in Section 6.3.5.3 does not provide a speculative estimate of changes in housing affordability (i.e., quantitative changes in housing payments) conclusions from Section 6.3 are carried forward into Section 13.5.4 where a discussion of cost of living (with additional consideration to vulnerable populations) is provided. The assessment of effects in relation to the social impacts from changes in the demand for housing availability was not included in the scope of measurable parameters identified in Table 6.3.2. Section 6.3.6 assesses cumulative effects at the RAA level (which includes Terrace). Change in Transportation Infrastructure and Services The scope of the assessment as it relates to change in transportation infrastructure and services does not include consideration of potential effects related to a predominately male workforce transiting local roads and highways and contributions to the Highway of Tears / Missing and Murdered Aboriginal Women phenomena. Section 6.6 Community Health notes that mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationships, and that this fly-in/fly-out (FIFO) workforce, while present, will increase the proportion of non-Aboriginal males in the LAA affecting the social determinant of health 'Social Environments'.

203	screening	Northern Health	6.3.5	Infrastructure and Services	(Part 2 of 2) 6.3.5.4 – Assessment of Change in Transportation Infrastructure - did not consider how increasing road use by a potentially dominantly male workforce may increase risks to vulnurable women/children and impact safety not just from an infury perspective (an important facets in light of the important link between transportation safety and the Highways of Tears as well as the recent discussions at the "Construction Camps in Communities" workshop in Prince George) - did not consider traffic impacts from FIFO workers during early works (e.g. before the construction camp is built). How will safety be managed when workers are staying in temporary lodging such as hotels/motels - does not include how the improvements to transportation to and on Digby Island may impact the quality of life for residence on Digby Island - this additional information would be required and would need to be carried forwarded into the "Community Health" VC for the rationale to exclude "Physicial environments" on page on page 6.6-15 to hold true. 6.3.5.5 – Assessment of Change in Health Care Infrastructure and Services - "Project Mechanisms for Change in Health Care Infrastructure and Services" should include information on expected worker demographics (age, gender, etc.), healthcare status (e.g. expected immunization records, overall health status, etc.), likely countries of origin and the health screening that will be provided/required for out-of country workers before arriving on Site. This information is required to assess the risk to health status and services which should be discussed in the effects assessment. If this information is not yet available, a committment should be made to conduct a risk assessment to identify the health risks and demands associated with the expected workforce. This risk assessment should be reviewed and updated at regular project intervals. - missing information on how health service demands will be managed during turnarounds and early works (before an on-site clinic is constructed). Would these demands be managed similarly to those during Construction?	(Part 2 of 2) Section 6.3.5.4 considers increased traffic on roads and highways within the LAA from FIFO local and in-migrating workers, as well as traffic associated with the transportation of goods and materials required during construction and operation. Section 6.6.5.3 provides an estimate of potential motor vehicle fatalities and injuries based on modelled population change (inclusive of direct, indirect and induced population effects) that also accounts for FIFO workers. All workers, even those during early works, will be required to comply with provincial and local motor-vehicle related laws and regulations as well as mitigation measures proposed in Table 6.3-12. Additional information on the Transportation Management Plan can be found in Section 14.12.3. Change in Health Care Infrastructure and Services In BC, privacy laws such as the Personal Information Protection Act. S.B.C. 2003, c. 63 [PIPA] protects a person's health information. Under PIPA, subject to limited exceptions, an employer is prohibited from collecting, using, or disclosing personal information without informed and meaningful consent of an individual. Given the relatively restricted access or potential for the workforce to interact with local populations the need for a full health risk assessment is not anticipated. The proponent, it's employers and the workforce will all be expected to comply with the Occupational Health and Safety (OHS) Regulations and Part 3 of the Workers Compensation Act to ensure the health and safety of the workforce during construction and operation of the Project. All Project workers will be expected to meet minimal fit-for-duty requirements. Potential effects on health service demands from turnarounds were not assessed; however, as the assessed peak operations workforce and major turnaround workforces are relatively similar in size (with respect to potential demand on health care infrastructure and services) and because the same camp and site management policies apply to operation and turnaround workers (e.g., on-site lodging [where workers are required to stay onsite for the duration of their shifts] and the provision of health care services) mitigation measures and conclusions provided in Section 6.3.5.5 are considered appropriate and apply to the turnaround workforce.
204	screening	CEAA	6.3.9 6.3.10	Infrastructure and Services	Reference to develoment of a Social Mgt. Plan as a key mitigation instrument. Should provide an idea as to what key elements this plan would include.	The key elements of the proposed Social Management Plan are outlined in Section 14.12 of the Application.
204.11	round 1	CEAA	6.3.9 6.3.10	Infrastructure and Services	**Aa a follow up to screening comment #204** Sections 6.3.9/6.3.10 should refer to Section 14.12 to substantiate consideration of a Social Mgt. Plan. However, the Social Management Plan described in Section 14.12 provides only a heading list of the sub-plans that comprise it, without any further details. In general, the level of detail provided within Chapter 14 for the Environmental and Operational Management Plans is insufficient. A sufficient level of detail is required to demonstrate the appropriateness, viability, and effectiveness of the plans.	**Reference to Section 14.12 has been added to Sections 6.3.9 and 6.3.10. An errata document is being created that will capture these corrections and it will be filed with the BC EAO. The level of detail provided in Section 14.12 on the Social Management Plan is consistent with the AIR and application of similar scope within northern BC.**
204.12	round 1	CEAA	"6.3.9 6.3.10"	Infrastructure and Services	**"As a follow up to screening comment #204 MOTI Would like to see a Traffic Impact Assessment included as a condition to Aurora's EA Certificate"**	BC EAO to acknowledge this comment and respond as required.
205	screening	Dodge Cove	6.4.2	Land and Resource Use	Table 6.4-2 Fails to include Dodge Cove Improvement Districts' traditional subsistence food gathering in both marine and terrestrial areas. Section 6.4 Fails to include traditional knowledge and traditional use for Dodge Cove Improvement District and residents of Digby Island throughout the section including hunting, fishing, vegetation and marine plant harvesting and gathering. Fails to look at publicly available sources of information, fails to identify use and concerns that was addressed in writing during the public comment period. Fails to include widely recognized sites of use such as Casey Cove, and does not assess affects of changes to the public and Dodge Cove Improvement District on the potential changes to Casey Cove (dredging/MOF/any other plans). Fails to include a map showing all publicly available information regarding trails used on the island, Map 6.4-3 only partially shows existing trails. Fails to acknowledge how the PDA will effectively cut off the community of Dodge Cove Improvement District from the rest of Digby Island, and assess the impacts on land and resource use from that. We believe this information is incomplete and should include these areas.	Information provided in Section 6.4.3 was obtained through the review of readily available public information, geospatial information made available through DataBC and information provided to Aurora LNG during Project consultation (see Section 6.4.3.1 for additional information). While it is likely that not all information sources have been cited, Aurora LNG is confident that the information provided in Section 6.4.3 portrays a reasonable description of existing land and resource use within the LAA and RAA. Issues raised during public review of the AIR have been included where relevant throughout Section 6.4, not limited to the description of existing conditions and residual and cumulative effects assessments. Section 6.4.2.2 documents and summarizes how information obtained through consultation completed by Aurora LNG influenced the assessment of land and resource use. Information on existing use of lands within the LAA by residents of Dodge Cove for subsistence food gathering including vegetation gathering, hunting and fishing is included, as modified following Application screening, in Section 6.4.3.4 (Non-tenured Land Use) under subsections "Hunting", "Fishing" and "Vegetation and Marine Plant Harvesting and Gathering". Use of marine areas is provided in Section 6.5 Marine Use and Navigable Waters. Consideration of changes in access to lands and resources within and west of the PDA (due to PDA access restrictions) are integrated into the assessment of change in non-tenured land use (Section 6.4.3.4) as project mechanisms, and are included in the assessment of "Outdoor Recreation", "Hunting", "Fishing", and "Vegetation and Marine Plant Harvesting and Gathering". Section 6.4.3.4 subsection "Outdoor Recreation" (including figures detailing trails on Digby Island) and Section 6.4.5.3 subsection "Outdoor Recreation" were modified during Application screening to better illustrate use of the trail from Dodge Cove to Wahl Lake, use of Casey Cove, and other unmapped trails within the PDA and LAA. Potential effects on marine fisheries and other uses (e.g., public marine use of Casey Cove) due to dredging and the construction and operation of the MOF are assessed in Section 6.5 Marine Use and Navigable Waters.
206	screening	Gitxaala Nation	6.4.2.2 6.4.2.3	Land and Resource Use	This description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken.	Sections 6.4.2.2 and 6.4.2.3 provide a high-level overview of how consultation influenced the assessment (Section 6.4.2.2) and how TK/TU information was incorporated into the assessment (Section 6.4.2.3). As stated in Section 6.4.2.3, where possible, TK/TU information was directly incorporated into the assessment. Publicly available and Gitxaala Nation-provided TK/TU information was reviewed and presented at the same level as other data sources for a given topic. In addition to direct reference to TK/TU information in Section 6.4.3, TK/TU information referenced in Sections 4.6 (Vegetation and Wetland Resources), 4.7 (Wildlife Resources), and 4.8 (Freshwater Fish and Fish Habitat), further informed the description of existing conditions for vegetation and marine plant harvesting and gathering, fishing (freshwater), and hunting.
207	screening	Lax Kw'alaams Band	6.4.3	Land and Resource Use	More information on existing conditions is required. Comprehensive overview of "Other Vessel Types" (6.5-22) and "Aboriginal Boating Routes" (6.5-40) is missing from the Application. The limited information provided (i.e. Calliou 2016, DMCS and MSS 2016, Pulla 2015, Kitsumkalum First Nation and Crossroads 2016) is not sufficient to allow for an adequacy review to take place on Aboriginal Marine Use and Navigable Waters. Provide more baseline information on other vessel types and aboriginal boating routes to complete the Application.	The assessment used the best available information on shipping traffic. For example, numerous sources obtained from Aboriginal Groups were included (see Section 6.5.2.3 - Traditional Knowledge and Traditional Use Incorporation), the most recent data from the BCMCA, showing boating routes, marinas, marine parks, and other important features, as well as information from the Prince Rupert Port Authority, Pacific Pilotage Authority, Marine Communications and Traffic Services, and Canadian Coast Guard were referenced throughout the assessment to describe baseline shipping traffic and conditions for marine navigation. Aurora LNG acknowledged (in Section 6.5.3.2 - Other Vessel Types) that no reliable marine data were available to quantify small vessel movements in a systematically and spatially relevant way. While additional data pertaining to small vessel movements, and specifically Aboriginal boater movements could be used to supplement the current assessment, additional information is not likely to change the outcome of the assessment. With respect to Aboriginal boating routes, all of the TK/TU studies provided to Aurora LNG by Aboriginal Groups were considered in the assessment. Specific application of this information can be found with reference to the in-text citations.
208	screening	Gitxaala Nation	6.4.3	Land and Resource Use	Section does not identify data gaps	Data gaps are described throughout Section 6.4.3 on a topic-by-topic level in accordance with the AIR. For example, data gaps specific to trapping and outdoor recreation and non-Aboriginal vegetation and marine plant harvesting are highlighted in Sections 6.4.3.3 and 6.4.3.4 respectively.
209	screening	EAO	6.4.3.3 6.4.3.4	Land and Resource Use	Pages 6.4-29, 6.4-62: "Abandoned structures are present within the PDA" and "Potential affects to these structures are negligible and given these are located on Crown lands, no mitigation is required." Please clarify how there are negligible effects to the structures when page 7-17 of Section 7, identifies "Two structures (one standing structure and one dilapidated structure)", which "are not legally protected, [but] they have been assessed to have heritage value based on input from First Nations, other stakeholders and/or the Archaeology Branch's criteria for post-1846 site evaluation." Will the structures not be disturbed via project construction and operations? If so, please describe how you determined the value of these structures as defined by the public or First Nations and the rationale for concluding "negligible effects"? Page 6.4-34: "In the PDA, there are four recreational features for which values are recorded, covering 768 ha and range from medium to high significance and sensitivity. Within the LAA, there are eight recreational features, covering 3,164 ha and ranging from medium to high significance and a medium sensitivity. The rationale for these ratings have not been provided in the GIS databases used in this analysis (see BC MFLNRO 2015c and BC MFLNRO 1998)." Where are the rec features in the PDA/LAA and what are they? How is the rating of "medium to high significance and sensitivity" to the rec features in the PDA/LAA considered in the assessment characterization of effects? Please consult with FLNRO staff to provide further input on these rec features.	The two abandoned structures located in Delusion Bay will likely be disturbed. Section 7.2 (Archaeological and Heritage Resources) assesses these structures as having low heritage value (not legally protected) with no mitigation or avoidance measures proposed. These structures are not associated with any fee simple land or Crown land tenures, leases or licenses. Section 6.4.3.4, notes these same two structures: one derelict structure and one collapsed structure. Observations made during archeological field visits to Digby Island indicate that the derelict structure is located on saturated terrain that likely floods during storm surges while the collapsed structure appears to have not been visited for approximately 20 years. Based on this information and the review of publically available information (including limited information provided by residents of Dodge Cove during public consultation), adverse effects related to non-tenured land use and these structures is characterized as negligible. Identified in the Recreation Features Inventory: Procedures and Standards Manual referenced in the Application (BC Ministry of Forests 1998, p. 21), a recreational feature inventory (RFI) polygon's significance is "a subjective rating used to indicate the relative importance of the polygon to recreation" and is rated on a scale from low to very high. Sensitivity, "a subjective rating indicating the relative vulnerability of the recreation features to potential alterations caused by resource development" (BC Ministry of Forests 1998, p. 22) is rated on a scale from low to high. Information on the rationale behind significance ratings for RFI polygons on Digby Island (i.e., the top three factors contributing to its rating [activity attraction capability, uniqueness, scarcity, scenic view, amount of current recreation use, accessibility, or other]) is unknown as this information is not provided in publicly available datasets. During Application development, the BC MFLNRO was contacted to provide additional information on RFI polygon significance ratings on Digby Island; a response was not received. Regarding the location of these RFI polygons, the entirety of Digby Island, including areas currently altered through existing development (e.g., the communities of Digby Island, Crippen Cove, Casey Cove, and the Prince Rupert Airport etc..), is classified as having moderate significance with the eastern shore of Digby Island from Casey Cove to Crippen Cove as well as the northern and western shore classified as having high significance. The southern shore of Digby Island inclusive of Fraser Point, Lima Point and up to a location approximately lateral with the northern extent of Metford Island is also classified as having high significance. The eastern shore south of Casey Cove from Charles Point including that around Delusion Bay is rated as having moderate significance. RFI polygons within the PDA and LAA are not recognized in higher level (above the RFI) provincial land use plans such as regional land use plans, provincial land and resource management plans, recreation/tourism strategies, park management strategies, archaeological management strategies or sensitive unit inventory's (BC Ministry of Forests 1998 and BC MFLNRO 2015) Regarding these RFI ratings, the Project PDA primarily overlaps areas of moderate significance with the exception of Casey Cove where the PDA overlaps areas of high significance. By comparison, shorelines in Dodge Cove and the entirety of Elizabeth Point and Parizeau Point (where a communication tower is located) fall within areas of high significance. Taken together, the above considerations (that most of the Project falls within RFI polygons rated as having moderate significance, that development already exists within RFI polygons with significance ratings of moderate and high, that polygons have a moderate level of sensitivity to resource development, and that polygons are not recognized in higher level land use plans) were brought forward in the assessment of adverse residual effects. These considerations informed the characterization of adverse residual effects on change in non-tenured land use – outdoor recreation provided in Section 6.4.5.3 (moderate in magnitude during construction and low during operations).
210	screening	Dodge Cove	6.4.3.3 6.4.3.4	Land and Resource Use	Table 6.4-2 This map shows the wide land use plans very well, but it is hard to see the local land use plans such as the overlap of the CNOOC-Nexen Aurora LNG project across the Dodge Cove Official Community Plan. This section should be directed to Figure 6.4-3 instead. Section 6.3.3.3 Under Dodge Cove Official Community Plan, the statement that the "Project PDA overlaps with the periphery of the Dodge Cove OCP totaling approximately 13%...of the total Dodge Cove OCP area." Once the portion of fee simple land is removed from this calculation, the remaining percentage of greenspace/watershed that is overlapped by the Project PDA will be a much higher value. We believe this needs to be properly calculated to show the true reflection of the impact of this overlap. 6.4.3.4 "Structures" The standing cabins in Delusion Bay are not abandoned - they are used seasonally and as needed (places of refuge) by regional residents and local Dodge Cove Improvement District residents. The collapsed structure on the west side of Delusion Bay is still an area that is visited, by regional and local residents, even though the cabin has collapsed. These areas and structures have been consistently used historically and in the present. Existing conditions are not characterized properly. Under "Outdoor Recreation", it says that these areas and structures have been highlighted as areas for recreational use, so this information was received by Nexen and should have been included/assessed under "Structures". Traditional use of Digby Island by Dodge Cove residents is not for just recreational purposes, but for subsistence food gathering/hunting/fishing of all areas listed, and also section 6.4 also fails to take into account ceremonial purposes. Page 6.4-24 This description of Private Lands is very minimal. It does not acknowledge Dodge Cove Improvement District, length of time that Dodge Cove and Crippen Cove have been inhabited, length of time that sportsfishing lodges operated from Dodge Cove. The description does not include global tourists, marine tourists, and Prince Rupert residents. We feel a full description would be needed to accurately portray the extent of land and resource use of Digby Island and surrouding waters. Section 6.4.3.4 "Recreation Sites & Trails" Does not include Casey Cove, or effects that would result from changes in use. "A foot trail was observed in the proposed access road area" yet fails to identify that this trail is many generations old and the trail to Wahl Lake - even though this information was given during the public comment period. Lake Wahl has not been described or assessed with the emphasis Dodge Cove residents has put on the importance of this site. "of the identified trails, only the Frederick Point trail crosses in to the PDA" fails to acknowledge trails in publicly available info and the trail to Wahl Lake. Also does not recognize possibility of other non-recognized trails. Public comments directly referred to these trails, as well as published sources and online. We believe that this section fails to use the available info to accurately address present and historical Land and Resource use and impacts of changes to the present use.	Reference to Figure 6.4-2 remains unchanged in Section 6.4.3.3 (Tenured Land Use and Private Lands) subsection "Land Use Plans" as this subsection introduces, at a high-level, all land use plans applicable to the LAA. As currently stated, the 13% overlap of the Dodge Cove OCP area by the PDA, while likely understated if fee simple lands were removed from the calculation of total OCP area (fee simple lands currently fall within the OCP boundary and therefore does not misrepresent the data), is accompanied by an area calculation of 49 ha which would remain unchanged if fee simple lands were removed from the calculation. Baseline information presented in Section 6.4.3.4 is based on publicly available information, information provided to Aurora LNG during Application development from Dodge Cove and that obtained during archeological field visits to Digby Island. Noted in Section 6.4.3.4 are two identified structures in Delusion Bay, one derelict structure and one collapsed structure. Observations made during archeological field visits to Digby Island indicate that the derelict structure is located on saturated terrain that likely floods during storm surges while the collapsed structure appears to have not been visited for approximately 20 years. Intensity information regarding the use of the collapsed structure as provided in this comment was not provided to Aurora LNG at the time of writing. Information on existing use of lands within the PDA by residents of the LAA including Dodge Cove for subsistence food gathering including vegetation gathering, hunting and fishing is included, as modified following Application screening, in Section 6.4.3.4 (Non-tenured Land Use) under subsections "Hunting", "Fishing" and "Vegetation and Marine Plant Harvesting and Gathering". Ceremonial uses of lands within the PDA as used by Dodge Cove residents was not considered in Section 6.4. Baseline information provided in Section 6.4.3.3 subsection "Private Lands" primarily focuses on fee simple lands within the LAA with high-level qualifying information on the use of these lands provided as context. This information includes population estimates, mention of the once operational Great Pacific Salmon Lodge, and tourist use (limited information available) of the area. Historical information such as the founding and length of time Dodge Cove has been inhabited is not included in this section. Section 6.4.3.4 subsection "Outdoor Recreation" (including applicable figures) and section 6.4.5.3 subsection "Outdoor Recreation" were modified during Application screening to better illustrate use of the trail from Dodge Cove to Wahl Lake, use of Casey Cove, and other unmapped trails within the PDA and LAA.

211	screening	Dodge Cove	6.4.5.3 6.4.5.4	Land and Resource Use	Aurora LNG will continue to reach out to and engage stakeholder groups to help identify the loss of recreational use values and find potential ways to offset these residual effects. A Social Management Plan will also be developed and implemented to manage potential social effects of the Project and enhance potential benefits." Will Frederick Point Trail, shoreline, recreation sites continue to be accessible to the public during project construction and operations? How will they be degraded? Please clarify the extent to which removal or degradation of recreation sites and sites of interests will be mitigated or how a Social Management Plan (or other such plan or process) may address the effects.	Residual effects will primarily occur within the PDA where access will be restricted. Typically, a restriction of access to outdoor recreational areas would result in users shifting activities to other areas. The Project will occupy 23% of the LAA, and thus remove a substantial proportion of Digby Island from potential recreational use. Access and use of existing unmapped trails within the PDA, including that from Mount Comblain to Wahl Lake, will be affected; however, Aurora LNG is open to incorporating mechanisms to provide safe access for pedestrian traffic from Dodge Cove across the planned access road. Additional areas, for example, beaches along the west side of Digby Island and the Frederick Point Trail may be affected due to reduced accessibility. Aurora LNG will inform local communities within the LAA and identified stakeholders of the location and timing of Project activities, and other Project-related information.
212	screening	EAO	6.4.9 6.4.10	Land and Resource Use	(Part 1 of 2) Page 6.4-95: "residual effects for tenured land use and private property are predicted to be negligible to high (with reference to LAA private land owners) in magnitude during construction" and "Project residual adverse effects on change in tenured land use and private property are not significant because the Project is not anticipated to change or disrupt present tenured land use capability to a point where the activities cannot continue at or near current levels or where compensation is not possible." But if magnitude of effects during construction may be high, how do we know activities can continue at current levels or are compatible? How did you consider potential compensation in effects assessment? Who are the potentially affected land/resource users who will be compensated, what is the compensation, and what are the views of those users on the componensation as mitigation? Page 6.4-95: "Typically, a restriction of access to outdoor recreational areas would result in users shifting activities to other areas. This is more difficult in Digby Island because it is not connected by road to the mainland. Thus residents may need to rely on personal boats to travel to other recreational sites, and travel to such sites will involve time and expense. Recreational users believe that the proposed Project will adversely affect the remoteness of recreational areas on Digby Island." "The removal of recreational areas within the PDA and the physical separation of users from other recreational opportunities have the potential to adversely affect recreational land use in the LAA and are anticipated to be moderate in magnitude as 23% of the LAA will be removed from recreational use for the PDA. Based on the information available for the assessment, although the proposed Project will remove and reduce access to land for recreational use, land within the PDA appears to be lightly used for recreation. There are alternative lands within the LAA and the RAA available for recreational use. Project residual adverse effects on change in non-tenured land use are therefore predicted to be not significant." Given the constraints described, how might significance of effects on recreational features be defined specifically for residents of Digby Island as opposed to others in the LAA/RAA who may more easily have access to alternative places? Page 6.4-95: "With mitigation and environmental protection measures, the residual cumulative effects on the land and resource use are predicted to be not significant due to the availability of recreational opportunities in the RAA." Number of rec opportunities in RAA should be only one factor in determining significance… do we know the value of the Digby Island rec opportunities in relation to the rest of the RAA? For example, given the proximity of Digby to Prince Rupert and in consideration of the loss of shoreline access, etc due to regional port/industrial development, is this the most valuable place to recreate in a marine/island environment? How might significance of effects on recreational opportunities be defined specifically for residents of Digby Island as opposed to others in the LAA/RAA who may more easily have access to alternative places?	(Part 1 of 2) Private Property Section 6.4.5.2 subsection "Private Property" characterizes residual effects on private property within Dodge Cove and Crippen Cove. The characterization of residual effects on private property provided in this section considers potential nuisance effects from Sections 4.2 (Air Quality) and 4.4 (Acoustic environment) for receptors at/near Dodge Cove and Crippen Cove. These nuisance effects on private property owners are considered moderate in magnitude (this aligns with residual effect characterizations provided in Sections 4.2 and 4.4 for receptors in Dodge Cove). Potential effects on private property also considers the presence of a fly-in/fly-out (FIFO) workforce on Digby Island. Since onsite workers (inclusive of FIFO workers) will be discouraged from leaving the PDA for the duration of their shifts and in consideration of mitigation measures proposed in Table 6.4-16, adverse effects due to the presence of the FIFO workforce on private property owners within the LAA is considered moderate in magnitude. However, as the assessment takes a conservative approach to assessing adverse residual effects, a high magnitude characterization is provided for overall effects on private property. The high magnitude characterization accounts for nuisance effects, the presence of the FIFO workforce and accounts for incomplete data and uncertainties related to potential changes in property value, quality of life and community identify (see Section 13) that may affect private property. For this reason, while a high magnitude characterization is provided it is still expected that activities will be able to continue at or near current levels. Compensation for private property owners is not proposed as a mitigation measure in Section 6.4.5.2.Rather, a broader commitment to continue to engage with affected private property owners within the LAA for the purpose of discussing implications of the proposed Project on private property with the goal of developing methods to reduce effects is proposed (see mitigation 6.4.1). Compensation – Tenured Land Use Section 6.4.5.2 outlines tenured land users that will be affected by the Project. Users include the trapline holder (who will be compensated in accordance with the BC Registered Trapper and Petroleum Industry Agreement on Notification and Compensation – mitigation 6.4.3) and operators of electric power lines and BC Timber Sales (relates to the removal of merchantable timer from the PDA and effects on annual allowable cut) who will be engaged by Aurora LNG to discuss implications of the proposed Project and develop methods to reduce effects (mitigation 6.4.1). At the time of writing holders of tenured land and private property owners had not been questioned regarding their views on compensation. Outdoor Recreation – Significance for Residents of Dodge Cove A significance determination solely based on changes in recreational opportunities for Dodge Cove residents is not provided in the Application. In accordance with the AIR a significance determination for Project residual effects is provided at the LAA level (Digby Island) for the effect 'change in non-tenured land use' (see Section 6.4.7.1). However, since the LAA is Digby Island (and therefore the assessment of residual effects is focused on users of recreational opportunities on Digby Island) the characterization of adverse residual effects is primarily based on changes in use of access to recreational sites and trails by residents of Digby Island. Although this is the case, the characterization also accounts for users that visit Digby Island but of whom are not residents of the island.
212	screening	EAO	6.4.9 6.4.10	Land and Resource Use	(Part 2 of 2) Page 6.4-95: "With mitigation and environmental protection measures, the residual cumulative effects on the land and resource use are predicted to be not significant due to the availability of recreational opportunities in the RAA." Number of rec opportunities in RAA should be only one factor in determining significance… do we know the value of the Digby Island rec opportunities in relation to the rest of the RAA? For example, given the proximity of Digby to Prince Rupert and in consideration of the loss of shoreline access, etc due to regional port/industrial development, is this the most valuable place to recreate in a marine/island environment? How might significance of effects on recreational opportunities be defined specifically for residents of Digby Island as opposed to others in the LAA/RAA who may more easily have access to alternative places?	(Part 2 of 2) Further applying this rationale, while individuals engaged in hunting, fishing and vegetation and marine plant harvesting and gathering (other non-tenured land uses assessed in Section 6.4.5.3 from which the significance determination in Section 6.4.7.1 is informed), effect characterizations made for these non-tenured land uses predominately related to change in use and access by residents of Digby Island (the LAA). As this is the case, the significance determination provided in Section 6.4.7.1 for non-tenured land use directly and most accurately applies to residents of Dodge Cove and Crippen Cove. Outdoor Recreation – Value of Recreational Opportunities and Alternatives Similar to above, a significance determination solely based on changes in recreational opportunities for Dodge Cove residents in consideration of ease of access to alterative/additional recreational sites by residents of the RAA living outside Dodge Cove and Crippen Cove is not provided in the Application. While the quoted text focuses on alternative recreational opportunities, this is just one consideration (primarily used as context) considered in Sections 6.4.5.3 (Residual Effects on Non-Tenured Land Use) and 6.4.7.1 (Significance of Project Residual Effects) as it relates to outdoor recreation. Additional measurable parameters that inform the overall assessment of change in non-tenured land use (as set out in the AIR and introduced in Table 6.4-3) include the area (ha) of current recreational use, access to use areas and intensity of use of area. Together these measurable parameters in conjunction with contextual information (i.e., the availability of additional recreational opportunities with the RAA) inform evaluation against the significance threshold presented in Section 6.4.2.8. Section 6.4 does not attempt to value recreational opportunities within the LAA relative to the RAA but rather assesses all identified recreational sites, trails and activities as having intrinsic value to its users (whether in the PDA, LAA or RAA). The assessment does however qualify intensity of use of recreational sites and trails as well as recreational opportunities related to hunting, fishing, and vegetation and marine plant harvesting and gathering. This qualification is provided in the description of existing conditions for non-tenured land use (see Section 6.4.3.4) and carried forward into the assessment of residual effects (Section 6.4.5.3).
213	screening	Metlakatla First Nation	6.5.2	Marine Use and Navigable Waters	During the AIR, Metlakalta noted the importance of assessing both real and perceived risk of access and use of marine areas/resources. For example, the perception among marine users that they are "at risk" on the water due to increased shipping activity can dissuade users from participating in harvest activities. Including perceived risk as a measurable parameter would ensure an understanding of the potential impact and ways to mitigate.	Aurora LNG recognizes that Metlakatla First Nation are concerned about real or perceived safety risks to other marine traffic as a result of additional LNG traffic associated with the Project. To address concerns related to real and/or perceived risks to navigation safety, the Project has committed to a number of mitigation measures (Table 6.5-14) that will reduce the likelihood of negative interactions between LNG carriers and other marine traffic. The mitigations proposed consequently address real and perceived safety concerns. Perceived risk, in particular, is addressed through the commitment to conduct safe shipping workshops aimed at promoting safe navigation around shipping traffic for other mariners (mitigation 6.5.5). One of the objectives of these workshops would be to address perceived risks of small vessels navigating around LNG carriers and other large traffic. The other mitigations to improve marine safety (Table 6.5-14), include creation of a marine activities plan to share information on construction activities with mariners, the use of Automatic Identification Systems (AIS) by all LNG traffic, implementation of speed limits, and use of marine pilots and escort tugs.
213.1	round 1	Metlakatla First Nation	6.5.2	Marine Use and Navigable Waters	**As a follow up to screening comment #213** A potentially effective mitigation would be to understand diurnal and seasonal travel patterns of First Nation fishers and avoid LNG carrier shipping during those times, as opposed to putting the onus on fishers to adjust their schedules according to shipping itineraries. Note that the majority of mitigation measures involve information that will "allow" First Nations to modify behaviour to ensure safety. This represents an infringement on rights within traditional territories. This impact needs to be appropriately recognized and described.	Aurora LNG acknowledges this concern and has proposed multiple mitigation measures that are expected to reduce potential effects on marine fisheries and navigation (see Tables 6.5-13 and 6.5-14 in Section 6.5 of the Application). Aurora LNG is not proposing that Aboriginal Groups modify their behaviour as a mitigation measure to shipping traffic. However, there is an expectation that all vessels on the water follow maritime rules, regulations, and safe practices. For example, the navigation of vessels operating in Canadian waters is governed by the Collision Regulations. The regulation aims to reduce the chances for a collision at sea, and applies to all marine vessels. The regulations require that a lookout is maintained, and that the navigator is aware of existing conditions. This also serves to keep small boats clear of the hazards associated with getting too close to any large ship. The determination of appropriate clearances isat the discretion of the local authority on a site-specific basis. Aurora LNG would be pleased to discuss this further with Metlakatla First Nation during the remainder of the Application review, including during Technical Workshops..
214	screening	Lax Kw'alaams Band	6.5.2.2 6.5.2.3	Marine Use and Navigable Waters	As per above comments: Aurora states information was obtained on TK and TU from Aboriginal Groups through consultation, information gathering and voluntary information sharing (e.g. Project-specific studies); however, Aurora does not describe how it was integrated into the assessment. Aurora ambiguously states "This information was reviewed and considered during the preparation of the Application, and has been incorporated into the assessment, where applicable" (4.2-3). This information is pertinent to understand the potential Project interactions, effects, and impacts on Lax Kw'alaams. Please coherently and transparently describe how TK and TU from Aboriginal Groups was integrated into the assessment. Furthermore, if Aurora finds that obtained TK and TU data is not applicable, please explain why and how it came to that conclusion.	Section 6.5.2.3 - Traditional Knowledge and Traditional Use Incorporation, provides a detailed list of documents included in the assessment of Marine Use and Navigable Waters in Section 6.5 of the Application. When information from this list was used in the Application, it was referenced using in-text citations, with the full details of each reference provided in Section 6.5.11 - References. All of the TK/TLU studies provided to Aurora LNG by Aboriginal Groups were considered in the assessment. The application of this information specific to marine use and navigation can be found with reference to the in text citations.
215	screening	Lax Kw'alaams Band	6.5.3.2 6.5.8	Marine Use and Navigable Waters	More informaiton on the quality and reliability of information is required. The AIR requires the Proponent to discuss the quality and reliability of information sources (e.g., gaps, insufficiencies and uncertainties) that are consulted and how the data is used to describe existing conditions and support the assessment and future monitoring activities (AIR 3-31). As Aurora states in 6.5.8 Prediction Confidence "there were limitations in the level of spatial detail available to describe some fisheries. These limitations, and some uncertainty surrounding the timing and opening of some fisheries, are matters that could improve prediction confidence if better data were available". Please incorporate the quality and realiability of information sources in the existing conditions section in order to fulfill AIR requirements.	The limitations of the fisheries data used in the assessment of Marine Use and Navigable Waters is discussed in Section 6.5.8 - Prediction Confidence, and not in Section 6.5.3 - Existing Conditions for Marine Use and Navigable Waters. However, the following additional supporting information relating to the prediction confidence as presented in Section 6.5.8 - Prediction Confidence, with respect to the fisheries data used in the assessment: The majority of the fisheries spatial data available from DFO are based on outdated and short time series of information. For example, the spatial data range from 9 - 13 years old (from the last year of data collection), with information collected consecutively for 4 - 20 years. Moreover, some spatial data were collected (or amalgamated) at a relatively coarse scale (from 2 - 10 km squared grids) limiting the ability, in some cases, to focus on specific areas relevant to the Project, or overstating the potential overlap of the fishing grounds with the shipping route. Overall, it is important to note that while fishing practices are not expected to change drastically from year to year, prediction confidence would increase if more recent data were available.
216	screening	Transport Canada	6.5.2.1	Marine Use and Navigable Waters	Comment 686 in the AIR tracking table states that "All potential shipping routes will be included in the Application". In the information provided Aurora only identifies what is known as the "Primary Route" from Triple Island through Chatham Sound. Port of Prince Rupert at present is using three different routes for inbound and outbound vessels from Triple Island to the Port. Depending on different factors such as traffic and size of ships the pilot chooses what will be the best route for a particular vessel in a given point of time. All these multiple routes are used by the pilots presently for large ships approaching Prince Rupert Port. It will be beneficial to elaborate on all these navigational routes for the benefit of clarity and more detail, as committeed to in the AIR tracking table. The Application should describe these routes, how often they would be used and the differences in environmental effects. The 500m control zones do not appear to match up with the ones in the figures assuming it's 500m from a central point , in which case it would impact the navigation channel. TC has no authority to create such zones, PRPA could create them, but would be responsible for the enforcement and impacts. Currently PRPA maintains a 50m safety zone around all works in the Harbour.	Only the primary shipping route is being fully assessed in the Application as this is the route that will be used the majority of the time. It is expected that alternate routes would be used infrequently and only during inclement weather events or periods of high traffic volume. Section 6.5.2.5 of the Application was revised during screening to recognize that alternate routes are available to LNG carriers. It is acknowledged that the use of those alternate routes would be at the discretion of the BC Coast Pilot. As described in Section 6.5.2.5 (Boundaries), the proposed control zones are 500 m in diameter, surrounding each berth, as depicted in Figure 6.5-2. Further reference to the control zones is made in Section 6.5.5.1 (Analytical Methods).
216.1	round 1	Transport Canada	6.5.2.1	Marine Use and Navigable Waters	"As a follow up to screening comment comment #216 The TERMPOL Review Guidelines set out a maximum possible scope of assessment for vessel safety and the risks associated with vessel manoeuvres and operations. If/when the proponont volunteers to have a TERMPOL review conducted (interest has already been expressed to TC), the proponent, in consultation with the Termpol Review Committee will select the most appropriate scope for the project after considering existing shipping activities in the area and/or unique circumstances. TERMPOL reviews will typically include; vessel operations in Canadian waters along the proposed shipping route(s) to and from the marine terminal. The analysis area includes alternate approach routes, from the western point of Dixon Entrance and from the southern entrance of the Hecate Strait; and, project LNG carrier characteristics, navigability, vessel routes in Canadian waters, other waterway users, the marine terminal and cargo transfer operations. "	Aurora LNG acknowledges this comment from Transport Canada and looks forward to working on the TERMPOL process in the future.
217	screening	Transport Canada	6.5.4	Marine Use and Navigable Waters	Comment 689 in the AIR tracking table states that the potential for impact of sight lines of smaller vessels will be addressed as part of the assessment of the Marine Use and Navigable Waters VC. There is no assessment of glare or sight lines in this section of the Application. in Table - 6.5-12 TC believes there is an interaction between navigation and dredging/disposal at sea. This assessmnet should be added.	Following the Application screening, Table 6.5-12 was updated to indicate an interaction between navigation and dredging and disposal at sea. Interactions between marine navigation and dredging and disposal at sea are discussed in Section 6.5.4.1. Subsequently, interactions between these construction activities and marine navigation were determined to not represent a worse-case scenario and were not assessed further. Rather, the assessment focused on LNG shipping traffic during operations because LNG carriers are much larger, move at higher speeds, require escort tugs and marine pilots, and will occur regularly for a minimum of 25 years. Despite this, as noted in Section 6.5.4.1, all relevant marine mitigation measures proposed in Section 6.5 apply to construction and decommissioning traffic including that related to dredging and disposal at sea. For information on Project effects related to glare and obstructions to sight lines for smaller vessels, Aurora LNG will be preparing a supplemental memo to address navigational sight lines and potential glare effects. Aurora LNG will follow up with EAO to confirm the exact timing of submission of this memo but it is anticipated to be available in mid-February.
217.1	round 1	Transport Canada	6.5.4	Marine Use and Navigable Waters	"As a follow up screening comment #217 TC expects Aurora LNG to submit a follow up memo on navigational site lines and potential glare effects to TC and the EAO. How many disposal at sea barge trips will be needed for this project? And how often? Will any channels be restricted during this activity? This information would feed into the analysis on local marine usage. The proponent should include the traffic from disposal at sea activities in the area. "	See the "Navigational Sight Lines and Glare Effects" and "Effects of Additional Project-Related Traffic" technical memos which will be filed with the BC EAO.

218	screening	Lax Kw'alaams Band	6.5.5.1	Marine Use and Navigable Waters	Marine Navigation is a critical element in this EA for Lax Kw'alaams and has been underassessed herein (as well as in Sections 11.3 and 12, where similar comments are provided). The potential effects of the project on limiting access to the waters around the Prince Rupert Harbour area must be included in estimating potential infringements to Lax Kw'alaams' Aboriginal rights. Perceived risks by Aboriginal people around navigation requires fulsome assessment – people will not go where they don't feel safe. To gauge this factor, this EA must include measureable parameters for navigation such as increased risk of incident, increased perceived risk and likely area of avoidance/alienation for Aboriginal navigators, reduction in available navigation area, increased pressure on alternative navigation routes, and altered enjoyment of the LAA by recreational and traditional users. Please include consideration of these issues in this section, as well as in Sections 11.3 and 12.	The assessment of Marine Use and Navigable Waters (Section 6.5) includes measurable parameters as per the AIR, which were developed with input from the Working Group. These measurable parameters are considered appropriate for the assessment. Section 6.5 includes assessment of small vessel access, primarily via displacement by LNG traffic and wake wave effects. With respect to marine safety, real or perceived risks, please see response to comment #213.
219	screening	Dodge Cove	6.5.5.2 6.5.5.3	Marine Use and Navigable Waters	6.5.5.3 This area is not showing in the Table of Concordance. 6.5.5.3 This process is not completed at the time of the application. A robust regulatory framework is required prior to the development of projects of this scale and scope. At present, regulations do not exist. This needs to be addressed for the project to be properly reviewed.	Aurora LNG understands your question to be that Section 6.5.5.2 - Assessment of Change in Marine Navigation and Section 6.5.5.3 - Assessment of Change of Marine Fisheries and Other Uses, are not in the Table of Concordance. These two sections are included on page xliii of the Table of Concordance. Aurora LNG is not responsible for creating provincial regulations or regulatory frameworks. Rather, they are required to follow provincial guidelines and adhere to federal or provincial recommendations. Aurora LNG is confident that the proposed Project has been properly assessed for potential effects and that those effects can be mitigated.
220	screening	CEAA	6.5.9 6.5.10	Marine Use and Navigable Waters	Commitment to develop a Marine Activites Management Plan, which would presumably include BMPs and mitigation measures. A commitment to develop a plan is insufficient. Management plans must be presented in sufficient detail at this stage to provide a comprehensive sense of mitigations and comittments. These elements need to be in place to inform the decision-making process.	Aurora LNG's commitment to develop a Marine Activities Management Plan is in line with other similar proposed projects in the region (namely LNG Canada). Aurora LNG cannot specify the exact details of the plan at this point in the project planning and review process. However, the commitment to develop the plan is made to keep mariners apprised of all construction activities. The plan is expected to include mitigation measures, permitting conditions, and relevant industry practices to reduce potential effects on marine navigation according to the construction schedule, equipment used, and magnitude of additional marine traffic.
220.1	round 1	CEAA	6.5.9 6.5.10	Marine Use and Navigable Waters	**As a follow up to screening comment #220** Issue remains outstanding. Under Section 5(1)(c) of CEAA 2012, marine navigation should be taken in to account in the environmental assessment insofar as it may cause changes to the environment that impacts the current use of lands and resources for traditional purposes, and socio-economic effects with respect to Aboriginal peoples. A commitment to develop a plan to address effects on marine navigation is not a substitute for providing specific mitigation measures that address these effects within the EA. Also see Agency response to ID # 204 above.	As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce Project effects on marine areas, marine users, and other stakeholders. Aurora LNG proposes to develop this plan through engagement with appropriate regulatory agencies, Schedule B Aboriginal Groups, marine users, and other interested stakeholders. The Marine Activities plan is one of several mitigation measures proposed to address effects on marine navigation and use (see Application Table 6.5-13 and 6.5-14) Through the proposed Safe-Shipping Workshops, TERMPOL study, and Aurora LNG's participation on the PRPA's Marine Construction and Coordination Committee (MCCC), additional mitigation measures may be developed to further reduce potential Project effects. The Marine Activities Plan will be developed during the detailed design process following a Project approval decision by both BC and CEAA.
221	screening	Metlakatla First Nation	6.6.2	Community Health	During the AIR process, Metlakatla noted the importance of examining the link between health, country food consumption and participation in food harvest and gathering. Participation in harvest has a strong social/mental/spiritual health component for the Aboriginal population. Furthermore, participation rates suggeset a degree of knowledge transfer is taking place among generations. The project has the potential to impact participation rates. Only measuring food consumption or harvest levels fails to recognize the importance of participating in gathering activities. Theoretically, consumption rates could be very high whereas participation rates very low (i.e. only a small number of gatherers providing food for a larger number of consumers). Both are important. Participation rates should be included as a measurable parameter in the community health section.	The assessment of a potential change in harvested foods considers the measurable parameters 'volume of foods harvested' and 'harvested foods consumption' in accordance with the AIR. Conclusions from this assessment (and other relevant VCs in the Application) informed Section 11.3 (which addresses specific requirements of CEAA 2012) and Section 12.3 (which considers in detail how the Project could potentially affect the Aboriginal Interests of Schedule B Aboriginal Groups). In particular, Section 12.5.5.7 (Assessment of Effects on Metlakatla First Nation Cultural Wellbeing) considers the importance of participation in traditional activities and effects on knowledge transfer under the subsection "Interruption to Cultural Transmission Between Generations" and Section 12.5.5.11 (Assessment of Effects on the Right to the Enjoyment of the Highest Attainable Standard of Physical and Mental Health) considers health-related effects.
221.1	round 1	Metlakatla First Nation	6.6.2	Community Health	**As a follow up to screening comment #221** It remains unclear why FSC participation is not included in Part B with a measurable parameter. Metlakatla raised this issue early and throughout the AIR process, providing participation rate data for its members.	As per responses to screening comment #251 on the draft Application Information Requirements (AIR), in accordance with AIR requirements (specifically Table 6-9) and identified in Table 6.6-2, measurable parameters to be considered in the qualitative assessment of change in harvested foods include volume of foods harvested and harvested food consumption. Consideration of (FSC) participation rates are not a requirement of the AIR. Noted in screening comment #251 of the draft AIR, Section 11.3 addresses specific requirements of CEAA 2012 regarding the effects of the environment on Aboriginal peoples, commonly referred to as the 5(1)(c) effects (i.e., health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance). In addition, Section 12 assesses how the project could potentially affect the interests of Schedule B Aboriginal Groups. Section 11.3.8.3 assesses Metlakatla First Nation members' ability to conduct traditional practices within their traditional territory due to changes in consumptive land and resource use for traditional purposes and changes in non-consumptive land and resource use for traditional purposes. Section 11.3.8.4 assesses how Metlakatla member health may be affected by changes in air quality, harvested food quality or quantity, and noise levels. Section 11.3.8.5 assesses how Metlakatla socio-economic conditions may be affected by changes to visual quality, the acoustic environment, or harvested foods. Section 11.3.8.6 assesses how Metlakatla physical and cultural heritage may be affected by changes to archaeological and heritage resources, and changes to consumptive and non-consumptive use of lands and resources for traditional purposes. Section 12 assesses effects on Metlakatla First Nation Cultural Wellbeing (see Section 12.5.5.7) including consideration of participation in cultural and spiritual activities (see the subsection 'Change in Locations, Landforms, Natural Features and Access Routes Associated with Cultural and Spiritual Use or Place Name-Names") and cultural transmission (see subsection 'Interruption to Cultural Transmission Between Generations'). Through mitigation 6.3.11, Aurora LNG will engage with local communities and Aboriginal Groups to address community concerns associated with the Project. Issues and concerns related to Project-influenced changes in participation rates, should they occur, could be further addressed through this mitigation measure.
222	screening	Northern Health	6.6.2.1 6.6.2.2	Community Health	Partially missing (Influence of consultation on assessment): - A number of national and international guidance documents exist for the assessment of health impacts, some (but likely not all) of which are listed in our Standard Comments document and/or our Communities Toolkit (https://northernhealth.ca/YourHealth/PublicHealth/OfficeofHealthandResourceDevelopment.aspx) . These should be included and referenced in this and following section, including: Health Canada's Canadian Handbook on Health Impact Assessment; International Finance Corporation's (IFC) Performance Standards on Environmental and Social Responsibility; National Collaborating Centre for Healthy Public Policy's Health Impact Assessment (HIA): Guides and Tools; The International Association for Impact Assessment (IAIA) Best Practice Principles and Guidance Documents; International Petroleum Industry Environmental Conservation Association (IPIECA) and International Association of Oil and Gas Producer's A Guide to Health Impact Assessments; American National Standard Institute/American Petroleum Institute Community Engagement Guidelines; etc.. Information on how the methodologies within the Application meet or do not meet these guidance documents should be provided. - While this section refers back to section 13 (Public consultation), it is missing detail on how public, regulator and stakeholder consultation was conducted specific to Infrastructure and Services and how this was incorporated into the effects assessment. For instance, what were the interview/meeting questions that were posed? How were representatives identified and how were the meetings facilitated? How was the raw data summarized and incorporated into the assessment. Which stakeholders were contacted specifically for this portion of the assessment? Detail of how raw data was obtained and then converted to the effects assessment for the purpose of this section should be provided in this section as well as appendices of the raw or detailed data should be referenced in an Appenix. These methods can significantly impact the value of the information that was obtained.	Numerous national and international guidance documents exist for the assessment of health impact assessment with each providing a slightly different guidance approach and/or view on methods but ultimately are founded on similar frameworks. While not all of the referenced guidance documents were applied to the assessment of Community Health, as noted in Section 6.6.5.1 subsection "Analytical Assessment Techniques for Community Health", "Qualitative methods were informed through the review of publicly-available literature on Health Impact Assessment available from Health Canada (1999a) and Habitat Health Impact Consulting and ERM (2009)." In addition, the International Finance Corporation's (IFC) Performance Standards on Environmental and Social Responsibility were reviewed and informed the development of mitigation measures and effect assessments (reference can be found in Section 6.6.11). Please see comment #190 for a response to the second half of this comment. While comment #190 provides references to Section 6.3 Infrastructure and Services, the same methods were used in Section 6.6 Community Health.
223	screening	Northern Health	6.6.2.2 6.6.2.3	Community Health	Partially missing: See comments above. While a reference to aboriginal consultation and traditional use/knowlewedge was provided, details of how information from these very important sources of information was obtained, and incorporated into this specific section is missing.	Sections 6.6.2.2 of the Application provides a high-level overview of how consultation influenced the assessment and Section 6.6.2.3 provides a high-level overview of how TK/TLU information was obtained, assessed and incorporated into the assessment of Community Health. Detailed methodological information regarding the review and incorporation of this information is not provided (and was not a requirement of the AIR). Reference to information provided by Aboriginal Groups is provided where relevant throughout Section 6.6.3. Additional Information on Aboriginal consultation is provided in Section 12 (Aboriginal Consultation).
224	screening	Gitxaala Nation	6.6.2.2 6.6.2.3	Community Health	This description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken.	Sections 6.6.2.2 of the Application provides a high-level overview of how consultation influenced the assessment and Section 6.6.2.3 provides a high-level overview of how traditional knowledge and traditional use information was directly incorporated into the assessment, where possible. Publicly available and Gitxaala Nation-provided TK/TLU information was reviewed and presented at the same level as other data sources for a given topic.
225	screening	Northern Health	6.6.2.5	Community Health	Partially missing: While spatial boundaries were provided, justification of why these boundaries were adequate (as noted in the AIR) were not provided. Learnings from the recent Health Impact Assessment conducted for the Mount Polley illustrates that a robust understanding and assessment of which communities will be or are being affected by a project is a crucial first step to a thorough assessment of community health impacts. While the boundaries align with those described in the AIR and a simple rationale was provided in the AIR for why these were selected, the Application should provide a thorough justification based on community engagement and an understanding of project effects for why these assessment boundaries are adequate. Anecdotally, we understand that just the "LNG Planning Boom" has had community health impacts as far reaching as Prince George as community members have had to re-locate to communities where better social services were available, leading to increased homelessness and drug use in downtown Prince George and subsequently increased reliance on our methadone clinic in Prince George. It would be important for this assessment to confirm or refute this anecdotal information that has been provided to Northern Health.	The spatial boundaries for Community Health are identified and justified in Section 6.6.2.5 subsection "Spatial Boundaries" per requirements of the AIR. The spatial boundaries were established following Working Group and Public review of the draft AIR. Additional discussion in the Application on the adequacy of the selected spatial boundaries is not a requirement of the AIR.
226	screening	Northern Health	6.6.2.5	Community Health	Note: We would recommend that a differentiation be made between early works (before the construction camp is constructed) and construction as well as regular operations versus turnarounds as impacts will be different for each phase of this project.	While not identified as a temporal boundary in the assessment of Community Health (Section 6.6.2.5), the differentiation between Phase 1 and Phase 2 Project buildout, site preparation (early works), peak construction, peak operation and minor and major turnarounds has been made throughout Section 6.6.5 where relevant. The assumptions regarding the timing, required workforce, and accommodation of workers for each Phase and construction and operation stage is detailed in Section 6.6.5.2 (Assumptions).

227	screening	Northern Health	6.6.3	Community Health	Partially missing: While we appreciate the inclusion and consideration of the determinants of health, we do not agree with the rationale that was provided in Table 6.6-6 for excluding some very important determinants of health from this section. Where reference was made to previous sections (e.g. economic conditions and infrastructure and services), these sections appear to be missing importance aspects that would be needed to be able to appropriately consider impacts on the community health section (e.g. see comments made above). This is at least the case for the sections that we reviewed ny Northern Health as part of the screening (limited to Infrastructure and Services) but likely also the case for the Economic section (for instance, was the recent increase in cost of living/housing linked to the significant recruitment challenges that it has imposed on recruiting medical professionals?) . Additionally, the results within these sections would need to be carried forward into the Community Health section, for these to be discussed within a community health lense (relating them not only to impacts to economic/ infrastructure conditions but also to community health conditions). Gender, culture, and early childhood development should also not be excluded, especially given recent reports for the Northern Health region that have identified the importance of these in relation to resource development and/or the health status of the region (see: https://www.amnesty.ca/sites/amnesty/files/ Canada%20Site%20C%20Report.pdf, https://northernhealth.ca/Portals/0/About/Community_Accountability/documents/ Northern-Health-CMHO.pdf). The likelihood for the project to change the gender composition in the LAA/RAA, for instance, is very important for community health outcomes. It should be noted that the physical environment refers to more than just the biophysical environment, but also the built environment, including housing, tranportation, etc. Some of these elements are captured under the other 4 DOH's that were identified, yet to get a fullsome understanding of community health impacts, the DOHs need to be considered holistically as they do not act in isolation of each other but act additively and cumulatively to affect overall health outcomes. While this section does a decent job of describing the importance of the identified determinants of health and the status of these at a desktop level, Northern Health feels that it is missing the depth required to adequately characterize the baseline conditions of the impacted communities. It is our understanding that an adequate characterization of existing conditions would also include a media scan, a review of all publicly available data as well as primary qualitative and quantitative data (measured in collaboration with communities) to fully understand the vulnurabilities, concerns and health priorities of the communities. It would also discuss, in depth, the changes that have already become apparent in the community as part of the "LNG Planning Boom", including the qualitative stories that are emerging from the Northwest. As Northern Health becomes increasingly more familiar with socio-economic and health monitoring/surveillance for resource development projects, the importance of this community level disaggregated data (as opposed to Stats Can and desktop data) is becoming increasingly more apparent. As you may recall, we had concerns about the detail and rigour of the assessment methodology as outlined in the dAIR and provided comments on the importance of capturing impacts to vulnurable populations and the importance of qualitative, dissaggregated and primary data in our dAIR comments. We had requested that the proponent ensure that the assessment mehods be shared with stakeholder for input prior to the submission of the Application to ensure that expectations aligned (see NH follow-up comments, dated 29 Septebmer 2015). It is unfortunate that further in depth discussions on the methodology and expectations did not occur prior to the submission of the application.	The Determinants of Health (DOH) described in Section 6.6 of the Application are based on the Public Health Agency of Canada's (PHAC) description of DOH. Selection of DOH for assessment was informed through the review of academic literature, publicly available information (including Northern Health's publication "Standard Working Group Comments and Recommendations for Provincial Environmental Assessment in Northern British Columbia" which outlines DOH that differ from the PHAC), comments received during AIR development (both from Working Group comments and the public) as well as comments obtained during public and Aboriginal consultation. Previous environmental assessments from northwest BC that have included DOH and/or VCs related to Community Health were also reviewed. Based on this input, the selection of DOH assessed in Section 6.6. is considered comprehensive. While Section 6.6 is not intended to satisfy the requirements of a health impact assessment (HIA) selection of DOH, the DOH used in Section 6.6 was informed by health impact assessment (HIA) guidance documents that align with PHAC's description of DOH (as identified in Section 6.6.5.1). Aurora LNG is confident that this approach meets the requirements of the AIR.
228	screening	Northern Health	6.6.3.1 6.6.3.3	Community Health	Partially missing: While this section refers back to section 13 (Public consultation), it is missing detail on how public, regulator and stakeholder consultation and primary data collection was conducted specific to Community Health and how this was incorporated into the effects assessment. For instance, what were the interview/meeting questions that were posed? How were representatives identified and how were the meetings facilitated? How was the raw data summarized and incorporated into the assessment. Which stakeholders were contacted specifically for this portion of the assessment? Detail of how raw data was obtained and then converted to the effects assessment for the purpose of this section should be provided in this section as well as appendices of the "raw data" should be referenced as these methods can significantly impact the value of the information that was obtained. For instance, while it is noted that primary research involved key information interviews, including with service providers like Northern Health, based on our record, this was limited to our response to a couple of e-mails which were meant to inform projects in the northwest in general and were limited to responding to a limited number of specific questions.	Please see the responses provided to comment #190. While comment #190 provides references to Section 6.3 Infrastructure and Services, the same methods were used for Section 6.6 Community Health.

229	screening	Lax Kw'alaams Band	6.6.3	Community Health	Additional Aboriginal-specific is available for the area and must be presented in this section of the Application. Available information that can provide more precise analysis relevant to Lax Kw'alaams includes:
					(a) NHS/Census data;
					(b) Office of the Provincial Health Officer (PHO). (2012). Provincial Health Officer's Special Report. The Health and Well-being of the Aboriginal Population. Interim Update. October 4, 2012.
					(c) Chan et al., 2011 referenced elsehwere in the Application but not here.
					For (b), data for 7 Relevant health indicators are found including PYLL, diabetes, and suicide.
					For (c) relevant health indicator data is included such as perceived health, obesity/overweight, employment, food security, smoking, diet, Food Guide servings/day, contribution of TF to nutrition for First Nations on reserve.
					Data on food security and discussion of relevance to various health conditions is missing from the Application. Food security was flagged by Aboriginal groups as a concern. Food security data has been available for on reserve populations, Aboriginal off reserve populations, and the general population in several reports not integrated in the Application. Sources include: Statistics Canada CCHS, FNFNES (Chan et al. 2011), PROOF reports (U. of Toronto).
					This gap is important to fill because food insecurity is a sensitive indicator of financial constraints. It is evident in FNFNES (Chan et al., 2011) that the diet of First Nations on reserve is not adequate to meet nutrition needs and there are high levels of food insecurity already that can be further impacted by changes in access/availability to country food. Any change to current use (in Section 11.3) should take this sensitivity into strong consideration. Food insecurity is linked to birth outcomes, maternal health, child development, poorer mental health, physical health, health care costs.
					Please integrate this missing information for Aboriginal-specific health data and food security data.
						(a) Detailed Aboriginal specific information from Statistics Canada's 2011 Census and 2011 NHS (including Aboriginal-specific population profiles) is included in Section 6.3.3 and referenced (where relevant) in Section 6.6.
						(b) While not referenced in the Section 6.6, baseline information on health indicators included in the referenced publication are provided in Section 6.3 at the aggregate population level for Local Health Area (LHA) 52 and for the Northwest Health Service Delivery Area (NW HSDA) as available from Statistics Canada. Rationale for the selection of baseline data at the LHA and NW HSDA level is provided in Section 6.6.2.5 (Boundaries) under the subheading "Technical Boundaries"
						(c) As noted by Lax Kw'alaams, this publication is not referenced in Section 6.6. However, a majority of health indicators provided in this publication are provided in Section 6.6 at the LHA and NW HSDA level as available from Statistics Canada.
						The assessment of change in harvested foods considers the measurable parameters "volume of foods harvested" and "harvested foods consumption" in accordance with the AIR. The assessment of food security is not included in Section 6.6 and is not a requirement of the AIR. Additional consideration of Aboriginal-related country food harvesting and consumption, including rights and interests, is provided in Section 12. Section 11 (Statutory Requirements Under CEAA 2012) also considers topics related to traditional food harvesting and consumption.

230	screening	Health Canada	6.6.4	Community Health	No acknowledgement of the direct link between change in harvested foods and socioeconomic conditions.	Section 6.6.4 of the Application states "Project components and physical activities identified in Table 6.6-18 have the potential to affect harvested foods because they are associated with changes in employment and income, ecological change, and change in access and availability of harvested foods (mechanisms described in more detail in Section 6.6.5.4)". This statement acknowledges the direct link between change in harvested foods and socio-economic conditions (i.e., employment and income, and change in access to harvested foods) and directs readers to Section 6.6.5.4 where mechanisms (including socio-economic mechanisms) affecting change in harvested foods are discussed in detail.
231	screening	Dodge Cove	6.6.5	Community Health	6.6.5.2. Work Camp - in assumptions concerning community health and wellness, Nexen fails to mention distance of the work camp to Dodge Cove Improvement District and how this will affect Dodge Cove residents health and wellness. This information is needed to recognize the difference in effects a 5000 man camp will have in Dodge Cove Improvement District, not the entire RAA as a whole. The impacts on Dodge Cove Improvement District needs to be assessed seperately from the effects on the RAA. The implications of not having this information further negates the effects this project will have on the nearest community, DCID.	The distance from Dodge Cove to the Project is provided in Section 1.2.2 (Project Location) of the Application. The locations of Dodge Cove and the Project PDA are also depicted on Figure 6.6-1. While the assessment of change in community health and wellness (see Section 6.6.5) assesses residual effects at the LAA level, because Dodge Cove and Crippen Cove are the nearest communities to the Project, the potential adverse effects on community health and wellness due to changes in population and the presence of a mobile fly-in/fly-out workforce lodged on Digby Island have been disaggregated so they can be discussed separately (see Section 6.6.5.3).
232	screening	Northern Health	6.6.5	Community Health	(Part 1 of 2) Partially absent: - Please see above note on the Infrastructure and Services section about assumptions - overall, good desktop assessment but missing important elements as follows - does not consider impacts in the RAA Assessment of Change in Community Health and Wellness - is missing important depth and a robust asessment of changes in community health and wellbeing (e.g. it is not enough to say that it might go this way or that way but should provide robust evidence around likley and potential outcomes based on literature, community input, and experience from other projects of similar size and nature). Mitigations - Similar to our comments in the Infrastructure and Services section, this section should reference additional guidance documents and best practices for mitigating social impacts of projects of this size and nature and justify why the mitigations that are proposed align with these practices and are sufficient to manage impacts to as low as possible. - It is our understanding that international best practices require an overarching social performance management system for monitoring and managing social and community health impacts which includes management measures, dedicated resources (e.g. a social management team) and ongoing evaluation of risks, impacts and mitigation processes. A discussion around such a system is missing. - Please note: Thank you for referencing the committing to referring to our new Infection Control Plan Best Management Guide. Please note that the name has been changed to "Communicable Disease Control Plan Best Managment Guide for Industrial Camps" the final of which should be available on our website before the end of 2017. Residual Effects Summary - missing importants aspects as noted in our comments regarding Table 6.6-6 and comments on the Community Infrastructure and Services Section - missing important community level qualitative information - does not link back impacts that have already been experienced as part of the "LNG Planning boom" (here or in the baseline). An important aspect in the assessment as it provides evidence around likley response/outcome(s) in the region - potential outcomes identified should be supported by experience from projects of similar size and nature and/or experience of impacts from resource development activities in other regions of Northern BC and elsewhere in the world.	Please see the response to comment 201 (Assumptions – Infrastructure and Services). Section 6.6.5 of the Application assesses Project residual effects at the LAA level (not the RAA level) in accordance with methods outlined in Section 3 of the Application (in accordance with Section 3.3.1 of the AIR). The RAA is considered in the cumulative effects assessment (Section 6.6.6). Change in Community Health and Wellness The assessment of change in community health and wellness is based on evidence from academic research, government publications and other peer-reviewed literature. The range of literature cited in this section encompasses an array of industrial development (both in scale and type) as well as general cause-and-effect relationships among social determinants of health. In addition to the assessment of community health and wellness completed in Section 6.6, additional topics not addressed in Part B of the Application (including quality of life/community identity, social cohesion, private property values and cost of living) are addressed (based on case study analysis and/or academic or peer-reviewed literature) in Section 13.5 of the Application. As discussed in Section 6.6.2.5 subsection 'Technical Boundaries', "With respect to the second set of technical boundaries (plausibility vs. empirical predictability of effects), due to the nature of social interactions, and differences in individual actions, behaviours and influences that are outside the control of the Project, the assessment of Community Health is constrained by the impractically to empirically predict residual effects with a high-degree of certainty. Rather, residual and cumulative effects assessments consider mechanisms to establish rational arguments using cause-and-effect reasoning to support the plausibility of effects. This limitation is acknowledged by Veerman et al. (2007) in their review of the validity of predictions in health impact assessments; they note that that an accurate determination, as confirmed by fact, of the magnitude of potential effects (i.e., quantitative estimation) is largely unattainable (Veerman et al. 2007; Kemm 2003)." Similar to the response to comment 202, Mitigation measures proposed in Tables 6.6-18, and 6.6-21 are based on guidance documents and industry best practices (see column "Rationale for Selection" in each table). Mitigation number 6.3-1 (Social Management Plan) is proposed in Table 6.6-18 as an overarching social management system for monitoring and responding to community-level effects of the Project (see Section 14.12 Social Management Plan for additional details). Social Support Networks An assessment of social conflict between community members in support vs. those not in support of the Project was not undertaken.
232	screening	Northern Health	6.6.5	Community Health	(Part 2 of 2) HEALTH STATUS - does not incorporate the results of the subsequent sections/conclusion on the DOH and how changes to these would impact the health status of the region. Perhaps it would be more appropriate to place "Health Status" after a discussion on the DOH's to allow for a discussion around how increased income inequity, strain on social support networks, social environments, personal health practices and coping skills and other important determinants of health (e.g. housing, cost of living, etc.) will impact health status beyond those identified. -missing discussion around link between mental health and FIFO (see AIR: Measurable Parameters: occurrence-rates for medical and mental health incidents") SOCIAL SUPPORT NETWORKS - missing an important discussion around potential (and already realized) conflicts within and between communities related to those in support of and/or those likley to benefit from the project and those against and/or likely be be adversely impacted by the project	
233	screening	Lax Kw'alaams Band	6.6.5	Community Health	Change in country food availability is assessed poorly, makes false assumptions, and misses key relationships. Aurora's assumption that people can harvest elsewhere to justify a lower magnitude impact is not acceptable, as raised in AIR comments. This "go elsewhere" assumption must be taken out of the Application and filled with a more reasonable assessment. Food security is a serious concern generally, and any adverse effects on harvesting of marine foods must be taken seriously. As outlined in Chan et al. (2011), cited in the Application, financial constraints (such as harvesting costs) are already a burden on community members and forcing community members to travel further to harvest sufficient volumes of country food to support their nutrition and food security needs only exacerbates this problem. Please re-assess the effects, using additional data sources (above) to estimate percentage of of food harvested, disagregated for each community. An estimated increase in food costs (costs to replace foods that cannot be gathered, costs to travel further to access other areas) should be provided to provide a more accurate picture of food security and health.	In accordance with cited materials elsewhere in the Application (i.e., Chan et al. 2011), Section 6.6.5.4 of the Application does caveat the "go elsewhere" assumption (which is applied in part in Section 6.6) by stating the following: "Regardless of potential availability of alternative harvesting locations, it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs increased time spent travelling to harvesting locations, poorer quality yields)". Baseline information on the volume of foods harvested and harvested food consumption provided in Section 6.6.3.2 specific to Lax Kw'alaams was informed through the review of publicly available information and that collected in support of Project consultation. At the time of writing, Aurora LNG had not received Project specific information from Lax Kw'alaams Band regarding the percentage of food harvested by community members. Estimates regarding the percentage of food harvested by Lax Kw'alaams Band were not developed nor were costs of replacing foods that cannot be harvested. With respect to the economic considerations, Section 5.2.5.3 of the Application assesses Change in Resource-based Primary and Subsistence Economies.

234	screening	Metlakatla First Nation	6.6.5	Community Health	Metlakatla noted the importance of disaggregating project effects on Aboriginal and non-Aboriginal populations. It is not clear how Metlakatla comments were addressed. The existing conditions section shows Aboriginal data separated from non-Aboriginal populations but it is not clear how that is carried forward into the assessment.	Disaggregated information for existing conditions within Aboriginal and non-Aboriginal communities within the LAA is provided in Section 6.6.3, where possible. Taken together, information on existing conditions for Aboriginal and non-Aboriginal communities for a given topic forms an aggregate description of existing conditions that is carried forward in the assessment of residual and cumulative effects. However, as noted in Section 6.6.5.2, it is recognized that vulnerable populations (which includes Aboriginal populations) could be disproportionally affected by the Project and as such disaggregated characterizations have been provided throughout Section 6.6.5 and 6.6.6, where relevant.
235	screening	Northern Health	6.6.6	Community Health	Residual cumulative effects - missing references to substantiate the conclusions made (e.g. why would effects extend only to the LAA?). Conclusions require additional justification/rationale - does not consider cumulative impacts of the boom/bust nature of these types of developments (especially as it relates to the large construction boom) and their long term negative legacies that may persist over the long term	Regarding the geographic extent of residual cumulative effects, two sets of characterizations are provided: 1) the Project's contribution to residual cumulative effects; and 2) residual cumulative effects including the Project. As Project residual effects are limited to the LAA (see Table 6.6-22), the Project's contribution to residual cumulative effects (1) is limited to the LAA. However, combined with projects considered in the cumulative case, the residual cumulative effects including the Project, extend to the RAA. Boom/bust effects are assessed in Section 5.2 with conclusions from Section 5.2 brought forward into Section 6.6.
236	screening	Dodge Cove	6.7	Summary of Potential Social Effects	6.7-5 The inclusion of Dodge Cove Improvement District residents as "vulnerable population" does not mention or consider the proximity of the Aurora LNG project as the reason that Dodge Cove is "not resilient to change". CNOOC-Nexen fails to recognize the existing quality of life and the long-term sustainable lifestyle of Dodge Cove but instead gives the impression that the vulnerability is not due to proximity but is due to other factors. The projects proposed proximity to Dodge Cove is the ONLY reason that Dodge Cove residents are vulnerable.	Dodge Cove is not included in the definition of a vulnerable population (see Section 6.6.5.2). Rather, and as suggested, the Project effect characterizations have been disaggregated for Dodge Cove from the aggregate LAA communities (where relevant) due to the proximity of the construction camp to the community, the presence of a large mobile workforce on Digby Island, and because of unique cultural and population characteristics of the community. Equally, and for the same reasons noted above, Dodge Cove is considered to be non-resilient to change.
237	screening	NCRD	6.7	Summary of Potential Social Effects	Greater emphasis should be put on the shadow population and the potential for creating a surge and overbuilding a community (long-term effects)	Consideration of shadow populations, also referred to as temporary populations/workers, and the potential effects on social valued components (including the potential for periods of rapid population change [population surge] and associated periods of increased demand [relates to the potential for community 'overbuilding']) is embedded in the assessment of social valued components with population-related effect mechanisms (Sections 6.3, 6.4, 6.5, and 6.6). Population-related effect mechanisms are informed through baseline conditions and population modeling completed for the Project. Detailed baseline information on shadow populations within the LAA and RAA is provided in Section 6.3.3 with population modeling and estimates of Project-related population change provided in Section 6.3.5.2 (residual case) and Section 6.3.6.1 (cumulative case).
238	screening	Gitxaala Nation	7.1	Heritage	Introduction does not include a discussion of archaeological site potential	The Introduction provides a high-level discussion of the archaeological and heritage background, including a description of the common site types encountered on Digby Island and their geographic setting. Additional detail on the archaeological potential is provided in Appendix W of the application.
239	screening	Lax Kw'alaams Band	7.1	Heritage	Ethno-historical and historical information of the area is not provided in Section 7. While this section does well at listing the kinds of sites to be found on Digby Island as well as a very brief overview of who the Tsimshian are, the ethno-history and history of the area is not provided. Addition of these components, brought forward from the AIA, will aid the understanding of the importance of these sites. Please include this information in this section.	Section 7.1: Introduction provides a high-level discussion of the archaeological and heritage background, including an overview of the Tsimshian member bands. Additional detail on history and ethnohistory are provided in Appendix W of the Application.
240	screening	FLNRO, Heritage Branch	7.2.2.2	Heritage	It is not clear to what degree, if at all, the proponent engaged the general public regarding non-archaeological heritage resources. There may be heritage resources on the land base that are valued by local community members but have not been formally protected or recorded on the heritage register. Without engaging the public to identify such resources, they are at risk of being lost of damaged in the course of development. Community governments also need to be engaged in this process - it is not clear from the application who the proponent has involved.	This comment was addressed during Application screening and edits were made to Section 7.2.1 and Section 7.2.3.3 of the Application.
241	screening	FLNRO, Heritage Branch	7.2.2.2	Heritage	Table 7-1 assessment description did not include discussion with the Heritage Branch or review of the provincial fossil database or the database of the Geological Survey of Canada.	This comment was addressed during Application screening. Edits were made to Sections 7.2.1, 7.2.2.1, 7.2.2.8, 7.2.3.1, 7.2.3.2, 7.2.3.3, 7.2.8, and 7.2.9 of the Application. To clarify, a high-level review of paleontology has been conducted for the Project. A paleontological assessment will be conducted prior to construction and will include a review of relevant information and databases. The assessment and reporting will be conducted under a permit issued by the province. If any fossils are identified, they will be managed in consultation with the Heritage Branch. The Heritage Management Plan will include measures to manage any unexpected fossil finds during project activities. The Plan will meet Heritage Branch standards regarding management of fossil sites.
241.1	round 1	FLNRO, Heritage Branch	7.2.2.2	Heritage	As a follow up to screening comment #241 - Heritage Branch needs to review Heritage Mngt Plan and chance-find protocol before start of any development on the land. Especially important given that Nexen's assessment report, section 7.2.3.2 (p. 7-18) states that a potential quaternary fossil site on Digby Island has been reported but the exact location is unknown. Important for field operators to know what to pay attention to. "	The Archaeological and Heritage Resources Management Plan will include measures to manage any chance find fossils during project activities. The Plan and chance find procedures will be developed in consultation with the Heritage Branch and will meet applicable guidelines and standards regarding management of fossil sites.
242	screening	FLNRO, Heritage Branch	7.2.2	Heritage	The Local Government Act is a key piece of legislation, which regulates the management or heritage resources within municipal jurisdiction. This important piece of legislation is not identified as part of the Scope of Assessment, and it is therefore not clear whether the proponent understands or has considered the role of municipal governments in managing local heritage resources. This may undermine the proponent's overall assessment of potential impacts of the proposed project on heritage values, increasing the risk of loss or damage of heritage resources. Other relevant legislation not considered - Heritage Lighthouse Protection Act (federal).	This comment was addressed during Application screening and edits were made to Section 7.2.2.1 in the final Application.
243	screening	Lax Kw'alaams Band	7.2.2.2 7.2.2.3	Heritage	As per above comments: Aurora states information was obtained on TK and TU from Aboriginal Groups through consultation, information gathering and voluntary information sharing (e.g. Project-specific studies); however, Aurora does not describe how it was integrated into the assessment. No references to studies are made in section 7 or the AIA. This information is pertinent to understand the potential Project interactions, effects, and impacts on Lax Kw'alaams, once studies from Lax Kw'alaams are provided, especially for high value cultural and heritage resources. Please coherently and transparently describe how TK and TU from Aboriginal Groups was integrated into the assessment. Furthermore, if Aurora finds that obtained TK and TU data is not applicable, please explain why and how it came to that conclusion.	The TK/TLU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. For the Aboriginal Groups that have not completed TK/TLU studies for the Project, a desktop review was conducted of publically available ethnographic and ethno-historic sources, as well as TK/TLU reports from other environmental assessments near the LAA/RAA. If additional project-specific TK/TLU information or studies become available during the Aurora LNG Application review process, these additional materials will be reviewed and incorporated, as applicable.
244	screening	Gitga'at First Nation	7.2.2.2 7.2.2.3	Heritage	Section 7.2.2.2 excludes Gitga'at's Traditional Use and Occupancy Study (Study) completed for the Aurora LNG Project (i.e., Inglis 2016), as well as in Section 7.4. This Study must be considered in the assessment of potential heritage effects from the Project.	The TUOS report from Gitga'at First Nation was reviewed and, where applicable, information was incorporated into the assessment. It is cited as "Gitga'at First Nation (2016)" in Section 7.2.3.1; however, it was inadvertently omitted from the list of references in Chapter 7.
245	screening	Gitxaala Nation	7.2.3	Heritage	This section notes that TK/TLU was used as a source of information but does not include any results of these studies.	The TK/TLU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. The results of these studies are summarized in Appendix S.2. The public versions of theseTK/TLU studies are available from the BC EAO. For the Aboriginal Groups that have not completed TK/TLU studies for the Project, a desktop review was conducted of publically available ethnographic and ethno-historic sources, as well as TK/TLU reports from other environmental assessments near the LAA/RAA. These results are included in Appendix W. If additional TK/TLU information or studies become available during the Aurora LNG Application review, these will be reviewed and incorporated, as applicable.
246	screening	Lax Kw'alaams Band	7.2.3	Heritage	As highlighted in above comments, the AIA is a detailed technical report but does not incorporate TK or TK/TUS studies in determining baseline nor does it account for changes to the PDA since 2015.	The AIA of the PDA was completed prior to receiving the TK/TLU reports. However, once received, TK/TLU reports were reviewed and information was incorporated into the assessment, where appropriate. The comment on changes to the PDA since 2015 and resulting gaps are addressed and edits made in Sections 7.2.3.3 and 7.2.9 of the Application. Aurora LNG and Lax Kw'alaams have developed a workplan that sets out a collaborative process to review the Application during the review period, and incorporate the results of the project-specific Aboriginal Interest and Use Study (AIUS) and Socio-Economic Impact Assessment (SEIA) that Lax Kw'alaams will be providing to Aurora LNG early in 2017. The objective of this process is to determine if and how information from the Application needs to be updated or revised for a supplemental submission to the EAO. Aurora LNG will continue to consult with Lax Kw'alaams to identify additional mitigation measures through the life of the Project that aim to reduce potential adverse effects on Aboriginal Interests related to archaeological and heritage resources.
247	screening	Lax Kw'alaams Band	7.2.4	Heritage	Application missing assessment of operations and decommissioning activities that include ground disturbance. It is likely that ground will be disturbed during operations and certain that it will be disturbed during reclamation and dismantling of infrastructure. Also, the interaction of vessel wake effects during operations (identified by consultation and claimed to be part of assessment) is not included in the assessment at all. Please provide an updated assessment of effects resulting from operations, including vessel wake effects, and decommissioning activities on this VC.	As per Section 7.2.4 of the Application, potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. Tree removal or ground disturbance have the potential to adversely affect archaeological and heritage resources by altering the site contents or context causing a loss of information. Project activities and works that do not involve tree removal or ground disturbance are considered non interactions. The operations and decommissioning phases are not anticipated to cause additional Project effects on archaeological and heritage resources beyond what occurred during the construction phase, and are thus not carried forward in the effects assessment. The potential for wake effects from vessels was considered in Section 7.2.5.2. Wake waves generated by LNG carriers and associated escort tugs are not expected to have adverse effects on marine intertidal areas. Several recent wake studies commissioned for LNG projects on the coasts of British Columbia have shown that wave heights generated by transiting LNG carriers and escort tugs are generally small, and well within the range of natural wave conditions. For example, the largest wave height measured in the Oceanic Consulting Corporation's ship wake study for all vessel types was less than 1.0 m (Doucet 2014). This study illustrates that the waves generated by LNG carriers and escort tugs are not overly large relative to the natural background waves that exist in the region. As such, wake effects was not carried forward in the archaeological and heritage resources effects assessment.
248	screening	Lax Kw'alaams Band	7.2.5	Heritage	All heritage and archaeological values important to Aboriginal groups must be covered off in Part B. Section 12 does not provide a thorough assessment of effects, neglecting to place any rigorous or transparent framework, or any thresholds of significance. Please update the assessment herein to include Aboriginal values.	Previously responded to during screening: The value of archaeological and heritage resources as held by the Lax Kw'alaams Band can be further understood through on-going consultation with the Band during the Application review phase. Aurora LNG and Lax Kw'alaams have developed a workplan that sets out a collaborative process to review the Application and review and incorporate into the environmental assessment the results of the project specific Aboriginal Interest and Use Study (AIUS) and Socio-Economic Impact Assessment (SEIA) that Lax Kw'alaams will be providing to Aurora LNG early in 2017. The objective of this process is to determine if and how information from the Application needs to be updated or revised for a supplemental submission to the EAO. Aurora LNG will continue to consult with the Lax Kw'alaams Band to identify additional mitigation measures through the life of the Project to reduce potential adverse effects on Aboriginal Interests related to archaeological and heritage resources.
249	screening	Gitga'at First Nation	7.2.5	Heritage	Vessel wake was not assessed but rather Aurora LNG references an assessment completed by LNG Canada in Douglas channel. A Project specific assessment must be completed. This is important for Gitga'at to evaluate the potential impacts on Gitga'at's Aboriginal Interests. See Gitga'at's comment #20 in dAIR Public Tracking Table.	The potential for wake effects from vessels was considered in Section 7.2.5.2. Wake waves generated by LNG carriers and associated escort tugs are not expected to have adverse effects on marine intertidal areas. Several recent wake studies commissioned for LNG projects on the coasts of British Columbia have shown that wave heights generated by transiting LNG carriers and escort tugs are generally small, and well within the range of natural wave conditions. For example, the largest wave height measured in the Oceanic Consulting Corporation's ship wake study for all vessel types was less than 1.0 m (Doucet 2014). This study illustrates that the waves generated by LNG carriers and escort tugs are not overly large relative to the natural background waves that exist in the region. As such, wake effects was not carried forward in the archaeological and heritage resources effects assessment.
250	screening	FLNRO, Heritage Branch	7.2.7.1	Heritage	Disagree with assessment of residual cumulative effects, but perhaps best addressed later.	Cumulative effects are discussed in Section 7.2.6 of the Application. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
251	screening	FLNRO, Heritage Branch	7.2.7.1	Heritage	Table 7-8 - No rationale provided for sites that require 'no further mitigation'. More information needed.	Sites for which no further mitigation is recommended are assessed to have a low significance and there would be limited value in preservation or data recovery through mitigation beyond the level of what has already been recorded during AIA fieldwork.

251.1	round 1	FLNRO, Heritage Branch	7.2.7.1	Heritage	"As a follow up to screening comment #251 Please provide information on sites ACH-007 (historical structure) and APW-003 (historical bridge) so that significance and mitigation requirements can be determined. Also, it is not clear that site BME-021 (unidentified structure) requires no further mitigation - is this site the one referred to in comment 210 above? If so, the commenter notes possible value to the community for recreation, subsistence and possibly ceremonial use, suggesting that mitigation may be required. "	Please see the "Historical Sites - Additional Information" technical memo regarding sites ACH-007 (historical structure) and APW-003 (historical bridge), which will be filed with the BC EAO. The "Historical Sites - Additional Information" technical memo was provided to the Working Group in draft on May 2, 2017. Regarding BME-021 (historical structure), this is likely one of the two structures on the eastern shore of Delusion Bay that are referred to in screening comment #210. This structure was assessed to be in poor condition and have low scientific and historic significance. However, its public significance is assessed as moderate, which is consistent with it being of potential interest to, or used by, members of local community. The mitigation of post-1846 resources that are not automatically protected by the HCA will be determined in consultation with the Heritage Branch, potentially affected Aboriginal Groups, and/or stakeholders as appropriate, and typically follows established provincial best practices. Aurora LNG welcomes further discussion regarding potential mitigation measures for BME-021.
252	screening	FLNRO, Heritage Branch	7.2.8	Heritage	section 7.2.8 states that effects assessment is sufficient to make determination - insufficient information from the desktop to make this determination for paleo resources. Standards mitigation measures and BMPs need to apply to paleo and other heritage resources, not just archaeo resources.	To clarify, a high-level review of paleontology has been conducted for the Project. A paleontological assessment will be conducted prior to construction and will include review of relevant information and databases. The assessment and reporting will be conducted under a permit issued by the province. If any fossils are identified, they will be managed in consultation with the Heritage Branch. The Heritage Management Plan will include measures to manage any unexpected fossil finds during project activities. The plan will meet Heritage Branch standards regarding management of fossil sites. During screening, edits were made to the following Sections to more clearly reference 'heritage resources': 7.2.1, 7.2.2.1, 7.2.2.8, 7.2.3.1, 7.2.3.2, 7.2.3.3, 7.2.8, and 7.2.9.
253	screening	Lax Kw'alaams Band	7.2.8	Heritage	Does not incorporate Proponent professional experience or previous success with mitigation measures in calculation. The description only includes "access to best practice". This is not in compliance with AIR requirements. Please update section accordingly so mitigations can be evaluated during Application review period.	The comment on confidence in mitigation has been addressed and edits made accordingly in Section 7.2.8. See also Table 7-7 for a list of mitigation measures and a column describing expected success, risk and uncertainties. Site-specific mitigation plans are not provided nor have been evaluated as project engineering plans are not at an advanced enough stage to determine the exact nature of potential Project impacts. However, as mitigation measures will be determined in consultation with appropriate regulatory agencies, and potentially affected Aboriginal Groups, the success of the measures that are ultimately determined is predicted to be high.
254	screening	FLNRO, Heritage Branch	7.3	Heritage	Disagree with assessment of residual cumulative effects, but perhaps best addressed later.	Cumulative effects are described in Section 7.2.6 of the Application. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects is not warranted because Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual Project effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects other projects or activities.
255	screening	FLNRO, Heritage Branch	7.3	Heritage	The Summary of Assessment states that the impact on heritage resources is not significant. The proponent has not demonstrated a sufficient review/assessment of non-archaeological heritage resources on the land base to provide confidence that this statement is accurate. The References consulted are primarily those dealing with archaeological sites; further research on the historic period (post-1846) and community engagement are required in order for the proponent to properly assess existing historic resources and potential heritage effects.	The Summary of Assessment (Section 7.3.1) states that Project effects to archaeological or heritage resources will be mitigated through avoidance where feasible, systematic data recovery where appropriate, and/or archaeological monitoring of sites during development. Residual effects on archaeological and heritage resources are, therefore, assessed to be not significant. As part of the background research for the AIA, historical and ethnographic research on the LAA/RAA was conducted, including visits to the Prince Rupert Archives and Museum of Northern BC. As part of the AIA field investigations, archaeological field crews assessed the LAA/RAA for areas of past human habitation and occupation regardless of antiquity. Detailed notes regarding findings of non-archaeological heritage resources and the potential effect on these places were recorded. Based on the methods used, there is a very high likelihood that non-archaeological heritage resources with the potential to be affected by the Project have been identified and recorded. The assessment of significance for historical sites/places followed the methods described in Appendix W, Section 6.2. Proposed mitigation measures outlined in Table 7-7 are based on the assessed scientific significance of a site, including its current physical condition, and potential project impact. Public and ethnic significance determinations, and final mitigation measures, will be determined in consultation with the appropriate regulatory agencies, and potentially affected Aboriginal Groups.
255.1	round 1	FLNRO, Heritage Branch	7.3	Heritage	"As a follow up to screening comment #255 Mitigation through avoidance is the preferred method for historical features located within the project boundaries. Systematic data recovery followed by demolition is less desirable and the results of demolition could not be considered ""not significant"". Historical features identified during the field program include: 15-MS-001 Marine Station at Casey Cove; 15-WW-002 W.W.2 Structures at Frederick Point; 15-BME-021 Unidentified structure associated with three graves; Boy Scout Camp at Emmerson Point (includes standing structures); Gravel and corduroy road between Marine Station and Frederick Point; Trails in the AOI. These historic features have not yet been adequately assessed for the full range of heritage values and interpretation potential. The assessment to date has been archaeology-focused and could be improved through consultation with Heritage Branch, other agencies and local communities including aboriginal groups. Some of these sites still have substantial infrastructure, some of which could be maintained and interpreted through signage and online resources. In preparing the forthcoming Heritage Resource Management Plan, the proponent should refer to the Standards and Guidelines for the Conservation of Historic Places in Canada and Building Resilience: Practical Guidelines for the Sustainable Rehabilitation of Buildings in Canada, available online at www.historicplaces.ca and through Heritage Branch. Heritage Branch can supply a copy of a 2007 report on Casey Point on Kaien Island that provides context on the Prince Rupert Harbour defenses. Heritage Branch requests that the proponent provide an outline of what the Heritage Resource Management Plan will address, and whether a chance-find procedure for non-archaeological heritage materials will be included. In preparing the Heritage Resource Management Plan, the proponent should deal with archaeology, historic places and fossils separately, to allow for efficient review of the proposed plan and mitigation measures. "	Historic features were assessed with regards to a wide range of heritage values and interpretation potential using the Archaeology Branch guidelines for post-contact sites from the British Columbia Archaeological Impact Assessment Guidelines (1998) (Appendix W, Section 6.2). Extensive consultation has been conducted with local communities, including Schedule B and C Aboriginal Groups (Application Sections 12 and 13). The Archaeological and Heritage Resource Management Plan will include a separate section on historic places that will be developed in consultation with the Heritage Branch and will refer to Standards and Guidelines for the Conservation of Historic Places in Canada and Building Resilience: Practical Guidelines for the Sustainable Rehabilitation of Buildings in Canada. An outline of the Plan has not yet been prepared but, at a minimum, it would include a description of Project staff and contractors' roles and responsibilities, site-specific mitigation measures (e.g. site avoidance, data recovery, monitoring), and a chance find procedure. The Plan will have separate sections for archaeological sites, historic places and fossils. Avoidance of archaeological and heritage sites is the preferred management option; however, it is recognized that it will not be feasible to avoid all sites in the PDA. Aurora LNG has incorporated a buffer that avoids some coastal and riparian areas within the PDA (Figures 7-1, 7-2). The adoption of this buffer zone results in avoidance of most of the significant archaeological and heritage resources in the PDA (Section 7.2.5.2). While Aurora LNG will look for opportunities during detailed site planning and construction to avoid sites within the PDA where feasible, for purposes of the application it is assumed that sites that are not within the buffer will be impacted by construction. Aurora LNG welcomes further discussion with the Heritage Branch regarding appropriate mitigation measures during preparation of the Archaeological and Heritage Resource Management Plan.
256	screening	Dodge Cove	3.2	Human Health	Page # 8-5 "…assessment of human health includes evaluation of the projects' activity that could influence surface water quality…" no evaluation is included.	Section 8.1.2 of the Application Information Requirements states that, "freshwater quality, as it relates to human health will be considered in the assessment." Section 8.2.3.2.2 of the Application (Existing Conditions for Human Health from Surface Water Quality) describes the existing conditions for human health related to surface water quality used for drinking and recreational use. Section 8.2.4 of the Application (Project Interactions with Human Health), the project interactions table (Table 8.2-8) considers water quality as it relates to human health and indicates that there are no project interactions that would change surface water quality in a manner that would affect human health. A revised rationale was provided in Section 8.2.4.
257	screening	CEAA	8.2.2	Human Health	The Agency seeks clarification around why the human health assessment did not consider and assess the health impacts associated with project-related noise, vibration, and light? The Agency notes that the Acoustic Environment assessment identified negligible to moderate residual noise impacts on human receptors during both construction and operations phases of the Project. The Assessment also indicated that receptors within the LAA might experience perceptible vibration effects ranging from negligible to moderate. These types of impacts have been considered and assessed in similar EAs including the Pacific Northerwest LNG Project. Consequently, it is unclear to the Agency whether this Application presents all of the information that will facilitate B.C.'s analysis of significant adverse environmental effects.	The assessment of human health (Section 8.2) did not include a description of health effects from noise and vibrations because these effects were assessed in Section 4.4, Acoustic Environment. An assessment of the effect of light on human health was not required as per the AIR. This format and content is consistent with the AIR. For clarity, Section 8.2.2 has been revised to direct the reader to Section 4.4, Acoustic Environment, for information on effects of noise and vibration; and Section 6.2, Visual Quality for lighting effects. The "percent highly annoyed" (or %HA) measurable parameter applied in Section 4.4, Acoustic Environment, is the same metric used in the Pacific Northwest LNG Project. The potential effect of light is qualitative in nature, and the potential effect from visual light is low to moderate in relation to skyglow. However, direct effects such as lighting glare and light spill to residential areas will be avoided, as described in Section 6.2.7.1 of the Application. Consequently, the Application presents the information requested by the Agency in accordance with the organizational layout described in the AIR.
257.1	round 1	CEAA	8.2.2	Human Health	**As a follow up to screening comment #257** Response not satisfactory-- issue remains outstanding. While effects from noise and vibrations were assessed, including a quantitative description of effects to human health from noise (% highly annoyed), it is not clear as to whether this was carried forward in to the effects assessment for human health. It is important that conclusions on effects to human health take in to consideration all pathways of effects, including noise and light. As there is no mention of effects to human health due to sensory disturbance in the assessment of human health, it can be inferred that these effects were not taken in to consideration when formulating the conclusion that effects to human health are not significant.	The effects of noise were assessed in the Acoustic Environment valued component (Section 4.4 of the Application), which applies the same metrics applicable to human health (i.e., percent highly annoyed; or %HA). The assessment concluded that there would be no significant changes in the %HA. The conclusion would be identical when applied to human health, because such an assessment would apply the %HA metric in the same manner. Potential effects of ground vibration related to human health are not within the final approved scope of the assessment. However; any blasting required during the project construction period will conform to the applicable guidelines limiting charge size and ground movement at sensitive receptors and blasting is expected to only occur during daylight hours. Potential effects from light are described in the Visual Quality assessment (see Section 6.2 of the Application). This section describes the potential lighting effects to nearby receptors/residences including residents of Port Edward and Prince Rupert. There would be increases in ambient light and sky glow during nighttime hours. However, the Project is not predicted to be visible from Port Edward and direct lighting effects would not occur. Topographic and vegetation screening would intersect sight lines between Dodge Cove and the Project. Lighting effects could occur in some areas of Prince Rupert (i.e., the project night lighting is visible from parts of Prince Rupert), but this effect will be mitigated to levels that would not result in significant effects. The conclusions in the Visual Quality assessment related to lighting effects would be identical when applied to human health. Note that the assessment of human health does not make a singular conclusion that encompasses all aspects of health including sensory disturbance. The human health assessment provides separate evaluations and conclusions for effects from air quality and marine foods because the exposure pathways, chemicals of potential concern, and potential adverse effects are different, and not comparable with each other. The fact that noise (including vibration) and light are addressed and evaluated in separate sections of the Application does not preclude the ability to make an overall conclusion on the potential Project effects to human health. The noise and light assessments are focused on potential Project effects to receptors including humans. However, characterizing an overall effect on human health from a combination of air quality effects, marine foods consumption, noise effects, vibration effects, and lighting effects could be speculative given that a number of the potential effects could be perceived differently (e.g., noise, vibration and lighting).
258	screening	Gitxaala Nation	8.2.5.2 8.2.5.3	Human Health	It is not clear that the effects of cooling tower steam will be released to the environment and, if so, whether the AQ effects on human health have been identified and addressed.	Please see response to comment #32.
259	screening	Health Canada	8.2.5.2 8.2.5.3	Human Health	Reference to the justification for inclusion and omission of certain CACs should be provided (e.g., refer to Section 4.2)	The criteria air contaminants (CACs) listed in the AIR for the assessment of human health include sulphur dioxide, nitrogen dioxide, particulate matter and carbon monoxide. Justification for the omission of carbon monoxide from the assessment of human health is provided in Section 8.2.2.5.4 of the Application.
260	screening	ECCC	8.2.5.3	Human Health	The proponent has reported in 'Appendix F - Marine Sediment and Water Quality Technical Data Report' that PCDD/Fs in some samples exceed the CCME ISQG (0.85 pg/g TEQ). It should be noted that Health Canada may require a Human Health Risk Assessment for any sediment with PCDD/F values above the CCME criteria that is proposed for disposal at sea, irrespective of ECCC's Interim Guidance for the Assessment of Risks from Dioxins and Furans in sediments proposed for Disposal at Sea in Pacific and Yukon Region (2014). Health Canada should contacted for further guidance.	Sediment quality guidelines and disposal at sea guidelines are intended for the protection of aquatic life from direct exposure to chemicals in the sediment. These guidelines are based on studies of marine invertebrates such as amphipods, that live in the sediment. These guidelines are not intended to be used for the protection of human health because the guidelines are not based on human studies. It should be noted that there are no provincial or federal sediment quality guidelines for the protection of human health and that humans are not regularly exposed to sediments at the bottom of the ocean. The Application already includes a human health risk assessment (Appendix R of the Application) that evaluates the health risk from exposure to dioxins and furans from seafood harvested in the proposed dredge footprint. The types of seafood include clams and crabs because they live and feed among the marine sediment and may uptake dioxins and furans into their tissues, which are subsequently consumed by people. Aurora LNG is committed to engaging with ECCC and Health Canada regarding any further information requirements regarding seafood quality during the Disposal at Sea permitting process, once greater detail about the disposal requirements have been established.

260.1	round 1	ECCC	8.2.5.3	Human Health	"As a follow up to screening comment #260 The proponent has reported in "Appendix F - Marine Sediment and Water Quality Technical Data Report" that PCDD/F concentrations in some samples exceed the CCME ISQG (0.85 pg/g TEQ). It should be recognized that - in addition to ECCC's Interim Guidance for the Assessment of Risks from Dioxins and Furans in sediments proposed for Disposal at Sea in Pacific and Yukon Region (2014) - further analysis of potential impacts related to disturbance of sediment with PCDD/F values above the CCME criteria may be recommended by other authorities with pertinent expertise (e.g. Health Canada). It is recognized that Aurora LNG has committed to engaging with ECCC and Health Canada regarding any further information requirements during the Disposal at Sea permitting process. However, at this planning phase of the project, an effects assessment should allow for the impacts of any proposed disposal at sea activities to be determined taking into account the input of expert government authorities, the public and Indigenous groups participating in the environmental assessment. Information Request: ECCC requests that the proponent describe how it will assess and mitigate potential impacts related to disturbance of sediments with PCDD/F concentrations exceeding the CCME ISQG (0.85 pg/g TEQ) as part of the environmental assessment.	Aurora LNG is of the opinion that the mitigation measures described in the Application are sufficient to reduce the predicted Project effects of disturbance of sediment containing PCDD/Fs at concentrations higher than the CCME ISQG and no additional mitigation measures are planned. The following summarizes and expands on information provided in Section 4.5 (Water Quality) as it applies to human health. Potential effects related to disturbance of sediments with PCDD/F concentrations exceeding the CCME ISQG are characterized in Section 4.5.15.3, Characterization of Residual Effects - Dredging and Sediment Disposal. Mitigation measures 4.5.3, 4.5.4, 4.5.5, 4.5.6, and 4.5.10, relate to dredging and sediment disturbance (Table 4.5-26). The Project will not contribute to PCDD/Fs in the environment. Since the highest PCDD/F concentrations were detected in the 0.2 m surface layer of sediment, benthic marine life such as crabs, clams, prawns and benthic fish are currently interacting (i.e., feeding, foraging and living) with the layer of sediment that would result in the highest possible PCDD/F concentrations in their tissues. There is no pathway for the removal of surface, and underlying sediment to 15 m depth to result in higher PCDD/F concentrations in the environment. As noted in Section 4.5.13.3, "sediment containing PCDD/Fs will settle in an area of similar concentrations…much of the PCDD/F deposited in the surrounding area is anticipated to be covered subsequently with dispersed sediment of lower PCDD/F concentrations". Owing to the highly hydrophobic nature of PCDD/Fs, uptake by aquatic life from the water column is negligible compared to the uptake from food (which represents approximately 75% of PCDD/F uptake) and sediment (Cook et al. 1991). Further discussion on the risk to aquatic life from exposure to PCDD/Fs is provided in Section 4.5.15.3. As stated in mitigation 4.5.10, "sediment from the top layer (0.5 m) of the dredge footprints will be disposed of on land..". Therefore, that top layer of sediment with elevated PCDD/Fs will not be disposed of at sea. Some sediment disposed of on land will have PCDD/F concentrations above the CCME ISQG. However, the PCDD/F levels found in the proposed dredge footprint do not indicate a level that would constitute contamination. Consider the following: 1. The maximum concentration of PCDD/F in the sediment was 2.86 picograms per gram toxic equivalency (pg-TEQ/g) of sediment, based on fish toxic equivalency factors. Distribution of PCDD/Fs was patchy, with concentrations in the surface 0.2 m of sediment ranging from 0.120 to 2.86 pg-TEQ/g g/g. In the top 1 m of sediment, 17 of the 81 samples collected had concentration higher than the CCME ISQG (Table 4.5-24). 2. The BC Contaminated Sites Regulations for PCDD/Fs in sediment for marine and estuarine waters are considerably higher than the CCME ISQG and measured concentrations in sediment: - Sensitive Contaminated Site - 130 pg-TEQ/g - Typical Contaminated Site - 260 pg-TEQ/g http://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/policies-and-standards/sed_criteria_tech_app.pdf 3. When sediments are disposed on land, they are managed as soils. The BC Contaminated Sites Regulations for PCDD/Fs in soil are: - Agricultural/Parkland/Residential Land - 350 pg-TEQ/g - Commercial Land Use - 1,000 pg-TEQ/g - Industrial Land Use - 70,000 pg-TEQ/g http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/375_96_07 4. The BC Contaminated Sites Regulations - Schedule 7 for soil relocation to non-agricultural land for PCDD/Fs are: - 350 pg-TEQ/g http://www.bclaws.ca/civix/document/id/loo78/loo78/375_96_09 5. The Canadian Food Inspection Agency dioxin limit for all fish products is 20 parts per trillion (ppt), measured as TEQ. In comparison, the dioxin concentrations in sampled marine foods were: - Dungeness crab meat - 0.273 ppt - Dungeness crab hepatopancreas - 1.4 ppt - Clam - 0.811 ppt http://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/text-texte/fish_man_standardsmethods_appendix3_1406403090196_eng.pdf Reference: Cook, P.M.; Kuehl, D.W.; Walker, M.K.; and Peterson, R.E. 1991. Bioaccumulation and toxicity of TCDD and related compounds in aquatic ecosystems. Banbury Report 35. Biological Basis for Risk Assessment of Dioxins and Related Compounds
261	screening	Health Canada	8.2.4	Human Health	A discussion of how the different project phases may impact the surface water pH and subsequently the bioavailabiliy of chemicals of potential concern would be appropriate.	During screening Section 8.2.4 of the Application (Project Interactions with Human Health) was revised to include a discussion on the effects of surface water pH on chemical bioavailability, based on the predicted range of surface water pH change (i.e. 0.3 pH units).
262	screening	MOH	8.2.3.2	Human Health	(1) The Proponent did not provide an assessment of carbon monoxide in the HHRA. Although the Proponent provided an explanation for this exclusion in section 8.2.2.5.4 (p.8-11) of the Application, it is questionable if this fulfills the commitment to assess carbon monoxide as was indicated in the AIR in section 8.1.2, p. 8-1. Other EA applications for LNG facilities (e.g., LNG Canada) included an assessment of CO with respect to human health utilizing the AAQO that the Proponent cites in section 8.2.2.5.4, p. 8-11 of the Application. It is an expectation for Proponents to assess potential impact on human health of modelled carbon monoxide emissions. (2) The Proponent did not include a rationale for the exclusion of ozone from the HHRA as was committed to in Final Response 2 to comment #110 (1 of 4) of the dAIR tracking Table. (3) The Proponent did not include the location of the Workcamp as a receptor for air quality. MoH provided rationale for including the workcamp as a receptor in comment 110 (1 of 4), Round 2 comments of the dAIR Tracking Table. Exposures to air emissions from the Project at the work camp is not covered by BC's Occupational Health and Safety regulation. This is a concern because the Project Description (January 2015) indicates in section 6.7.4 (p. 38) that "during facility operation, the camp will continue to be used for permanent operations and maintenance personnel (up to 400), as well as those personnel required during plant turnaround (possibly in excess of 700). The camp may also be used to provide skills training and other capacity-building programs for the community." In other words, the camp will be in operation during the operations phase of the project and air quality should be assessed at the camp. (4) The Proponent used the CCME Interim Sediment Quality Guidelines for the Protection of Aquatic Life - Probable Effects Level to screen COCPs in the sediments. MoH expressed concern with this practice in comment #109, round 2 of the dAIR Tracking Table. These guidelines are not protective for human health and should not be used to screen out a COCP from being carried forward to the tissue sampling of marine country foods. The Proponent did not indicate any disagreement with this concern during the pre-Application period and stated that the BC Contaminated Sites Regulation Soil Standards would be used for this purpose in the Final Response to comment # 109 (Of Note: MoH has concerns with the use of these BC CSR Soil Standards for this purpose as well). This creates uncertainty about the COPCs - it is unclear if correct COCPs were screened out from tissue sampling. Additionally, the Proponent did not include the reference values used from the CCME guidelines to screen COPCs in the sediments against in Appendix 3. These values should be included to provide working group members the opportunity to assess the accuracy of the screening process. Given these issues, MoH will have difficulty reviewing the Existing Conditions with respect to marine country foods in the Application.	(1) As stated in Section 8.2.2.5.2, "...the BC Ministry of Environment ambient air quality objectives for carbon monoxide are pollution control objectives applicable to the agricultural industry (BC MOE 2016). This objective is not an indicator of health risk because health metrics were not used in its derivation. Potentially harmful concentrations of carbon monoxide typically occur in enclosed indoor spaces with a direct source of carbon monoxide (e.g., home furnaces or fireplace). Outdoor concentrations of carbon monoxide will not reach concentrations that could adversely affect human health". The Proponent maintains its position that carbon monoxide in outdoor environments does not pose a significant health risk, noting that provincial, federal work-related health guidelines for carbon monoxide are applicable to indoor and enclosed environments that contain an active carbon monoxide source. There are no provincial, federal or international carbon monoxide guidelines for the protection of human health applicable to outdoor environments. A revised rationale has been provided in Section 8.2.2.5.4 of the Application. (2) The Application was updated during screening to include a rationale for the exclusion of ozone from the assessment of human health in Section 8.2.2.5.4. (3) The assessment of human health was updated to include the worker camp at 3 additional human receptor locations during the operations phase. (4) The Proponent recognizes that that the sediment quality guidelines are protective of aquatic life, and not human health, and states in the Application that, "Regulatory agencies (both Canadian and international agencies) have not developed health-based sediment quality guidelines". Since the concern with marine food quality was based on dredging of sediment, this approach was deemed to be an appropriate alternative in lieu of human health based sediment guidelines and more conservative than applying guidelines intended for contaminated sites. This approach is also consistent with the approach applied in the environmental assessment for the Pacific Northwest LNG Project, Prince Rupert Gas Transmission Pipeline Project, LNG Canada Project, and Woodfibre LNG Project. As stated in Section 8.2.5.3.1.2 of the Application, technical details about sediment collection and laboratory analytical records are described in the Water Quality valued component (Section 4.5 of the Application). The Water Quality valued component provides a detailed comparison of sediment quality compared to the CCME sediment quality guidelines for the protection of aquatic life. The assessment of human health does not replicate the presentation of extensive sediment lab data used for screening/selecting chemicals, since the existing conditions for human health are based on the concentration ratio or hazard quotient, and not the existing conditions for sediment quality.
262.1	round 1	MOH	8.2.3.2	Human Health	"As a follow up to screening comment #262 (4) See Aurora LNG Memo MOH_COPCscreening for information request. Same comment applies for section 8.2.2.5.4 of the Application. "	Aurora LNG stands by the methods used to screen chemicals of potential concern to apply to marine traditional foods. Aurora LNG acknowledges that during the AIR development in 2014, the MOH indicated that the use of CCME sediment quality guidelines as a screening tool for food pathways is not appropriate. A request was made at that time for MOH to suggest alternative screening methods because the proponent recognized that no environmental guidelines would be entirely applicable. Ministry of Health declined to provide alternative screening methods that would be acceptable. Aurora LNG had considered applying the following methods as screening tools: - Canadian Food Inspection Agency tissue residue limits for dioxins and furans. - BC Contaminated Sites Regulations Soil Quality Guidelines for the Protection of Human Health (residential land). However, if these screening methods were applied, copper, dioxins and furans would be screened out of the assessment because the concentration of dioxins and furans were below the CFIA tissue residue limit, and the concentrations of copper, dioxins and furans in the sediment are below the BC CSR soil quality guidelines defining them as contaminants. Therefore, in order to be consistent with the methods used in other LNG projects that propose dredging, the CCME sediment quality guidelines were applied.
263	screening	Lax Kw'alaams Band	8.2.3	Human Health	No consumption rates from community studies are provided. The authors tested clams/crab in the area and applied consumption rates for marine foods from FNFNES published by Chan et al. 2011. This is a common method when no local values are available to assess exposure risk to COPCs. No mention is provided as to consultation with Aboriginal Groups whether the consumption rates used reflect current use. This is relevant for inclusion to understand existing conditions. Please outline how TUS information was used to inform this assessment to inform the more general Chan et al., 2011 research.	The seafood consumption rates from Chan et al. 2011 were applied because it encapsulates a broad range of consumption rates from First Nations along the Pacific maritime coastline. More recent community studies provided by local First Nations for other similar projects (e.g., Pacific Northwest LNG) did not include a description of seafood consumption rates. Consequently, Chan et al. 2011 was applied as a secondary source of information. The consumption rates applied were the most conservative values available from Chan et al, applying the upper 95th percentile of consumption rates among study participants that consumed those foods. Since every individual's seafood consumption rate differs, the human health risk assessment (Appendix R of the Application) provides a Recommended Maximum Weekly Intake (RMWI) for each type of food assessed. Consultation with Aboriginal Groups for the Project was used to inform on the appropriate species to collect for the study. For example, salmon, Dungeness crabs, clams, prawns and halibut were identified as seafoods that were harvested from the region and consumed in high volumes. Among these species, only Dungeness crabs, clams were relevant study species because they live in close association with sediments that would be affected by dredging. At the time of writing the Lax Kw'alaams Band had not provided any information on traditional food consumption rates to Aurora LNG. Aurora LNG anticipates receiving an Aboriginal Interest and Use Study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to incorporate any information provided regarding seafood consumption rates for the types of foods that are potentially affected by the project.
264	screening	MOE	8.2.6	Human Health	Results of the acidification and eutrophication assessments have not been considered in the assessment of effects to Dodge Cove water reservoir. The reservoir was reviewed as a lake in the WQ portion of the assessment and the reservoir exceeded the critical threshold for eutrophication. While higher nutrients in and of themselves are not necessarily a problem, this change in reservoir nutrients can result in algal blooms that can decrease water quality and can even be toxic. Additionally pH on its own may be a concern for water treatment and pipes but it also needs to be evaluated in conjunction with other water quality characteristics, pH can change the availability and toxicity of other parameters such as metals in water. Lastly, like the fish habitat, increased acidity in adjacent soils has not been factored into the evaluation of water quality for the reservoir. This needs to be done.	The acidification and eutrophication assessments are based on indicators that are protective of aquatic life. They are not indicators that are protective of human health, and the results of the acidification and eutrophication assessments cannot be used to infer potential effects to human health. Section 8.2.4 of the Application was updated during screening to provide a more detailed rationale related to the absence of Project interactions with drinking water quality and recreational use, and incorporates the results of the acidification and eutrophication assessment in the rationale.
264.1	round 1	MOE	8.2.6	Human Health	"As a follow up to screening comment #264 (1) Acidification - The health implications of the predicted acidification to drinking water sources remain unclear. The proponent dismisses the change in acidity because the drinking water guideline for pH is operational, not health-based, and does not indicate whether the operational guideline will be achieved. This is relevant to human health because changes in pH can reduce the effectiveness of water treatment and/or contribute to the leaching of contaminants (e.g., copper, lead and other metals) from susceptible pipes. These potential effects can increase the risk to human health. Same comment applies to section 8.2.4 of the Application, & section 4.1.3 (p.16) of Health TDR. (2) Eutrophication - see Aurora LNG Memo MOH_EutrophicationDrinkingWater for information request. Same comment applies for section 8.2.4 of the Application, & section 4.1.3 (p.16) of Health TDR."	Refer to the "Dodge Cove Water Supply and Watershed" technical memo which will be filed with the BC EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
265	screening	MOE	8.2.7	Human Health	Disposal at sea was originally modelled to occur at Brown Passage, the project specifications changed at disposal at sea was modelled to occur at the MOF and berthing sites. The change of location and adjustment to model outcomes was not incorporated into the Human Health assessment. The increase in sedimentation and potential contaminants from soils to food sources has not been addressed.	The Disposal at Sea of dredged sediment is currently proposed at Brown Passage and there has been no change in the project specifications regarding the location of this activity. The materials offloading facility (MOF) and LNG carrier berthing sites are the dredging sites; and not the Disposal at Sea sites. The Project has been designed to dispose up to the top 0.5 meters of dredged sediment in an on-land engineered disposal cell located within the PDA because this top layer of sediments contains higher concentrations of dioxins and fiurans. The underlying sediment, that is deeper than 0.5 meters, would be acceptable for Disposal at Sea at Brown Passage because these sediments meet the applicable guidelines. The health risk to people consuming clams and crabs harvested from the MOF and berthing sites was considered in the Human Health Risk Assessment (Appendix R of the Application) and in Section 8.2.5.3 of the Application because dredging will disturb the sediments containing concentrations of dioxins and furans. The health risk to people consuming seafoods harvested from Brown Passage is not considered in the assessment of human health and is not in the Application Information Requirements.
265.1	round 1	MOE	8.2.7	Human Health	"As a follow up to screening comment #265 The wording in the Disposal as Sea document made it sound like the disposal would also happen at Berth 1 and 2 and the MOF as part of the building up of the sites. After reviewing this document and the others, only the Brown Passage is planned for disposal at sea."	Comment noted. As outlined in Section 1.2.6.3 of the Application, Brown Passage is the proposed disposal at sea site.

266	screening	CEAA	9	Accidents or Malfunctions	In B.C.'s Assessment Report, the Agency will be seeking an analysis to support B.C.'s conclusion on the potential significance of adverse environmental effects as a result of accidents and malfunctions. In the Application, descriptions of preventative and response measures are presented; however, it is sometimes unclear which measures will address which residual effect and how implementation of these measures will achieve the conclusions reached on the significance. Describing general compliance with laws and standards does not constitute suitable preventative and mitgative action. Mitigation measures provide the basis for deriving federal conditions, which require an appropriate level of detail to be enforceable. The Agency seeks more information to support the analysis and conclusions on accidents and malfunctions.	Comment noted. Please see responses to comments 272, 279, 281 and 283 for additional information.
266.1	round 1	CEAA	9	Accidents or Malfunctions	**As a follow up to screening comment #266** Issue remains outstanding. See Agency responses to screening ID #'s 272, 279, 281, and 283 above.	Aurora LNG acknowledges the request for additional certainty in commitments to preventative and response mitigation measures. Aurora LNG believes that it is not practical or necessary to develop detailed procedures during the Application review process, prior to detailed design and engineering when many of the aspects of incident prevention are firmly established. The measures presented in Section 9, including reliance on established design codes and industry standards for LNG and terminal development, are expected to address various VC effects simultaneously and as such are not presented in terms of individual residual effect. Prevention is of notably higher effectiveness than emergency response, which is why Aurora LNG has committed to developing Project design standards in collaboration with regulatory agencies. Effectiveness of emergency response measures will be dependent on many incident-specific factors, such as the location of an incident, the type of incident, and the environmental conditions at the time of the incident. This approach is consistent with the requirements of the Aurora AIR. As such, Aurora LNG believes that the EAO will be able to write an assessment report that provides sufficient details specific to preventative and response measures associated with accidents and malfunctions assessed in Section 9 of the Application.
267	screening	Lax Kw'alaams Band	9	Accidents or Malfunctions	Insufficient information provided to evaluate adequacy of assessing accidents and malfunctions on section 5(1)(c) factors. Section 9.2 Methods notes that CEAA s.5(1)(c) factors were "considered" in characterization of potential effects but they are not each specifically mentioned. Please outline exactly how these factors were considered. (For impacts to traditional use, it is advisable to consider the real scenario of the Bella Bella experience and lessons that have been learned from that need to be integrated.)	Environmental effects of accidents or malfunctions with respect to Aboriginal Groups are considered in Section 11.6 and Section 12.6 of the Application.
268	screening	Gitxaala Nation	9	Accidents or Malfunctions	The accidental introduction of invasive exotic marine species does not appear to be referenced. This is an accident of significant concern to Gitxaala members	The release of ballast water, a pathway through which aquatic invasive species could be introduced into the marine environment, is regulated by Transport Canada through the Ballast Water Control and Management Regulations (SOR/2006-129), under the Canada Shipping Act (2001). Further discussion is provided in Table 4.5-17 and in the Water Quality VC (Section 4.5.15.3, Operations). The Transport Canada regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Aurora LNG vessels will be expected to adhere to these regulations, as identified in Mitigation Measure 4.5.7 (Section 4.5.15.3 / Table 4.5-26 of the Water Quality VC).
269	screening	Metlakatla First Nation	9	Accidents or Malfunctions	Please indicate where the accidental introduction of invasive exotic marine species is identified and assessed.	The release of ballast water, the pathway through which aquatic invasive species could be introduced into the marine environment, is regulated by Transport Canada through the Ballast Water Control and Management Regulations (SOR/2006-129), under the Canada Shipping Act (2001). Further discussion is provided in Table 4.5-17 and in the Water Quality VC (Section 4.5.15.3, Operations). The regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Vessels transiting to the Aurora LNG marine terminal will be expected to comply with Transport Canada regulations, as identified in Mitigation Measure 4.5.7 (Section 4.5.15.3 / Table 4.5-26 of the Water Quality VC).
269.1	round 1	Metlakatla First Nation	9	Accidents or Malfunctions	As a follow up to screening comment #269, Metlakatla understands the provision for ballast water exchange. Metlakatla remains concerned that invasive species may be carried in bilge water and released in coastal waters and/or may be carried on vessel exteriors to detach in coastal waters. How will these pathways of effect be managed?	LNG shipping activities will adhere to Transport Canada Ballast Water Control and Management Regulations (SOR/2006-129), under the Canada Shipping Act (2001). Pathways will be managed through mitigation measure outlined in Section 4.5.15.3 / Table 4.5-26 of the Water Quality VC.
270	screening	MOE	9	Accidents or Malfunctions	Please see comments in Section 1.6, Applicable Authorizations.	For information on comments made by MOE on Section 1.6 please refer to responses provided during screening.
270.1	round 1	MOE	9	Accidents or Malfunctions	"As a follow up to screening comment #270 Please see Working Group round 1 comment regarding comment 1.6 Application Authrorization Table 1-23"	Comment noted. Table 1-23 in Section 1.6 (Applicable Authorizations) of the Application was updated during Screening to address similar and related comments from MOE. For example, edits were made to Table 1-23 indicating that the Sewerage System Regulation falls under the Public Health Act. Additional comments providing details related to applicable authorizations have been considered, but did not result in further updates to Table 1-23.
271	screening	Dodge Cove	9.5	Accidents or Malfunctions	9.5.3 An aircraft crashing into an LNG export terminal and/or ship would affect community health of Dodge Cove Improvement District and Prince Rupert, yet community health does not address these affects. This needs to be studied. Also the claim that a large-scale response is "likely within the operational capacity of local and regional ERS" fails to address the reality of the Prince Rupert region, which does NOT have the ERS systems to address emergencies dealing with LNG accidents and malfunctions. This needs to be properly studied to reflect the capacity of the Prince Rupert region, the LAA, and the RAA, in regards to any accidents and malfunctions at an LNG terminal.	Section 6.6 (Community Health) assesses potential adverse effects on community health and wellbeing and harvested foods under normal operating conditions. Assessment of facility impact by aircraft and vessel grounding or collision is included in Section 9 Accidents and Malfunctions. This includes facility impact from aircraft (Section 9.5) and vessel grounding or collision (Section 9.9). Section 6.4 (Infrastructure and Services) describes the current capacity of emergency response and protective services. Section 6.4.3 characterizes the capacity of the Prince Rupert Department as capable of accommodating increased demand similar to that currently demanded within the City; not that associated with industrial accidents. As stated in Section 9.5.3 an aircraft collision with the facility would likely result in an implementation of the Emergency Response Plan (see Section 14.16 Emergency Response Plan) from which additional local and regional resources would likely be activated to respond to the incident. Through the use of the ERP, mutual aid agreements and regional participation, response to aircraft collision with the facility is likely within the operational capacity of these local and regional emergency response services, including aircraft response services.
272	screening	CEAA	9.5	Accidents or Malfunctions	The Agency notes that general compliance with laws, regulations, standards, and coldes and deferred identification and implementation of mitigation measures (e.g. based on future discussions with regulators) do not constitute suitable preventative and mitgative action. Under CEAA 2012, mitigation measures must be clear, enforceable, technicaly and economically feasible, and effecive in addressing the adverse environmental effect. The Agency seeks more information ton how a proposed measure will be effecive in achieving the predicted level of effects to the VCs identified.	Section 9.5.2 presents proposed mitigation measures (preventative and response) applicable to a potential aircraft collision with the facility. Residual effects were assessed in terms of likelihood of the incident occurring (i.e., with project design / preventative measures in place), consequence of the incident on each distinct VC (i.e., after emergency response measures were applied), and as a function of the significance criteria defined discretely for each Valued Component. Preventative mitigation measures included: - developing final project design in compliance with the Prince Rupert port authority aerodrome requirements - prescreening helicopter service providers associated with Project activities to meet applicable regulatory requirements - conducting regular inspections of prescreened helicopter operations associated with the Project - providing Project aircraft traffic information to potentially affected members of the public, applicable municipal, provincial authorities In the event of an accident or malfunction, Aurora LNG will implement the Emergency Response Plan, will contact appropriate authorities, and will engage emergency medical services as needed.
272.1	round 1	CEAA	9.5	Accidents or Malfunctions	**As a follow up to screening comment #272** Issue remains outstanding as response does not address comment. A strategy to assess the effectiveness of the proposed mitigation measures is required. This would entail elements such as: briefly stating the nature and anticipated level of effectiveness of various proposed mitigations, an incident review procedure, periodic review of the Incident Command System and Emergency Response Plan, periodic audit of emergency response equipment and personnel training, annual safety reporting, continuous engagement with and feedback from local residents, airport, and other stakeholders in the area, continuous feedback through a safety committee, etc.	Aurora LNG believes that it is not practical or necessary to develop detailed emergency response procedures during the Application review process, prior to detailed design and engineering when many of the aspects of incident prevention are firmly established. As noted in Section 14.6 of the Application, Aurora LNG will prepare an Emergency Response Plan (ERP) and submit this plan to the British Columbia Oil and Gas Commission (BC OGC) under section 8(1)(b) of the Liquefied Gas Facilities Regulation. The Regulation requires that the ERP be prepared to the satisfaction of the commission. The ERP will be compliant with applicable regulations, and will adhere to relevant standards such as CSA Z246.2 - Emergency preparedness and response for petroleum and natural gas industry systems. The ERP will include details of emergency response resources, training, a description of maintenance, exercises, and procedures for plan review and update.
273	screening	MOE	9.5	Accidents or Malfunctions	Table 9.3-1 : In an accident, soil will also be contaminated. An assessment of potential soil contamination effects is missing.	Table 9.3-1 lists all valued components (VC's) in the environmental assessment; soils was not identified as a VC through development of the AIR, instead it was captured under the Vegetation and Wetland Resources VC. The likelihood of soil contamination is considered low. Vegetation and wetland resources have noted potential adverse residual effects for two accident or malfunction scenarios: On-shore fires or explosions On-shore hazardous spills Both scenarios result in no significant residual effect to vegetation and wetland resources after mitigation is applied. The first scenario (fire or explosion) would result in a low likelihood for soil contamination. Mitigation measures applicable to the second scenario (hazardous spill, either small spill or large scale spill) include facility design, secondary containment and implementing the spill response plan. As soils will be salvaged prior to development of the Project, the spill would have to migrate off-site to result in soil contamination. Remedial soil clean up measures, if necessary, would follow the British Columbia Contaminated Sites Regulations and would be cleaned up to parkland standards for effects to intact soils and industrial standards for bare ground conditions on the proposed facility.
274	screening	Dodge Cove	9.6 9.9 9.10	Accidents or Malfunctions	a) 9.6.1. On Shore Fires or Explosions - flammable liquids and gases may also be stored or used in areas that extend beyond the LNG facility - so the possibilty of a fire or explosion would also extend to these areas. Information about where these locations might be, and the effects that fuel storage/use would have on any fire and explosion would need to be studied. b) 9.6.2. Wildlife Resources (Terrestrial) "effects to wildlife resources could be long-term up to 10 years" if this involved old-growth forest, of which Digby Island has plenty of, than long-term affects would be irreversible. This needs to be studied. c) 9.6.3 The claim that high rain is not conducive to forest fires - yet the summers are quite dry and fire bans are implemented in the summers now. A study of forest fires need to be done, and the effects to all the VC's. Climate change may contribute to changing LAA climate, and considering the long-term range of the product, this needs to be studied and addressed for scenarios such as forest fires. d) 9.6.3. The claim that Auora LNG will be able to handle any emergency fire and explosion so it wouldn't effect LAA and RAA infrastructure and services - what about evacuation of Dodge Cove Improvement District and Prince Rupert? What about injured people that need medivac and/or hospital services. One time emergency situation could tie up the services in Rupert, or Terrace, and drastically affect local services. This needs to be studied. Marine Use and Navigable Waters - studies need to be done on how any accidents would affect marine traffic being shut down. Saying this is not significant when the mouth of Prince Rupert Harbour would be shut down is not studying the effects of a shutdown on the VC's, economic especially. 9.7.1 The max shutdown is one train, when max buildout is 4 trains. Air Quality is using 4 train scenario. This should be used for other VC's as well. The study should show max shutdown of 4 trains. In Air Quality, no mention of these effects on Dodge Cove Improvement District.	a) Preventative and response mitigation measures summarized in Section 9.6.3 will be applied to all flammable liquids and gases required to support Project activities regardless of their location relative to the LNG facility footprint. b) Effects of a small or large-scale fire on wildlife resources (terrestrial) are expected to be long-term (up to 10 years) as the immediate loss or alteration of habitat resulting from a fire at the LNG facility would be expected to extend through one or multiple generations (depending on the species). Potentially affected old-growth forest communities would require up to 250 years for the effect to be reversible (as forest communities recover). However, effects of a fire are expected to be localized to the PDA and LAA and species dependent on old-growth forests are expected to relocate to similar available habitats in the LAA or RAA within a shorter time period (e.g., within one to several years). c) Section 9.6.2 presents preventative and response mitigation measures specific to effects of an on-shore fire or explosion caused by Project activities. Potential effects of the environment (i.e., extreme precipitation, forest fires, climate change) are considered in Section 10. The Project will be designed to withstand extreme environmental conditions. Incremental changes to environmental extremes due to climate variability will still be within the design specifications of the Project. A more rigorous assessment of these extremes will be completed during the final detailed engineering design phase. Proposed preventative and response mitigation measures specific to forest fire are provided in Section 10.2.7.2. d) Stated in paragraph three of Section 9.6.1 the on-shore fire or explosion event, while unlikely, considers an accidental ignition of any flammable substance with the potential to spread beyond the PDA but remaining on Digby Island. As the scenario does not extend beyond Digby Island increased short-term demand related to an evacuation of Prince Rupert is not considered. With implementation of preventative and response measures (see Section 9.6.2), through the use of an Emergency Response Plan with local and regionally coordinated emergency responders, and through the use of Aurora LNG's on-site emergency response services, the magnitude of residual effects on infrastructure and services is expected to be low. Where air evacuation of personnel and/or residents of Digby Island is required, additional mitigation proposed in Section 6.3 requiring coordinated air evacuation and treatment services (likely with larger hospitals in BC) will further mitigate short-term effects on local emergency response and health care services. Sections 9.6 (On-shore Fires or Explosives), 9.8 (Vessel Grounding or Collision) and 9.10 (Releases at the Loading Facility) assesses potential residual effects on marine use and navigable waters with a focus on marine shipping traffic within the Port of Prince Rupert. Section 9.11 (Potential Cumulative Effects) assesses the potential for increased vessel-to-vessel collisions within the Port of Prince Rupert. As described, events assessed in Sections 9.4 (Motor Vehicle Collisions), 9.5 (Facility Impact from Airport), and 9.7 (LNG Plant Malfunctions) do not have a direct interaction with Marine Use and Navigable Waters and therefore effects on marine traffic within the Port of Prince Rupert for these events are not assessed. Potential residual effects on the economic environment are only assessed for the event described in Section 9.6 (On-shore Fires or Explosions). The decision not to assess a full four train shutdown in Section 9.7 (LNG Plant Malfunctions) was made as while a one train shutdown is highly unlikely, a four train shutdown is very unlikely and therefore does not constitute a credible scenario.
275	screening	Lax Kw'alaams Band	9.6 9.9 9.10	Accidents or Malfunctions	Aurora did not discuss fires on vessels nor fires during construction. The Application restricts fires to starting on-shore and spreading elsewhere and does not address fires or explosions on LNG vessels themselves. Aurora also focuses only on operations and does not discuss fires during construction. Please update assessment to include consideration of fires on LNG vessels and related risks, as well as fires during construction.	Fires associated with vessels are assessed in Section 9.9 (vessel grounding or collision) and Section 9.10 (LNG releases at the loading facility). Although not explicitly stated, Section 9.6 addresses on-shore fires and explosions during all phases of the Project. Section 9.6 focuses on the operations phase as a realistic worst case scenario (i.e., storage of large volumes of flammable liquids and gases); however, preventative and response measures proposed to address on-shore fires or explosions will be applied during all phases of the Project.

276	screening	CEAA	9.6 9.9 9.10	Accidents or Malfunctions	a) See previous comment. For on-shore Fires or Explosions, the Agency notes that Aurora's Emergency Response Plan, which includes emergency response procedures considered to be important to reducing the likelihood and consequence of fires, will be developed during the construction and operation phases. To the extent possible, please provide details on the process or key components of Aurora LNG's emergency response planning to fires or explosions (e.g. containment, notification, and mobilization) and how they contribute to the significance conclusion for the VCs identified. b) Please identify any potential residual effects to migratory birds and species at risk from an explosion or fire and provide details of how the proposed mitigaiton measures for on-shore fires or explosions will be effecive in achieving the predicted level of effects to the VCs identified .	a) Section 9.6.2 notes that mitigative response measures will include implementation of the Emergency Response Plan (ERP; preliminary information relating to the ERP is outlined in Section 14.16). ERP priorities will include protection of the environment in the event of an incident. Implementation of appropriate mitigative response measures will reduce the consequence of the incident on each distinct VC. The ERP, combined with the other proposed preventative and response mitigative measures was used to assess significance of residual effects. b) Section 9.6.3 provides a description of the potential Project residual effects from an on-shore fire of explosion for wildlife resources (terrestrial), which is inclusive of potential effects to migratory birds and species at risk. An on-shore fire or explosion is unlikely to extend beyond the boundaries of the PDA, and is unlikely to result in residual effects to migratory birds or species at risk beyond that which would be caused by the initial vegetation clearing for construction of the LNG facility. A fire or explosion that extends beyond the PDA boundary could result in the loss or alteration of foraging, breeding, nesting, rearing, or staging habitat for migratory birds and species at risk. There is also potential for direct mortality of individuals that are unable to leave the area (i.e., have limited dispersal ability, have limited mobility, or are of a life stage that inhibits movements). Preventative and response measures to avoid or reduce effects from an on-shore fire or explosion are described in Section 9.6.2. After preventative and response measures have been implemented following an on-shore fire or explosion, there is a medium likelihood of residual effects to terrestrial wildlife resources (including migratory birds and species at risk), while the consequence is high for habitats most likely to support wildlife species at risk (e.g., old growth forest). In the case of a small-scale fires limited to the PDA, residual effects on wildlife resources are predicted to be not significant. If a large-scale fire or explosion affected migratory birds or species at risk individuals or habitat to the extent that it limited the long-term viability of a regional population, it has potential to result in significant residual effects on wildlife resources.
276.1	round 1	CEAA	9.6 9.9 9.10	Accidents or Malfunctions	**As a follow up to screening comment #276** a) Issue remains outstanding. Level of detail provided in 14.16 is insufficient. See comment for ID # 204 above. b) Issue remains outstanding. Response points to Section 9.6.3 for a description of potential project residual effects from an on-shore fire or explosion for wildlife resources; however, the information in 9.6.2 is not specific to any VC and speaks more of a general mitigation strategy rather than any specific residual effects from on-shore fire or explosion that pertain specifically to wildlife resources. The remainder of the response speaks of the likelihood of the residual effects occurring, which does not address the requirement for details regarding the predicted level of effectiveness of the proposed mitigation measures in minimizing or reducing impacts to the stated VCs, and specifically for migratory bird species (which is a specific CEAA 2012 Section 5(1)(iii) requirement).	a) Comment noted. Aurora LNG is not of the opinion that the application review process, prior to detailed design, is the appropriate time to develop the emergency response plan. Prevention is of notably higher effectiveness than emergency response, which is why Aurora LNG has committed to developing Project design standards in collaboration with regulatory agencies. Effectiveness of emergency response measures would be dependent on many incident-specific factors, such as the location of an incident at the LNG facility, the type of the aircraft involved in the collision, and the environmental conditions at the time of the incident. Aurora LNG will prepare an Emergency Response Plan (ERP) and submit this to British Columbia Oil and Gas Commission (BC OGC) under section 8(1)(b) of the Liquefied Gas Facilities Regulation. The Regulation requires that the ERP be prepared to the satisfaction of the commission. The ERP will be compliant with the applicable regulations, and will adhere to relevant standards such as CSA Z246.2 - Emergency preparedness and response for petroleum and natural gas industry systems. The ERP will include details of emergency response resources, training, a description of maintenance, exercises, and procedures for plan review and update. b) In accordance with Section 5(1)(a)(iii), the environmental effects for migratory birds have been taken into account in Section 9.6 of the Application. Section 9.6.2 is intended to provide an overview of the preventative and response measures deemed to be effective at reducing the event, as well as its potential for interaction across valued components. Individual preventative or response measures were developed to reduce potential effects across multiple environmental receptors simultaneously to increase effectiveness across valued components. The design controls and adherence to regulations, standards, and codes are expected to limit the potential for an explosion or fire during Project operations. Collectively, these design controls and actions are intended to prevent an occurrence from happening and will directly benefit migratory birds by retaining the vegetated habitats adjacent to the facility site. Project personnel will also complete fire prevention and management training, which includes familiarity with the storage locations of emergency response equipment. As described in Section 9.6.2, response equipment will be located at pre-determined strategic locations in proximity to infrastructure most likely to pose a fire or explosion hazard; strategic locations would also consider proximity to adjacent vegetated areas off the facility site.
277	screening	EAO	9.8	Accidents or Malfunctions	Page 9-32: "In the case of a spill affecting the water supply of Dodge Cove residents, it is understood that alternative water supplies will be provided to prevent exposure to hazardous spill materials from consuming locally sourced drinking water. Therefore, the residual effects on human health would be not significant." Who will be providing the alternative water supply? What is the worst-case and most likely scenario for how long residents might have to rely on the delivery of water in the event of contamination of drinking water? Is this a proponent mitigation measure?	As noted in Section 8.2.3.2.2, surface water collected from the small reservoir near Dodge Cove has been under a boil-water advisory since 1988 due to the potential for microbiological parameters (e.g., Escherichia coli) to cause illness (Northern Health 2016). In 2011, Dodge Cove residents voted against the proposed installation of a water treatment plant that would remove harmful microbes, due to unaffordable user fees. Therefore, the surface water from this small reservoir in Dodge Cove is expected to be under a boil-water advisory indefinitely. As a result, some Dodge Cove residents may apply a point-of-use personal water filtration system for local surface water. In the event of a spill affecting the surface water reservoir near Dodge Cove, Aurora LNG would supply an alternate drinking water source until such a time when the spill was cleaned up. The worst-case scenario of an event affecting the Dodge Cove reservoir would be a vehicle accident involving a cargo truck along the access road that results in a spill of liquid cargo such as fuel. Aurora LNG will have the resource capacity to address most low-speed motor vehicle collisions within the PDA including fire and clean-up crews. The implementation of a maximum speed limit of 30 km/hour in the Project description area greatly reduces the probability for severe damage to a cargo vehicle. Under this scenario, residents of Dodge Cove may have to rely on the delivery of water for up to several months, allowing time for clean-up of spilled material and water quality testing to confirm whether the water quality in the reservoir has returned to existing conditions prior to the spill.
278	screening	Lax Kw'alaams Band	9.8	Accidents or Malfunctions	Aurora did not consider hazardous spills within marine environment. Application restricted to on-shore hazardous spills only and does not take into account transportation of materials for storage via LNG vessels, tugs or other vessels during construction, operations, decommisioning, and removal of wastes etc. Please update Application to incude consideration of hazardous spills via LNG vessels, tugs, or other marine based vessels for all phases of the Project.	Hazardous spills within marine environments are assessed in Section 9.9 (vessel grounding or collision) and Section 9.10 (LNG releases at the loading facility). These sections focus on the realistic worst case scenarios; however, preventative and response measures proposed to address spills of hazardous materials to the marine environment will be applied during all phases of the Project.
279	screening	CEAA	9.8	Accidents or Malfunctions	Section 9.8.2 describes emergercy response strategies that may be implemented as part of the Emergency Response Plan. However, conclusions on the significance of effects were made assuming these measures would be in place. The Agency is unclear on which mitigation measures should be considered to arrive at the signficance conclusions. Please confirm the measures that will be implemented to mitigate or reduce the potential effects of on-shore hazardous spills on different VCs. Note that mitigation measures provide the basis for deriving federal conditions, which require an appropriate level of detail to be enforceable.	Section 9.8.2 presents proposed mitigation measures (preventative and response) in the event of an on-shore hazardous spill. Residual effects were assessed in terms of likelihood of the incident occurring (i.e., with project design / preventative measures in place), consequence of the incident on each distinct VC (i.e., after emergency response measures were applied), and as a function of the significance criteria defined discretely for each Valued Component. Preventative mitigation measures included in the assessment are: Hazardous materials will be stored 250 metres (m) or more from water bodies and other sensitive habitats unless secondary containment is provided. Drainage systems will be in place to collect contaminated water and process effluents.Refuelling and maintenance areas for heavy equipment will be 30 m or more from water bodies and sensitive habitats unless secondary containment is provided. Mobile equipment operating near the marine shoreline will be monitored by qualified personnel to manage the potential for small-scale leaks into the marine environment. Equipment will be kept in good working condition and will be inspected regularly by qualified personnel. Equipment used in or adjacent to the freshwater or marine environment will be clean and free of external grease, oil, or other fluids of a hazardous nature. Personnel working with hazardous materials will receive training in the proper handling, identification, documentation, and storage of wastes and hazardous materials (e.g., WHMIS training and Transportation of Dangerous Goods certification).Equipment operators will follow recommended operational practices for fuelling and other tasks that have the potential to cause a spill. In the event of an accident or malfunction, Aurora LNG will implement the Emergency Response Plan, will contact appropriate authorities, and will engage emergency medical services, as needed. Emergency Response Plan mitigation measures to limit effects will include: The source of the spill will be secured (i.e., valves closed, patching tanks) to reduce, stop or mitigate the ongoing spill of hazardous materials. Spill containment kits (with contents such as absorbent pads and socks, specialized personal protective equipment, and disposal bags or bins) will be located at strategic locations throughout the PDA to facilitate immediate response to a spill. Response to the release of a hazardous product will be carried out by trained and properly equipped personnel. Personnel responding to the spill will review Safety Data Sheets for properties of the spilled material. If the identity of the substance cannot be confirmed, the spill will be treated as hazardous material until the spilled material is identified. Notification of relevant regulatory agencies, potentially affected Aboriginal Groups, stakeholders, and the public. If a hazardous spill has the potential to enter the drinking water source used by Dodge Cove residents located adjacent to the Dodge Cove community, residents may be supplemented with trucked or bottled water.
279.1	round 1	CEAA	9.8	Accidents or Malfunctions	**As a follow up to screening comment #279** Response understood. The issue is regarding the use of the word "may" in reference to the listed preventative and response measures in 9.8.2. Commitment to at least a subset of key mitigations is necessary in order to logically support the determination of residual effects which is contingent on each of the identified mitigation measures being in effect. Recommend revising prefatory clauses to be affirmative for the implementation of the listed preventative and response measures, which are key mitigations.	Aurora LNG acknowledges that a correction is required in section 9.8.2 of the Application, the wording of the last line of the paragraph before the second bulleted list on page 9-26. The word 'may' should be replaced with 'will'. Further, the use of the word 'may' in the last bulleted item on page 9-26, should be replaced with 'will'. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
280	screening	EAO	9.9	Accidents or Malfunctions	Page 9-42: "A spill of diesel or bunker oil could impact water and sediment quality as discussed above, which in turn could affect the quality of marine country foods. Consumption of affected marine country foods could affect human health. In the event of a spill of diesel or bunker oil it is expected that a localized ban on harvesting marine foods would occur within the area affected by the spill, imposed by regulatory authorities. Such a ban would limit human exposures to marine foods containing contaminants. People may continue to harvest outside of the ban area and consume those foods safely. As a result, the magnitude of residual effect to human health is negligible and within the geographical extent of the LAA. The frequency of the residual effect is a single event that is short-term and reversible within one year or less. The context of residual effects to human health is resilient, indicating that there is a high capacity for human health to recover from a perturbation. After mitigation and response measures have been implemented following a vessel grounding or collision event resulting in a release of diesel or bunker oil, the likelihood and consequence of residual effects to human health are very low. Based on these factors, the risk matrix ranking is remote. Residual effects on human health are not significant." FOR DISCUSSION WITH WORKING GROUP AND ABORIGINAL GROUPS: Negligible magnitude because they can go elsewhere to harvest fish? What is the potential maximum spatial and temporal extent of a harvest ban as a result of a spill (how far might people have to go to harvest marine foods)? Need to examine this conclusion further.	The Accidents and Malfunctions chapter for this scenario describes the actions to reduce the effect to each VC. The maximum spatial and temporal extent of a harvest ban would be dependent on the type of spill (diesel, bunker fuel or both), volume of spill, time of year, oceanographic conditions at the time and the dynamics of biological uptake of chemicals in the spilled material. Complex marine spill modelling can provide some indication of the environmental fate of spilled materials. However, in the unlikely event of a spill, monitoring data are used to determine the areas affected and to establish potential marine harvest restriction zones. Scientific methods to manage seafood safety in the event of a fuel oil spill are available (e.g., NOAA 2002, Managing Seafood Safety after an Oil Spill) and would be used should a spill occur. The spatial extent of a seafood harvest ban would be determined by a monitoring plan to collect species that would most likely be affected by the type of fuel spilled. For example, a spill of heavy fuel such as bunker oil may result in a harvesting ban of benthic seafood such as crabs and shellfish because heavy oils are more dense than water and would sink. The temporal extent of a seafood harvest ban would be determined by ongoing monitoring of chemicals of concern in target seafood species, marine water or marine sediment; depending on the type of fuel spilled. A harvesting ban may be in the range of weeks to several months based on records of seafood closures related to fuel oil spills in the United States which ranged from 4,500 to 180,000 gallons (NOAA 2002). Aurora LNG looks forward to further discussion with the Working Group members and Aboriginal Groups during Application Review.
281	screening	CEAA	9.9	Accidents or Malfunctions	See comment for Section 9.5 above. Section 9.9.2 describes emergercy response strategies that may be implemented in the event of vessel grounding or collision. as part of the Emergency Response Plan. However, conclusions on the significance of effects were made assuming these measures would be in place. Please confirm the measures that will be implemented to mitigate or reduce the potential effects of vessel grounding or collision on different VCs. Note that mitigation measures provide the basis for deriving federal conditions, which require an appropriate level of detail to be enforceable.	Section 9.9.2 presents proposed mitigation measures (preventative and response measures) in the event of a vessel grounding or collision. Residual effects were assessed in terms of likelihood of the incident occurring (i.e., with project design / preventative measures in place), consequence of the incident on each distinct VC (i.e., after emergency response measures were applied), and as a function of the significance criteria defined discretely for each Valued Component. Preventative mitigation measures included: Vessels will be subject to mandatory pilotage while in Canadian waters in compliance with the Pilotage Act (2011), Pacific Pilotage Regulations (Government of Canada 2009).Vessel crews and operators will have a high standard of training including vessel-specific emergency response protocols. Vessels will be operated by experienced master mariners and supported by the BC Coast Pilots for the entire duration of passage within the marine access route. Vessels will comply with the speed limits established by the Prince Rupert Port Authority. Vessel movement will rely on the judgement of an experienced ship captain, the local advice from the BC Coast Pilots, and existing environmental conditions. Vessels will be equipped with automatic identification systems in compliance with Marine Communications and Traffic System call-in procedures in Prince Rupert. Vessels will be equipped with standard navigational safety aids such as emergency steering, radars, electronic charts, navigation lights, sound-signalling devices, and marine VHF radios.LNG vessels will be escorted in and out of port by assist tugs while in transit within Prince Rupert Port Authority boundaries or berthing at the marine terminal.LNG carriers will be equipped with double-hulled cargo containment systems supported by containment breach sensors to reduce the probability of LNG leakage or rupture. Vessels will comply with the Canada Shipping Act, 2001, Vessel Pollution and Dangerous Chemicals Regulations. Vessels will be certified under the International Association of Classification Societies, which supports maritime safety through international standard training, emergency response protocols, technical support, compliance verification, research, and development.LNG carriers built after July 1, 1986 must comply with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IMO 1993). In the event of an accident or malfunction, Aurora LNG will implement the Emergency Response Plan, will contact appropriate authorities, and will engage emergency medical services, as needed. Since emergency response specific to this scenario is within the jurisdiction of the Canadian Coast Guard and Transport Canada, Aurora LNG will support these response efforts and will include the following response measures, as appropriate, to reduce or mitigate potential residual effects: Response to hazardous material spills, including containment of the spill and clean-up, will be carried out by trained, competent, and properly equipped personnel. Vessel-specific emergency procedures will comply with the requirements of the Canadian Coast Guard, Transport Canada, and the Marine Mammal Response Program under Fisheries and Oceans Canada. Response deployment will be supported by a Transport Canada certified Response Organization (e.g., Western Canada Marine Response Corporation) located in Prince Rupert to foster immediate response to a spill. Spill response procedures may include monitoring natural attenuation of released product and/or mechanical containment (e.g., booms) and recovery (e.g., removal using skimmers, sorbents, shoreline clean-up techniques).Personnel will notify relevant regulatory agencies, local Aboriginal Groups, stakeholders and authorities.

281.1	round 1	CEAA	9.9	Accidents or Malfunctions	**As a follow up to screening comment #281** Response understood. As per the comment for ID # 279 above, the issue is regarding the use of tentative or conditional language in describing the proposed mitigation measures. Affirmative language is necessary to impart confidence in the residual effects determination. In using conditional or tentative language, it is unclear as to whether the residual effects assessment is based on all of the listed preventative and response measures being in effect as a minimum, or whether the assessment would entail a portion or subset of the these listed response measures. If only a subset or portion is ultimatley committed to, the validity of the residual effects determination comes into question. Therefore, it is necessary to revise prefatory clauses to be affirmative for the implementation of the listed preventative and response measures (i.e.: change "may" to "will").	In the Section 9.9.2 of the Application, Aurora LNG acknowledges a correction is required in the wording of the last line of the paragraph before the second bulleted list on page 9-36. The word 'may' should be replaced with 'will'. An errata document is being created that will capture this correction and it will be filed with the BC EAO.
282	screening	ECCC	9.9	Accidents or Malfunctions	Section 9.9 combines vessel grounding with vessel collision, but is silent on vessel collision with another vessel. The section goes on to define a credible worst case scenario with a potential consequence of concern as a hull breach and containment failure of one LNG membrane tank (up to 48,000 m3 in volume) and one marine fuel tank (up to 2,500 m3 in volume). A more realistic credible worst case scenario would incorporate a collision of two vessels that results in a vessel grounding, which would therefore result in the containment failure of one LNG membrane tank, and at least two marine fuel tanks (with the possibility of at least two different fuel types being released for a worst-case scenario - namely bunker fuel and diesel).	The scenario assessed was developed as part of the AIR, with input from the Working Group. Based on our experience assessing similar projects, it is our professional opinion that a realistic credible worst case scenario is a grounding of one vessel or collision resulting in a hull breach and containment failure of an LNG membrane tank (up to 48,000 m3 of LNG) and one marine fuel tank (either bunker or diesel fuel up to 2,500 m3 in volume). The LNG carrier industry has a well-documented safety record, with no collisions, explosions or fires reported since the first LNG carrier sailed in 1964. This, combined with the pilotage and other mitigation measures listed in Section 9.9.2 placed on incoming and outgoing LNG carriers, provide preventative measures that reduce the probability of grounding or collision of marine vessels servicing this project.
282.1	round 1	ECCC	9.9	Accidents or Malfunctions	As a follow up to screening comment #282 In the Application Information Requirements it is stated that "The assessment approach should evaluate accidents and malfunctions risk (including scenarios) by examining the likelihood of an incident and the consequences of the incident to each relevant VC of the environment";. This requirement is not limited by the likelihood of the incident occurring. However, in the section of the Application entitled, Potential Cumulative Effects, the proponent indicates that a vessel-to-vessel collision is of a "low probability" and as such this scenario has not been considered in a substantive manner. A vessel-to-vessel collision may be a low probability, but such an event would have high environmental consequences. It is also important to note that potential collisions involving LNG carriers may be caused by other vessel types. For example, in Section 9.11, the proponent has recognized that the "Introduction of Project-bound LNG carriers and MOF-bound vessels will increase the probability of a vessel-to-vessel collision along the shipping route". In Section 9.11, the proponent has also recognized that "... if a vessel-to-vessel collision were to occur, the potential cumulative effects are expected to be significant for marine mammals and marine birds if the event results in a release of diesel and/or bunker oil, similar to the scenario described in Section 9.9." Information Request ECCC requests that the proponent revise the credible worst-case scenario to include a vessel-to-vessel collision. In this scenario such a collision would include a hull breach and containment failure of one LNG membrane tank (up to 48,000 m3 in volume) and up to two marine fuel tanks (up to 2,500 m3 in volume each), each of which contain a different marine fuel type (namely Bunker C fuel oil and marine diesel). "	Vessels travelling in the PRPA jurisdictional waters will be guided by experienced BC Coastal pilots and escorted by tugboats, so the likelihood of a collision between a vessel servicing Aurora LNG and a vessel from another project is considered low. However, the potential effects of a vessel collision would be expected to be of magnitude similar to the scenario described in Section 9.9 of the Application. As such, the potential effects of a vessel to vessel collision are expected to reflect those summarized in Section 9.9.3. Preventative measures and response mitigation measures summarized in Section 9.9.2 are expected to apply should this event occur.
283	screening	CEAA	9.10	Accidents or Malfunctions	See comment for Section 9.5 above. Section 9.10.2 describes preventative and response measures that may be considered or implemented in the event of a cryogenic release of LNG. However, conclusions on the significance of effects were made assuming these measures would be in place. Please confirm the measures that will be implemented to mitigate or reduce the potential effects of LNG releases at the loading facility on different VCs. Note that mitigation measures provide the basis for deriving federal conditions, which require an appropriate level of detail to be enforceable.	Section 9.10.2 presents the proposed mitigation measures (preventative and response measures) in the event of an LNG release at the loading facility. Residual effects associated with a release of LNG at the loading facility were assessed in terms of likelihood of the incident occurring (i.e., with project design / preventative measures in place), consequence of the incident on each distinct VC (i.e., after emergency response measures were applied), and as a function of the significance criteria defined discreetly for each Valued Component. Preventative mitigation measures included in the assessment are: Aurora LNG will consider Society of International Gas Tanker and Terminal Operators and Oil Companies International Marine Forum guidelines in its siting, design and operations The marine terminal will be equipped with safe-guarding instruments including process alarms, gas detection and fire detection systems The consideration of a spill basin designed into the jetty along with emergency shutdown systems that will be engaged to stop the flow of LNG from the loading arm which would limit the volume of LNG released Standard terminal procedures will be used to enhance safety and reduce the probability of a cryogenic spill. In the event of an accident or malfunction, Aurora LNG will implement the Emergency Response Plan, will contact appropriate authorities, and will engage emergency medical services as needed. The following mitigation response measures will be implemented: Securing of the source of the release (i.e., valves closed, patching tanks) to stop the ongoing spill Response by trained, competent and properly equipped personnel Notification of relevant regulatory agencies, potentially affected Aboriginal Groups, and stakeholders.
283.1	round 1	CEAA	9.10	Accidents or Malfunctions	**As a follow up to screening comment #283** Response understood. As per the comments for ID #s 279 & 281 above, the issue is regarding the use of tentative or conditional language in describing the proposed mitigation measures which undermines the confidence in the residual effects assessment. Recommendation: revise preffatory clauses to be affirmative for the implementation of the listed preventative and response measures (i.e.: change "may" to "will").	Comment noted. As per Aurora LNG's response to comment #279 and 281 regarding corrections identified in Sections 9.8.2 and 9.9.2 of the Application, Aurora LNG has reviewed the Section 9.10 and has not identified any further clauses that require correction.
284	screening	Dodge Cove	9.2	Accidents or Malfunctions	"Assessment of potential effects and/or consqeuences to each relevant VC of the environment, economic, social, heritage or health pillars." Very little of this is sufficiently assessed in Section 9. Very little mention of Dodge Cove, or Prince Rupert, and potential impacts in any accident/malfunction scenario, or residual and cumulative effects, especially in relation to economic, social, and health pillars. There seems to be no study of spills affecting soil quality/contamination and dermal contact with wildlife/birds/humans, and contact through food and water sources. There seems to be no study of accidents at the MOF, or turbine power systems, which are much closer to the community of Dodge Cove Improvement District. There seems to be no study of Allision ship accidents. We believe that these should be addressed. The assessments available seem to not be in-depth and take into account species of special concern, effects to the Skeena Estuary and biologically significant areas, of which Digby Island is part of.	As it is not feasible, reasonable or possible to evaluate all possible hypothetical accidents and malfunctions scenarios and/or variations of each scenario (e.g., varying chemicals, varying size of a spill or magnitude of an accident), the Accidents and Malfunctions chapter considered the scenario classes that were deemed to be credible as determined in the AIR from consultation with stakeholders. IR response 273 addresses the remedial soil clean up measures, if necessary. In the unlikely event of an on-land spill, soil contamination would follow the British Columbia Contaminated Sites Regulations and would be cleaned up to parkland standards for effects to intact soils and industrial standards for bare ground conditions on the proposed facility.
285	screening	NAV CANADA	9.2	Accidents or Malfunctions	Aurora did not provide the following information required in the AIR: (a) likelhood and probablility of Motor Vehicle collisions is not provided; (2) facility impact from aircraft misses interaction with vegetation and other VCs; (3) no consideration of likelihood of other marine vessel collisions and groundings (i.e. tugs, others); (4) Likelihood of LNG releases at loading facility based on historical trends not provided. Please provide the misssing information for the Application Review phase.	Assessment of potential effects of motor vehicle collisions is provided in Section 9.4; probability is discussed in the Conclusion of Section 9.4. Assessment of potential effects of facility impact from aircraft is provided in Section 9.5. As per Table 9.3-1 no other VCs are expected to interact with a Project accident or malfunction event related to a facility impact from aircraft. Events that could occur subsequent to an aircraft directly impacting the LNG facility are discussed in Section 9.6 and 9.8. Assessment of potential effects of marine vessel collisions and grounding is provided in Section 9.9. Section 9.9 focuses on the realistic worst case scenario; however, preventative and response measures proposed to address that scenario will be applied to other marine vessel collisions or groundings, where applicable. The worse case scenario was assessed as per the AIR. Assessment of potential effects of LNG releases at the loading facility is provided in Section 9.10.Section 9.2.1 states that the likelihood of events is discussed quantitatively where data are available (e.g., historic statistics); otherwise, a qualitative approach is taken based on professional judgment.
286	screening	Lax Kw'alaams Band	9.2	Accidents or Malfunctions	More information is required to define the potential risks to aviation from use of the emergency Burn Off Gas Flare stack and associated mitigations to address identified risks.	The Application assesses Project effects on aviation during a full emergency shutdown of a maximum of one production train with associated flaring (Section 9.7: infrastructure and services) . This event is an unexpected occurrence and assumes a worse-case scenario. The Application assesses Project effects on aviation under normal operating conditions (Section 6.3: Infrastructure and Services) and prescribes appropriate mitigation measures to reduce potential adverse effects related to the flare stack. In addition to adhering to Transport Canada regulations, mitigation measures proposed in Section 6.3 are expected to reduce the likelihood that aircraft will be in close proximity to flare stack. The mitigation measures proposed in Section 6.3 therefore also mitigate potential effects related to aviation interaction with an upset flaring event.
287	screening	Northern Health	9.2	Accidents or Malfunctions	Partially absent: potential health impacts (including those to community health, country foods, health services and exposures) are significantly oversimplified and not adequately characterized	The level of detail provided in Section 9 of the Application with respect to potential health impacts is consistent with the requirements of the AIR and typical of the level of information available during this phase of the environmental assessment process. The assessment of potential effects to human health can be found in Section 8 of the Application.
288	screening	Lax Kw'alaams Band	11.6	Accidents or Malfunctions	Insufficient information provided to evaluate adequacy of assessing accidents and malfunctions on section 5(1)(c) factors. Section 9.2 Methods notes that CEAA s.5(1)(c) factors were "considered" in characterization of potential effects but they are not each specifically mentioned. Please outline exactly how these factors were considered. (For impacts to traditional use, it is advisable to consider the real scenario of the Bella Bella experience and lessons that have been learned from that need to be integrated.)	Please see response to comment #267.
289	screening	Lax Kw'alaams Band	9.11	Accidents or Malfunctions	Only vessel to vessel collisions are considered for cumulative effects assessment due to the rational that spatial overlap for other projects activities is low but this disregards aviation within the narrow framework. Section 9.5 does note that there will be project related aviation therefore use of aircraft by other projects should be assessed. Furthermore, the potential for even just 2 vessel groundings with moderate amounts of fuel leaking during storm conditions has the potential to dramatically alter the conditions and associated Aboriginal Interests in this area, even from the same project. Please update the cumulative effects assessment to include aviation accidents/malfunctions, and the potential for overlapping effects on CEA section 5(1)(c) factors.	Aviation activities are regulated by Transport Canada and aviation activities will operate in accordance with Transport Canada regulations and the operating policies and procedures of the applicable airports. As such, an assessment of aviation collisions was not included in the Application. The Accidents or Malfunctions section did consider the risks of an aircraft collision with the facility (Section 9.5) and that of an LNG carrier collision or grounding (Section 9.9) with potential loss of containment. This is consistent with the requirements of the AIR.
290	screening	Dodge Cove	10.0	Effects of the Environment on the Project	The Table of Concordance states that the effects and/or consequences that may result from the extreme weather and other natural events on the LNG terminal are to be addressed in the assessment. Dodge Cove Improvement District feels that this section has not properly informed the working group about effects of natural events on the project - there seems to be an overall lack of data and follow through of consequences about each natural event and its impacts.	Section 10 assesses potential effects resulting from extreme weather and other natural events identified in consultation with the Working Group and as outlined in the AIR. The assessment method includes a description of potential environmental factors associated with each natural event and characterizes existing baseline conditions based on available data obtained from sources listed in Section 10.1.3. Where data was unavailable, the assessment notes what future studies will be conducted at a later state in the design phase, to address and inform potential effects in further detail.
291	screening	CEAA	10.2	Effects of the Environment on the Project	Fog should be included as another potential effect of the environment on the project as the PR area is prone to fog which can reduce visibility and affect navigation safety and shipping schedules. Intensity-duration-frequency curve for 1:100 year 24 hour rainfall event does not consider potential changes to rainfall patternsn because of climate change. However, there is no further exploration of the connection between what is stated on p. 10-19 ("... the return frequency of a 1 in 100-years extreme 24-hour precipitation event for North America (25°N-65°N) is expected to increase to once in 70 years by mid-21st century (Kharin and Zwiers 2000; Lemmen et al. 2008)" and the sufficiency of a 1:100 year extreme rainfall event facility design standard, given the 25+ year life of the project and the stated modelling predictions on pp. 10-20 - 10-22 for increased precipitation as rain in the Project area. Similar consideration should be granted for climate change influencing storm surges and the likelihood of flooding or incapacitation of project infrastructure due to an increase in the intensity, frequency, or duration of extreme wave events. 1:250, 1:1000, or other intervals for extreme year events should also be compared to provide a sense of relative magnitudes, which may further guide appropriate consideration of design standards and establish greater confidence in the design approach.	Assessment of potential effects of fog on visibility, navigation safety and shipping schedules is not within the scope of the final AIR as developed with input from the working group. Only LNG carriers and assisting tugs that are appropriately equipped (e.g., radar/navigation equipment) to the environmental conditions will be allowed passage between the Triple Island Pilot Station and the marine terminal/MOF. In addition, mandatory pilotage will be required from BC Pilots familiar with seasonal conditions (e.g., visibility) between the Triple Island Pilot Station and the marine terminal and MOF. Its acknowledged that climate change is expected to affect rainfall intensity and storm surge frequency (as per Section 10.2.8). Some of the design options used to mitigate precipitation and storm surge extremes are summarized in Sections 10.2.2, 10.2.3 and 10.2.8. The Project will be designed to withstand extreme environmental conditions. Incremental changes to environmental extremes due to climate variability will still be within the design specifications of the Project. A more rigorous assessment of these extremes will be completed during the final detailed engineering design phase.
291.1	round 1	CEAA	10.2	Effects of the Environment on the Project	**As a follow up to screening comment #291** Issue remains outstanding. The extreme weather list on p. 10-1 of the final AIR is prefaced with "i.e.", which implies that the requirement is not exclusive or exhaustive of the items listed. It is reasonable to assume that fog will interact with the project given the tendency for fog to occur within the Prince Rupert area. This interaction is likely to affect not only vessel traffic, but facility operations as well. Please note that the effects of fog on the project was also included for the PNW EA, which is immediately to the south of the Aurora LNG site; therefore, it is a reasonable and similar circumstantial consideration for Aurora LNG.	The wording on p. 10-1 of the AIR uses 'i.e.,' rather than 'e.g.,' to indicate exclusiveness to the items listed. The noted PNW LNG EA included fog and visibility in its assessment of extreme physical environmental conditions. The Aurora LNG's Application does not consider fog to be an extreme weather event. The PNW LNG EA, (section 23.5.2), considers fog in the context of reduced visibility with the potential to affect navigation safety and shipping schedules. In Section 9.4 of the Application, Aurora LNG considers the potential for reduced visibility (e.g., during foggy conditions) to be a contributory factor associated with motor vehicle collisions. Furthermore, Section 9.9.2 of the Application provides a number of preventative measures relevant to vessel navigation in reduced visibility conditions.
292	screening	Metlakatla First Nation	11.3.1 11.3.8	CEAA 2012	11.3.8 (page 11-122)- In meeting with Aurora LNG, MSS raised the issue that the socio-economic section failed to identify impacts on tourism operaters and fishing charters as a result of the project. Impacts to these industries must be fully assessed in the application.	Potential adverse effects of the Project on tourism operators and fishing charters (including those operated by Metlakatla First Nation and its members) are assessed in the Application as follows: Potential changes resulting from the marine terminal and LNG carrier traffic on marine navigation and use by recreation and tourism operators is assessed in the Section 6.5 : Marine Use and Navigable Waters of the Application. Potential adverse effects on non-tenured land use (i.e. outdoor recreation, hunting, fishing, vegetation and marine plant harvesting and gathering), including effects on access to and use of identified recreational sites and trails, are assessed in Section 6.4.5.3 (Land and Resource Use VC) of the Application. Changes in resource-based primary industries and subsistence economies are assessed in Section 5.2.5.3 of the Application. In addition, in the context of Aurora LNG's assessment of Project environmental effects on Aboriginal socio-economics, Section 11.3.6.3 and Section 11.3.8.5 of the Application assess potential effects on Metlakatla First Nation tourism-related businesses resulting from Project-generated changes in visual quality, the acoustic environment, and the availability of harvested foods relied on by Metlakatla First Nation-owned or operated businesses.

293	screening	Lax Kw'alaams Band	11.3.1 11.3.7	CEAA 2012	This information is not accurate and is not verifiable; Lax Kw'alaams requested this information to be removed from the Application prior to submission. Supplemental placeholder text was provided to replace this information, but was not incorporated and, instead, captured in the "views" table in this section of the Application.	While specific in-text changes requested by Lax Kw'alaams Band were not made, Aurora LNG did add a statement in Section 11.3.7 recognizing the anticipated receipt of an Aboriginal Interest and Use Study (AIUS) and a socio-economic study from Lax Kw'alaams, and Aurora LNG's commitment to incorporate this information into a supplemental filing to the Application. Aurora LNG looks forward to working with Lax Kw'alaams Band upon receipt of these studies to review the information and develop the supplemental filing, as appropriate.
294	screening	Gitxaala Nation	11.3.2.2	CEAA 2012	Section does not describe how TK/TLU is incorporated.	TK and TLU information was used to inform the assessment as required under Section 5(1)(c) of CEAA 2012 (see Section 11.3 of the Application). Project specific and public domain TK and TLU information was used to help characterize residual CEAA 2012 5(1)(c) Effects for each Aboriginal Group. Section 11.3.2.2 describes how Aurora LNG consulted with Aboriginal Groups on the use of their TK/TLU information in the assessment of Section 5(1)(c) Effects. Information on how TK/TLU was incorporated into the Section 5(1)(c) Effects assessments is provided for each Aboriginal Group in their respective "Existing Conditions - Methods" sections: Section 11.3.7.2 - Lax Kw'alaams Band Section 11.3.8.2 - Metlakatla First Nation Section 11.3.9.2 - Gitxaala Nation Section 11.3.10.2 - Kitsumkalum First Nation Section 11.3.11.2 - Kitselas First Nation A detailed discussion of how TK and TLU information provided by Schedule B Aboriginal Groups was integrated into Aurora LNG's analysis of how the Project may adversely affect the exercise of Aboriginal Interests is provided in Section 12.4 of the Application. TK and TLU information also informed the assessment of potential effects on VCs in Part B of the Application. A summary of how Project specific and public domain TK and TLU information was considered in the Assessment of VCs in Part B of the Application is provided in Table 12.4-1.
295	screening	Gitga'at First Nation	11.3.2.2	CEAA 2012	Aurora LNG did not hold a workshop with Gitga'at First Nation to discuss the use of their Traditional Knowledge and Traditional Use information in the assessment of the Section 5(1)(c) Effects as was done with the other Tsimshian First Nations (p. 11-23). Since this did not occur as well as considering the limited consultation with Gitga'at on Part B VC's, the assessment and conclusions presented in Section 11.3 are problematic for Gitga'at First Nation at this time; e.g., with the consultation and engagement to date, Aurora LNG should not be making statements such as "Given Aurora LNG's understanding of Gitga'at First Nation's fishing practices, fishing practices by the Gitga'at First Nation are considered to have a moderate to high level of resilience." (p. 11-324).	As required in the AIR, Aurora LNG assessed section 5(1)(c) effects for each Aboriginal Group in the Section 11 Order issued by the EAO for the Project. On August 30, 2016, Gitga'at First Nation was added to the Aboriginal groups identified for consultation in Schedule B when the EAO issued a Section 13 Order. Aurora LNG worked within the timelines and used the Project specific information provided by Gitga'at First Nation as well as publicly available sources to prepare the Application. Gitga'at First Nation also participated in a workshop with Aurora LNG prior to the Application being submitted to the EAO that was designed to record the preliminary views of Gitga'at First Nation on sections of the Application dealing with CEAA 2012 5(1)(c) requirements and the assessment of Aboriginal Interests related to Gitga'at First Nation. Aurora LNG is committed to working with Gitga'at First Nation during the Application-review phase of the environmental assessment, including organizing a focused workshop with Gitga'at First Nation to discuss, among other topics, the characterization of CEAA 2012 5(1)(c) effects, and to continue developing a shared understanding of the potential effects related to the Section 5(1)(c) Effects. Aurora LNG will also continue consultation with Gitga'at First Nation during the Application-review stage to seek resolution of any outstanding issues. Aurora LNG will report on progress on the resolution issues consistent with the requirement to prepare an interim consultation report at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016), and to submit Aboriginal Consultation Report #3 at day 120 of the 180 day Application-review period (as per the section 11 Order).
295.1	round 1	Gitga'at First Nation	11.3.2.2	CEAA 2012	As a follow up to screening comment #295 As we stated during the meeting, and in subsequent correspondence with Nexen, Gitga'at is playing ""catch-up"" on this Project. Since being added to Schedule B (relatively recently considering the duration of this Project), we have displayed our good-faith in engaging in this Project, and now, we are looking to Nexen to do the same. We would like commitment from Nexen that our questions, issues and/or concerns will be addressed now, rather than sometime in the future (e.g., further into the Application Review stage and/or during permitting), and that our questions, issues and/or concerns will not be addressed with a formula-driven approach (i.e., the same approach taken with other Schedule B Nations) because our situation is unique. Also, in Aurora LNG's screening response to screening comment #295, an ACR#3 is mentioned; Gitga'at would like to review the draft ACR#3 prior to submission, and would like Aurora LNG to provide a response to any and all of Gitga'at's comments prior to submission."	Aurora LNG has been committed to ongoing consultation with Gitga'at First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 29, 2017, Aurora LNG's wildlife and marine fish subject matter experts accompanied Gitga'at First Nation on a field visit to review the work completed in support of baseline field studies for the Project. On March 30, 2017, Aurora LNG held Technical Workshop #5 with Gitga'at First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. As a result of Gitga'at First Nation's Working Group comment submissions and subsequent discussion at Technical Workshop #5, Aurora LNG changed some of the characterizations of effects on CEAA 2012 Section 5(1)(c) factors. These changes have been recorded in an errata document that will be filed with the BC EAO. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitga'at First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. Gitga'at First Nation will have the opportunity to review and provide comments on the draft Aboriginal Consultation Report #3. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
296	screening	Lax Kw'alaams Band	11.3.2.2	CEAA 2012	Application is missing consideration of how TK and TU influenced significance determination as per Comment #632 requesting that significance definitions be culturally appropriate. That was requested for all terrestrial and marine biophysical VCs to reflect cultural use considerations when determining significance. Please update the assessment to include this consideration.	Traditional Knowledge and Traditional Use Information was included throughout the Application. Table 12.4-1 "Incorporation of TK or TU Information in the Assessment of VCs in Part B of the Application" in Section 12 of the Application provides in detail how Traditional Knowledge and Traditional Use Information was incorporated into existing conditions for each VC. Project residual effects were assessed in accordance with the methods outlined in Section 3.6 of the AIR. Significance thresholds were determined for each of the biophysical VCs based on applicable legislation, regulatory guidance documents, or other management standards. Where thresholds were not set by legislation, guidance documents or standards, a threshold was developed based on scientific literature and professional judgement and following the EAO's "Guideline for the Selection of Valued Components and Assessment of Potential Effects" (dated September 9, 2013). Consultation between Aurora LNG, the EAO and Working Group members was used to develop appropriate significance definitions for the purposes of assessment. On December 2, 2015, Aurora LNG's proposed methods for characterizing residual effects (including proposed significance thresholds) were discussed at a technical workshop held by Aurora LNG with Aboriginal Groups (including Lax Kw'alaams Band) (See Appendix S.1 Aboriginal Consultation Report #2 for more detail). Specific thresholds relating to the assessment of potential project effects under CEAA 2012 5(1)(c) were discussed with Aboriginal Groups, as part of a subsequent technical workshop.
297	screening	Lax Kw'alaams Band	11.3.2.3	CEAA 2012	In Sections 11.3 and 12, changes to preferred harvesting locations is missing from the assessment entirely. While Aurora considers changes to harvesting locations, without preferred locations Aurora the Application is fundamentally flawed through (a) adoption of the false assumption of "go elsewhere" biasing all assessments that consider TU, and (b) all conclusions related to Project and cumulative effects on preferred use areas. This methodological data gap should be filled in the Application prior to review.	Section 11.3.7.3 includes assessments of project effects on both the quantity and quality of current traditional use locations used for hunting, fishing, trapping, and vegetation gathering. Where possible, Aurora LNG has considered preferred or known use location information from Aboriginal Groups, however Lax Kw'alaams Band did not specify preference information for use locations within the PDA, LAA, or RAA prior to submission of the Application. Section 12.5.4.6 includes an assessment of project effects on harvesting locations and access routes, which incorporates any information available to Aurora LNG regarding Lax Kw'alaams Band use locations at the time of Application submission. As with the assessment completed in Section 11.3.7.3, information regarding Lax Kw'alaams Band preference of different known use locations was not available for consideration by Aurora LNG at that time. Aurora LNG anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to incorporate this additional information into a supplemental filing, including information provided regarding preferred use locations.
298	screening	Gitga'at First Nation	11.3.2.3	CEAA 2012	Due to the comments above on the Part B VCs, and the linkages of the Part B VCs with this section (11.3), this is incomplete. For example, asthma was not assessed in either the Part B Human Health or Community Health VC. Also for effects of changes to the environment on Aboriginal socio-economics, only impacts to Aboriginal owned or operated businesses were assessed. This is extremely limited; for example, availability and affordability of housing and access to social services should be assessed for Aboriginal groups, therefore, the Infrastructure and Services VC should be included in Section 11.3 (and in Table 11.3-3). Furthermore, many of the '-' in Table 11.3-3 are incorrect; e.g., none of the Economic VC effects are checked, and Marine Use and Navigable Waters VC should be checked for at least Aboriginal Socio-Economic Conditions.	Section 11.3 assesses Section 5(1)(c) effects on Aboriginal Socio-Economic Conditions that may result from Project-generated changes to the environment. In particular, the assessment considers effects on the environment that may affect "Gitga'at First Nation economic enterprises". These enterprises are not necessarily limited to businesses, but also include Gitga'at First Nation individuals' economic pursuits, including fishing activities and the effects on commercial fishing. See Section 11.3.12.5 for conclusions regarding effects on the environment on commercial fishing. The examples of effects included in Gitga'at First Nation's comment, including changes to availability and affordability of housing and access to social services, are outside of the scope of the CEAA 2012 assessment because they are not related to effects on the environment.
299	screening	Gitga'at First Nation	11.3.2.4	CEAA 2012	Given that the Section 11.3 boundaries are based on the Part B VCs, Gitga'at First Nation's comments and issues identified above (i.e., on Part B VC boundaries) must be considered here.	Aurora LNG acknowledges this comment, and assumes that Gitga'at First Nation is referring to IRs 152, 167, 178, 189, and 193.Hartley Bay is included in the four LAAs used in Section 11.3 and in particular when considering Project effects on harvested foods (see figures 11.3-1, 11.3-2, 11.3-3, and 11.3-4). The assessments in Section 11.3 apply to Gitga'at First Nation and its members, whether they live in Hartley Bay or Prince Rupert. Hartley Bay is also included in the four RAAs used in Section 11.4, and, therefore, has been considered in the assessment of cumulative effects on CEAA 2012 Section 5(1)(c) Effects.
300	screening	Gitga'at First Nation	11.3.12	CEAA 2012	Socio-economic assessment is narrowly focused because only assessed impacts to Aboriginal owned and operated businesses. Page 11-341 states "Available information on Gitga'at First Nation economic enterprises does not indicate that they would be affected by changes in visual quality."; in making assessments and conclusions such as this, it is important for Gitga'at First Nation to be consulted. Additionally, according to Appendix S2, the Gitga'at First Nation Businesses considered in the assessment are limited; if the socio-economic assessment of Section 11.3 is going to be narrowly focused on Aboriginal owned and operated businesses, at the very least, all Gitga'at First Nation businesses should be considered.	Section 11.3.12.5 assesses Section 5(1)(c) effects on Aboriginal Socio-Economic Conditions that may result from Project-generated changes to the environment. In particular, the assessment considers effects on the environment that may affect "Gitga'at First Nation economic enterprises". These enterprises are not necessarily limited to businesses, but also include Gitga'at First Nation individuals' economic pursuits, including fishing activities. Therefore, the assessment includes, but is not limited to, effects on the Gitga'at-owned businesses listed in Appendix S2. Results and conclusions included in Section 11.3 (CEAA Section 5(1)(c)) were shared with Gitga'at First Nation prior to submission of the Application for screening. In addition, Aurora LNG met with Gitga'at First Nation to discuss draft versions of Section 11.3 and Part C of the Application prior to its submission to the EAO. Aurora LNG made a number of changes to the draft Application as a result of Gitga'at First Nation's helpful feedback during that meeting.
300.1	round 1	Gitga'at First Nation	11.3.12	CEAA 2012	As a follow up to screening comment #300 Gitga'at would like to remind Nexen that the October 2016 workshop was the first meeting of its kind with Gitga'at to discuss this Project. We prepared for this meeting within an expedited timeframe and with missing information (e.g., Part B VC assessments). As we stated during the meeting, and in subsequent correspondence with Nexen, Gitga'at is playing ""catch-up"" on this Project. Since being added to Schedule B (relatively recently considering the duration of this Project), we have displayed our good-faith in engaging in this Project, and now, we are looking to Nexen to do the same. We would like commitment from Nexen that our questions, issues and/or concerns will be addressed now, rather than sometime in the future (e.g., further into the Application Review stage and/or during permitting), and that our questions, issues and/or concerns will not be addressed with a formula-driven approach (i.e., the same approach taken with other Schedule B Nations) because our situation is unique. Also see further comments below regarding Appendix S.2 - e.g., Aboriginal owned business are missing."	Aurora LNG has been committed to ongoing consultation with Gitga'at First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 29, 2017, Aurora LNG's wildlife and marine fish subject matter experts accompanied Gitga'at First Nation on a field visit to review the work completed in support of baseline field studies for the Project. On March 30, 2017, Aurora LNG held Technical Workshop #5 with Gitga'at First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. As a result of Gitga'at First Nation's Working Group comment submissions and subsequent discussion at Technical Workshop #5, Aurora LNG changed some of the characterizations of effects on CEAA 2012 Section 5(1)(c) factors. These changes have been recorded in an errata document that will be filed with the BC EAO. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitga'at First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. Gitga'at First Nation will have the opportunity to review and provide comments on the draft Aboriginal Consultation Report #3. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
301	screening	Lax Kw'alaams Band	11.4	CEAA 2012	No rationale provided for why cumulative effects are not assessed for each Aboriginal group individually. The assessments should flow from disaggregated assessment provided in prevous pages. Please provide a cumulative effects assessment for each Aboriginal group individually or a strong rationale for why Aboriginal groups are lumped together. Past activities are not included in Table 11.4-1. Please add past activities, and update dthe assessment accordingly.	As described in Section 11.4 of the Application, Aurora LNG undertook a combined cumulative effects assessment for all of the Aboriginal Groups due to the incomplete nature of the information available within the respective RAAs for CEAA Section 5(1)(c) Effects for those past, present and future projects listed in Table 11.4-1 of the Application. In particular, Aurora LNG notes data deficiencies related to the extent and duration of Section 5(1)(c) Effects from past, present and reasonably foreseeable future projects in the RAAs, and usage relevant to possible interactions throughout the RAAs.
302	screening	Metlakatla First Nation	11.3.8	CEAA 2012	MSS takes issue with the way that the residual effects characterizations were made from page 11-149 to 11-161. For many of the values, the PDA should be used as the geographic extent rather than the LAA boundary. Using the LAA as the geographic extent for things like Current Use and Physical Heritage, does not properly recognize the value of the PDA. The PDA is extremely important to Metlakatla because of its proximity to the community and the ease of access and the rich history of use of the location. Aurora has framed their 'no significance' arguments in part because because the PDA only contributes to 0.4% of metlakatla territory and because it makes up only a small portion of the LASS. This fails to recognize that other areas are already impacted or developed, mountanous, and not accessible or do not contain the wealth of archaeology or biological resources located in the PDA. Metlakatla therefore disagrees with many of the significance conclusions that Aurora LNG made in Chapter 11. This issue needs to be addressed prior to the application being accepted. For current use, the proponent admits that the impact will be continuous, irreversible, permanent, and have a moderate magnitude if the geographic extent is the LAA however it is considered to be not significant. MSS disagrees with this conclusion and finds fault in Aurora's rational. Similarly for physical and cultural heritage, MSS disagrees with the methodology used in the table 11.3-14. Loss of information about or alteration to site contents or context should be considered to be continuous and high in magnitude. The impact to this value is significant.	Aurora LNG acknowledges Metlakatla First Nation disagrees with some of the characterizations and significance determinations in Section 11.3. Aurora LNG also acknowledges the importance of Digby Island to Metlakatla First Nation. Information regarding the importance of the Digby Island to Metlakatla First Nation informed the assessment throughout Section 11.3 (see pp. 11-111, 11-113, 11-118, 11-128, and 11-135). During Application-review, Aurora LNG will organize a focused workshop with Metlakatla First Nation to discuss, among other topics, the characterization of CEAA 2012 5(1)(c) effects, and to continue developing a shared understanding of the potential Project effects related to Aboriginal Interests. Furthermore, the Nation will be invited to participate in a "field review and tour session" to discuss study findings and to visit key sampling/survey locations.

302.1	round 1	Metlakatla First Nation	11.3.8	CEAA 2012	**As a follow up to screening comment #302** Nexen has underestimated impacts to Metlakatla; this issue should be resolved before day 90.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The LAA and residual effects characterization methods utilized for the assessment of Section 5(1)(c) Effects on current use were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. Such consultation included the pre-application workshop held on June 20 and 21, 2016 with Metlakatla First Nation, at which the proposed assessment methods and characterization criteria for socio-economic VCs and traditional use sections of the Application were discussed. Please also see the memo titled "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application. Aurora LNG has been committed to ongoing consultation with Metlakatla First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. On March 20, 2017, Aurora LNG held Technical Workshop #5 with Metlakatla First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C.This workshop (in addition to Technical Workshop #4) was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Metlakatla First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Metlakatla First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
303	screening	Lax Kw'alaams Band	11.4.3	CEAA 2012	Given missing trend information to demonstrate previously impacted state of TU and alienation over time, the characterization of residual cumulative effects for consumptive use. The present state of TU is far from pre-industrial baseline and far from desired future state for Lax Kw'alaams. This must be acknowledged in this section. If Aurora will not provide the actual information to demonstrate alienation over time, then this must be suggested by change context to "high" (low level or resilience) and magnitude of cumulative effects resulting from activities/projects past, present, and reasonably foreseeable should also be "high" in Table 11.4-2.	The current use cumulative effects assessment relies on information available at the time of writing and focuses on current conditions, rather then attempting to take into account pre-industrial conditions. Given the definitions in Table 11.3-6 and 11.3-7, Aurora LNG is of the opinion that cumulative effects to current use have been appropriately characterized. Aurora LNG looks forward to continued consultation with Lax Kw'alaams Band and anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.
304	screening	Lax Kw'alaams Band	11.6	CEAA 2012	Interactions are not correct and should better reflect likely accidents and malfunctions impacts on TU (e.g. vessel grounding on fishing is missing). Further, it is unclear how findings from this sections have been considered in the overall report conclusions. Please update the assessment to include a fulsome suite of effects and explain how this assessment contributes to overall conclusions in the Application.	Section 11.6, Accidents of Malfunctions with Respect to CEAA 5(1)(c), in accordance with the AIR, includes a summary of potential adverse effects caused by the potential accident or malfunction events identified in Section 9 on the factors set out in CEAA 2012 Section 5(1)(c). Please note that a dash ("-") in Table 11.6-1 does not mean "no interaction with the Section 5(1)(c) Effect." Rather, a dash indicates "no interaction beyond what has already been assessed in Section 9.0 of the Application." Section 9 includes a description of several potential effects of a vessel grounding or collision (see Section 9.9), including effects on marine fish and fish habitat, marine use (fishing), community health (harvested foods), and human health (quality of marine foods). Aurora LNG would be pleased to meet with Lax Kw'alaams Band during the Application-review phase of the environmental assessment to understand more fully how accidents or malfunctions may adversely affect CEAA 5(1)(c) Effects.
305	screening	Gitga'at First Nation	11.6	CEAA 2012	As described on page 11-423, Vessel Grounding or Collision can result in the failure of one LNG membrane tank and one marine fuel tank. Therefore, interactions in Table 11.6-1 are missing for 'vessel grounding or collision' and should be further assessed (e.g., tank failure can have direct impacts on Aboriginal Socio-Economic Conditions).	Section 11.6, Accidents of Malfunctions with Respect to CEAA 5(1)(c), in accordance with the AIR, includes a summary of potential adverse effects caused by the potential accident or malfunction events identified in Section 9 on the factors set out in CEAA 2012 Section 5(1)(c). Please note that a dash ("-") in Table 11.6-1 does not mean "no interaction with the Section 5(1)(c) Effect." Rather, a dash indicates "no interaction beyond what has already been assessed in Section 9.0 of the Application." Section 9 includes a description of several potential effects of a vessel grounding or collision (see Section 9.9), including effects on marine fish and fish habitat, marine use (fishing), community health (harvested foods), and human health (quality of marine foods). Aurora LNG would be pleased to meet with Gitga'at First Nation during the Application review phase of the environmental assessment to understand more fully how accidents or malfunctions may adversely affect CEAA 5(1)(c) Effects.
306	screening	Lax Kw'alaams Band	11.7	CEAA 2012	This information is not accurate and is not verifiable; Lax Kw'alaams requested this information to be removed from the Application prior to submission. Supplemental placeholder text was provided to replace this information, but was not incorporated and, instead, captured in the "views" table in this section of the Application.	Aurora LNG assumes that Lax Kw'alaams Band is not referring to all of the information in Section 11.7.1, however it is unclear which information Lax Kw'alaams Band perceives as inaccurate. Aurora LNG acknowledges that during consultation on a draft version of Section 11.3 Lax Kw'alaams Band requested that large portions of Section 11.3 be removed from the Application prior to submission. However, Aurora LNG determined that these portions of the assessment were necessary in order for the Application to meet the requirements of the AIR. In an effort to maintain transparency, Aurora LNG included Lax Kw'alaams Band's requests in Section 11.7.1.
307	screening	Metlakatla First Nation	11.9	CEAA 2012	MSS disagrees with the methodology used for assessing cumulative effects on section 5(1)(c). Cumulative effects need to be assessed seperately for each First Nation rather than aggregated for all First Nations. By aggregating First Nations, the cumulative effects impacts to Metlakatla become 'watered down', especially when considering impacts to the Prince Rupert Harbour. MSS has maintained that this information be disagregated during the AIR comment periods and also during our workshop meeting with Nexen in October 2016. In their dAIR comment responses Nexen affirmed that they would disaggregate FN assessments as long as they were provided with community-specific data. Metlakatla has provided Nexen with the relevant data for them to conduct a CE assessment on Metlakatla First Nation interests. If the issue was that Nexen didn't have enough community specific information from other communities, CE should still be fully assessed for Metlakatla First Nation.	As described in Section 11.4 of the Application, Aurora LNG undertook a combined cumulative effects assessment for all of the Aboriginal Groups due to the incomplete nature of the information available within the respective RAAs for CEAA Section 5(1)(c) Effects for those past, present and future projects listed in Table 11.4-1 of the Application. In particular, Aurora LNG notes data deficiencies related to the extent and duration of Section 5(1)(c) Effects from past, present and reasonably foreseeable future projects in the RAAs, and usage relevant to possible interactions throughout the RAAs.
307.1	round 1	Metlakatla First Nation	11.9	CEAA 2012	**As a follow up to screening comment #307** Comment does not address Metlakatla's original comment.	As described in Section 11.4 of the Application (pg. 11-380), Aurora LNG undertook a combined cumulative effects assessment for all of the Aboriginal Groups due to the incomplete nature of the information available within the respective RAAs for CEAA Section 5(1)(c) Effects for those past, present and future projects listed in Table 11.4-1 of the Application. In particular, Aurora LNG notes data deficiencies related to the extent and duration of Section 5(1)(c) Effects from past, present and reasonably foreseeable future projects in the RAAs, and usage relevant to possible interactions throughout the RAAs. Aurora LNG has been committed to ongoing consultation with Metlakatla First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. On March 20, 2017, Aurora LNG held Technical Workshop #5 with Metlakatla First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. This comment and Aurora LNG's response was discussed as part of Technical Workshop #5. Throughout Technical Workshop #5, Aurora LNG documented Metlakatla First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Metlakatla First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
308	screening	CEAA	12.1.2	Aboriginal Consultation	No information on Schedule D group (MNBC) is presented in Part C. Potential impacts to asserted rights must be provided for ALL Indigenous groups identified in the Section 11 Order.	Consistent with the requirements of Section 12 of the AIR, the Aboriginal Groups discussed in Part C of the Application are those identified in Schedule B of the BC EAO's Section 11 Order (as amended). Metis Nation BC was not included in Schedule B of the Section 11 Order and, as such, is not included in Section 12 of the Application. Metis Nation BC was engaged for the purposes of fulfilling the requirements associated with CEAA 2012 5(1)(c) requirements (assessed in Section 11.3 of the Application), the details of which are contained in Section 11.3 of the Application (see Sections 11.3.1, 11.3.13 , 11.7.7). Details related to Aurora LNG's consultation with MNBC can also be found in Sections 2 and 11 of ACR #2 (see Appendix S.1).
308.1	round 1	CEAA	12.1.2	Aboriginal Consultation	**As a follow up to screening comment #308** Response acknowledged but remains outstanding. While an assessment of 5(1)(c) effects for MNBC is presented in section 11.3, an overview of MNBC's relevant history, interests, and general rights assertions in the Prince Rupert area is still required. This information can be obtained readily through a desktop study/review combined with information already in the proponent's possession through engagement activities undertaken with MNBC.	Aurora LNG provided an overview of MNBC's interests and general rights assertions in the Prince Rupert area under Section 10 of Appendix S.2. Within Appendix S.2, the Background section (see Section 10.3) contains information regarding Métis Nation BC territory and governance, population and employment, reserves, infrastructure, businesses, and services. The Land and Marine Use section (see Section 10.4) describes culturally important sites and marine use and navigation. The Resource Gathering and Culturally Important Resources section (see Section 10.5) contains information regarding species, location and use for hunting, trapping, freshwater fishing, marine resources, and vegetation gathering activities for the Métis Nation BC. As previously noted, consistent with the requirements of Section 12 of the AIR, the Aboriginal Groups discussed in Part C of the Application are those identified in Schedule B of the BC EAO's Section 11 Order (as amended). Metis Nation BC was not included in Schedule B of the Section 11 Order (as amended) and, as such, is not included in Section 12 of the Application.
309	screening	Gitga'at First Nation	12.5.1	Aboriginal Consultation	Section 12.5.2.1 states "Aboriginal Interests were identified based on consultation activities with Aboriginal Groups (see Section 12.3 for a summary of consultation activities)"; as commented above consultation with Gitga'at First Nation has been limited, and Gitga'at First Nation was not afforded the same consultation activities as the other First Nations. This section should be revised to describe the actual consultation activities with Gitga'at First Nation. One example where revisions are required is on page 12-66 where it states that Aurora LNG has been actively consulting with Aboriginal Groups since November 2013 to understand how the Project may adversely affect their Aboriginal interests as this is not the case with Gitga'at.	Section 12 provides a high level overview of the consultation activities conducted by Aurora LNG as it relates to all Schedule B Aboriginal Groups and is not intended to detail the specific consultation that occurred with an individual Aboriginal Group. Specific information on the timing and nature of Aurora LNG's consultation with Gitga'at First Nation during the pre-Application review phase is provided in the Aboriginal Consultation Report #2 (Appendix S.1), specifically in Sections 2 and 10 of that document. Aurora LNG notes that Gitga'at First Nation was moved from Schedule D (notification) to Schedule B (consultation) of the Section 11 Order for the Project on August 30, 2016. As a result, Aurora LNG's modified its consultation and engagement with Gitga'at first Nation to reflect this change in consultation requirements related to the Project. Aurora LNG created opportunities designed to allow for consultation activities similar to that which had been conducted with the other Aboriginal Groups prior to Gitga'at First Nation being added to Schedule B and also sought to involve Gitga'at in subsequent consultation activities in a manner consistent with the other Aboriginal Groups.
309.1	round 1	Gitga'at First Nation	12.5.1	Aboriginal Consultation	As a follow up to screening comment #309 Since the purpose of Section 12 is to describe ""Aboriginal Consultation"", we expect for this section to not be ""a high level overview of the consultation activities"". We have identified many issues in Appendix S.1 (ACR#2). To move forward, we would like to review the draft ACR#3, and would like Nexen to provide a response to our comments prior to submission. As we stated during the meeting, and in subsequent correspondence with Nexen, Gitga'at is paying ""catch-up"" on this Project. Since being added to Schedule B (relatively recently considering the duration of this Project), we have displayed our good-faith in engaging in this Project, and now, we are looking to Nexen to do the same. We would like commitment from Nexen that our questions, issues and/or concerns will be addressed now, rather than sometime in the future (e.g., further into the Application Review stage and/or during permitting), and that our questions, issues and/or concerns will not be addressed with a formula-driven approach (i.e., the same approach taken with other Schedule B Nations) because our situation is unique."	Aurora LNG has been committed to ongoing consultation with Gitga'at First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 29, 2017, Aurora LNG's wildlife and marine fish subject matter experts accompanied Gitga'at First Nation on a field visit to review the work completed in support of baseline field studies for the Project. On March 30, 2017, Aurora LNG held Technical Workshop #5 with Gitga'at First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. As a result of Gitga'at First Nation's Working Group comment submissions and subsequent discussion at Technical Workshop #5, Aurora LNG changed some of the characterizations of effects on CEAA 2012 Section 5(1)(c) factors. These changes have been recorded in an errata document that will be filed with the BC EAO. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitga'at First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. Gitga'at First Nation will have the opportunity to review and provide comments on the draft Aboriginal Consultation Report #3. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
310	screening	Lax Kw'alaams Band	12.5.4	Aboriginal Consultation	The "relative availability of other areas in reasonable proximity, within the traditional territory" is not an acceptable approach and must be deleted from the AIR. A re-assessment of residual effects is therefore required.	This methodology to assess potential adverse effects on the exercise of Aboriginal Interests was added to the AIR at the request of the EAO. Aurora LNG used available information from Lax Kw'alaams Band to understand the nature and scope of traditional use within the Project Vicinity. This analysis included taking into account both the importance of the Project Vicinity, and the relative availability of other areas in reasonable proximity to the Project. Aurora LNG looks forward to continued consultation with Lax Kw'alaams Band and anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.

311	screening	Gitxaala Nation	12.5.4	Aboriginal Consultation	This section does not follow the Methodology outlined in Section 3 - Assessment Methods as required by the AIR. The assessment of effects to Aboriginal Interests does not clearly characterize the degree of residual effects nor provide the summary table (Table 3-3) that would do the same for each assessed Aboriginal Interest. This information is critical for Gitxaala and the BC EAO to understand the seriousness and degree of predicted effects.	The assessment of effects on Aboriginal Interests relies on several methods described in Section 3, including identification of Existing Conditions, Effect Mechanisms, and Mitigation Measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.4 and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3-11.8 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.4. To avoid redundancy and address the qualitative nature of Aboriginal Interest, the Degree of Effects sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.
312	screening	Metlakatla First Nation	12.5.4	Aboriginal Consultation	12.5.5.6- This section makes reference to the PDA covering only 0.04% of Metlakatla territory. This stat doesn't take into account the importance of the PDA to Metlakatla or the cumulative impacts and developments that have occurred to the rest of territory or the mountainous terrain over much of the territory. This sentence and all sentences eluding to the PDA only contributing a small amount of Metlakatla territory needs to be removed as it is a misprepresentation and confusing to the reader. Page 12-120: The paragraph that details that only maximum of 30 minutes of fishing time would be lost each day as a result of shipping activities needs to be deleted. As was explained to Aurora, it is a misrepresentation and the impact to one family could be quite serious if they are using the tides while fishing and have to alter their activities as a result of the vessel movement. Impacts to traditional use can be significant as a result of shipping activities. Page 12-135: The sentence that details the relative availability of other areas outside of the PDA that fall within Metlakatla Territory fails to recognize that much of the territory is covered in mountains, that much of the territory is already developed and cannot be used, that the PDA is desireable because of its high ecological value and its proximity to where community members live. This sentence makes it seem as if the 99.4% of the rest of territory is very accessible. This sentence and all similar sentences need to be deleted.	Comments Regarding Section 12.5.5.6: and Page 12-135: Throughout Section 12.5, and as required by the AIR, Aurora LNG took into account the following: Relative importance of the Project vicinity to the exercise of the Aboriginal Interest, including any special characteristics or unique features of that area Relative availability of other areas in reasonable proximity within the Metlakatla First Nation traditional territory where the meaningful exercise of Aboriginal Interests could reasonably occur. Aurora LNG is of the opinion that the information under the subheading "Importance of the Project Vicinity" accurately and appropriately considers the importance of the PDA to Metlakatla First Nation. The information described under "Relative Availability of Other Areas", including some statistics about the percentage of the traditional territory that falls outside of PDA, is meant to provide general context. Aurora LNG acknowledges that this statistic alone may not acknowledge the relative importance of different areas the Nation's traditional territory. As such (and at Metlakatla First Nation's request), Aurora LNG included a statement accompanying the statistic that acknowledges its limitations. Comment Regarding Page 12-120: The paragraph referred to on page 12-120 specifies that a fisher could lose up to one hour of fishing time per day in a worst-case, unmitigated, and unlikely scenario. Aurora LNG appreciates the additional information from Metlakatla First Nation that fishers may use tides while fishing. Aurora LNG looks forward to further discussing Metlakatla First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
312.11	round 1	Metlakatla First Nation	Aboriginal Consultation	Aboriginal Consultation	**As a follow up to screening comment #312** Nexen has underestimated impacts to Metlakatla; this issue should be resolved before day 90.Further consultation with Metlakatla First Nation during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (to be submitted on Day 30)	Aurora LNG has been committed to ongoing consultation with Metlakatla First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 20, 2017, Aurora LNG held Technical Workshop #5 with Metlakatla First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Metlakatla First Nation opinions, concerns and feedback. Aurora LNG requested and received specific feedback on proposed mitigation measures from Metlakatla First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Metlakatla First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
312.12	round 1	Metlakatla First Nation	12.5.4	Aboriginal Consultation	As a follow up to screening comment #312 This has been mislabeled as Gitga'at's comment when it appears to be Metlakatla's."	Comment noted. This has been corrected in this spreadsheet.
313	screening	Gitga'at First Nation	12.5.4	Aboriginal Consultation	• Due to the linkages of Part B VCs and Part C, Gitga'at First Nation's comments above on the Part B VCs apply to Part C, Section 12.5.9.4. For example, wake effects were not assessed for this Project; wake effects should be assessed so Gitga'at First Nation can evaluate Project impacts on Aboriginal Interests. Shipping noise and impacts to visual quality from shipping were not assessed in the Part B VCs; these must be assessed so Gitga'at First Nation can evaluate Project impacts on Aboriginal Interests. To assess effects on Gitga'at First Nation's Cultural Wellbeing, Hartley Bay must be included in the LAA in the Part B VC assessment. Additionally, given the methodology of summarizing the residual and cumulative effects from "relevant VCs that inform the assessment of adverse effects on Gitga'at First Nation", the comments above in Part B VCs should be addressed so a more fulsome cumulative effects assessment can be completed. This is also important due to the linkages of identifying mitigation measures. • Given the limited consultation with Gitga'at First Nation, Aurora LNG should not make statements such as those on page 12-291 and 12-300: 1) "Because of development already in place in the Prince Rupert harbour area and the fact that the shipping route has been used for shipping activities for over a decade, Aurora LNG does not anticipate that the aesthetic effects to the experience of harvesting resources would be considerable altered from existing conditions" or 2) "Aurora LNG anticipates that other areas in Gitga'at First Nation traditional territory allow for a more satisfying harvesting experience than within the Project vicinity." Also, in Section 12.5.9.4, Aurora LNG describes that "mitigation measures have been identified in consultation with Aboriginal Groups"; consultation to date on mitigation measures has been very limited, and the mitigation measures listed in Section 12.5.9.4 appear to be planning steps for Aurora LNG. Appropriate and effective mitigation measures should be identified. • No conclusions are made regarding cumulative adverse effects on Gitga'at First Nation's harvesting-related Aboriginal interests (p. 12-291). This is important given that on page 12-286, large vessel traffic is predicted to reach approximately 2,560 vessel visits to the area per year. Overall, the Part C assessment of cumulative effects on Gitga'at First Nation's Aboriginal Interests is limited	This comment spans several different topics which are addressed below. Wake Effects: Wake effects on Gitga'at First Nation's harvesting-related Aboriginal Interests are considered in Section 12.5.9.5 as part of changes in the harvesting experience, beginning on pp 12-288. Shipping Noise and Impacts to Visual Quality from Shipping Activities: LNG shipping activities, as described in Section 4.4.4, will not have substantial noise effects. This conclusion is based on the assessment findings of other similar LNG projects. Potential visual quality effects from shipping traffic were not assessed. This is because LNG vessels transiting to the Project's marine terminal will not be visually prominent from most viewpoints, will only be visible for part of each day, and will not introduce a new visual element into the area. As a result, Aurora LNG anticipates that the contribution of shipping traffic to change in visual quality within the LAA will be negligible, and, therefore, they were not carried forward into the assessment of Visual Quality effects. Cultural Wellbeing: The assessment of potential effects on Gitga'at First Nation cultural wellbeing in Section 12.5.9.6 considers the cultural wellbeing of any Gitga'at First Nation member (regardless of where that person lives) who relies on the Project vicinity for: use of culturally-important species access to locations, landforms, natural features and access routes associated with cultural and spiritual use use of sites and landscape features for rituals and spiritually important purposes, or cultural transmission. Statements on Pages 12-291 and 12-300: Where possible throughout Section 12.5.9, Aurora LNG has endeavored to consider (and integrate) Gitga'at First Nation's views on potential effects on the exercise of Aboriginal Interests. As part of that effort, Aurora LNG has also presented its own conclusions, as is the case with the two statements highlighted by Gitga'at First Nation. Consultation on Mitigation Measures: Aurora LNG looks forward to further discussing Gitga'at First Nation's comment and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30). Cumulative Effects: See Section 11.4 for an assessment of cumulative effects on changes to the environment on current use of land and resources for traditional purposes. The requirements of the AIR for Section 12 do not include an assessment of cumulative effects on Aboriginal Interests. However, relevant conclusions from the cumulative effects assessments completed in Part B are considered and incorporated into the assessment of effects on Aboriginal Interests in Part C, as per the AIR.
313.1	round 1	Gitga'at First Nation	12.5.4	Aboriginal Consultation	As a follow up to screening comment #313 See further comments below (e.g., on wake effects, shipping noise, shipping impacts to visual quality, Hartley Bay's socio-economic reliance on Prince Rupert, and issues with many mitigation measures)."	These matters are addressed by Aurora LNG in response to the noted comments received from Gitga'at First Nation based upon their review of the Application.
314	screening	Lax Kw'alaams Band	12.6	Aboriginal Consultation	Interactions are not correct, more assessment is required for obvious accidents and malfunctions impacts on TU (e.g. vessel grounding on abiltiy to make decisions about title lands). Further, it is unclear how findings from this sections have been considered in the overall report conclusions.	The Application contains a number of sections that address accidents and malfunctions. Consistent with the requirements of the AIR, the potential effects of Project-related accidents and malfunctions on the VCs assessed in Sections 4-8 are considered in a stand-alone section (Section 9.0). Section 9.0 of the Application assesses potential effects and/or consequences for each environment, economic, social, heritage or health pillar VC. In addition, the potential adverse effects of accidents and malfunctions on CEAA 2012 section 5(1)(c) factors are summarized in Section 11.6 of the Application. Potential adverse effects on the exercise of Aboriginal Interests are summarized in Section 12.6 of the Application. As indicated in Table 12.6-1 of the Application, Aurora LNG recognized the potential for Project-related accidents and malfunctions to affect the following asserted Aboriginal Interests: harvesting-related Aboriginal Interests cultural wellbeing the use of trails and travelwaysthe right to the enjoyment of the highest attainable standard of physical and mental health economic opportunities. Aurora LNG looks forward to further discussion with Lax Kw'alaams Band's during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30) to more fully understand how accidents or malfunctions may adversely affect the Band's ability to exercise their Aboriginal Interests.
315	screening	Gitxaala Nation	12.6	Aboriginal Consultation	Potential effects of an Accident or Malfunction on Aboriginal Title is not considered. This potential interaction needs to be considered as there are potential effects to Aboriginal title if an Accident or Malfunction were to occur. For example destruction of resources within a house territory is tied to a leader's ability to govern and follow the resource management principles.	Consistent with the requirements of Section 9.0 of the AIR, the potential effects of Project-related accidents and malfunctions on environmental, socio-economic, and health VCs are considered in a stand-alone section (Section 9.0). Section 9.0 of the Application assesses potential effects and/or consequences for each environment, economic, social, heritage or health pillar VC. In addition, the potential adverse effects of accidents and malfunctions on CEAA 2012 section 5(1)(c) factors are summarized in Section 11.6 of the Application. Potential adverse effects on the exercise of Aboriginal Interests are summarized in Section 12.6 of the Application. As indicated in Table 12.6-1 of the Application, Aurora LNG recognized that Project-related accidents and malfunctions could potentially affect the following asserted Aboriginal Interests: harvesting-related Aboriginal Interests cultural wellbeing the use of trails and travelwaysthe right to the enjoyment of the highest attainable standard of physical and mental health economic opportunities. Aurora LNG looks forward to further discussion with Gitxaala Nation during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30) to more fully understand how accidents or malfunctions may adversely affect the Nation's ability to exercise their Aboriginal Interests. .
316	screening	Lax Kw'alaams Band	12.7	Aboriginal Consultation	Given the limited and narrow scope of the assessment provided throughout the Application, especially as it relates to effects on Aboriginal section 5(1)(c) factors and Lax Kw'alaams rights and interests, Lax Kw'alaams has additional "other matters of concern" to raise herein. As outlined in accommpanying cover letter to this table of comments, the following other matters of concern are: a) The "Go Elsewhere" argument is not acceptable mitigation, is rejected by Coast Tsimshian, is not supported by evidence, and creates serious assessment gap for all VCs that interact with traditional use in an Application that is already deficient in mitigations. b) Environmental and socio-economic management plans lack sufficient detail to function as mitigation in the Application. c) Data on fish and fish habitat is deficient and requested primary data needed to address deficiency has not been provided. d) Baseline data is missing for the northern portion of the PDA for several VCs. e) Lack of First Nation information and perspectives throughout the Application. f) Even where First Nations' information was sought and received, Aurora did little to meaningfully integrate this information. g) Assessment of effects is premature without proper information current use of lands and resources for traditional purposes in Section 11.3 of the Application. h) Missing information on Project alternatives. i) Lack of consideration of effects on sensory values and visual quality. j) Several social and economic effect pathways are ignored. k) Required air quality and GHG emissions baseline data are missing from the Application. l) Missing information on vegetation and wetlands VC. m) Wildlife VC does not consider species of priority concern. n) Marine shipping and marine vessel effects assessment is done poorly or not at all. o) Aboriginal land and marine use plans are not integrated into the assessment.	Aurora LNG understands this comment to be a high-level summary of Lax Kw'alaams Band's other comments, for which Aurora LNG has provided specific responses. Aurora LNG is confident in the conclusions of the Application, which meet the requirements of the AIR. Aurora LNG looks forward to continued consultation with Lax Kw'alaams Band and anticipates receiving an Aboriginal Interest and Use Study (AIUS) and socio-economic study from Lax Kw'alaams Band during Application review. Aurora LNG is committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO. As a point of clarification, Lax Kw'alaams Band has indicated that the lettered items in this comment are "other matters of concern". While Aurora LNG acknowledges that these items represent Lax Kw'alaams Band concerns with the assessment, "Other Matters of Concern" as described in Section 12.7 of the AIR are "matters of concern raised by Schedule B Aboriginal Groups related to potential adverse environmental, economic, social, heritage and health effects of the proposed Project that are not addressed in Part B of the Application." Aurora LNG is of the opinion that the concerns raised in this IR do not necessarily fall under the description of "Other Matters of Concern" in the AIR, but are rather Lax Kw'alaams Band's issues and concerns with assessments of effects contained in the Application.
317	screening	Gitxaala Nation	12.7	Aboriginal Consultation	Aurora LNG has indicated that there are no "Other Matters of Concern" and therefore no information is included in this section.	Correct, Section 12.7 of the Application discusses matters of concern raised by Schedule B Aboriginal Groups related to potential adverse environmental, economic, social, heritage and health effects that are not already addressed in other sections of the Application. During consultation with Aboriginal Groups (see Section 12.3 of the Application and Appendix S.1 ACR #2), Aurora LNG sought to address all concerns raised by Aboriginal Groups either in the assessment of a specific VC, as a component of the assessment of the requirements under CEAA 2012 5(1)(c) (see Section 11.3), or to consider the concern as an Aboriginal Interest which are discussed in Part C (see Section 12.5). Aurora LNG believes it has adequately assessed matters of concern to Aboriginal Groups. Therefore no other matters of concern have been assessed in this section.

318	screening	Lax Kw'alaams Band	12.8 12.9	Aboriginal Consultation	This information is not accurate and is not verifiable; Lax Kw'alaams requested this information to be removed from the Application prior to submission. Supplemental placeholder text was provided to replace this information, but was not incorporated and, instead, captured in the "views" table in this section of the Application.	While specific in-text changes requested by Lax Kw'alaams Band were not made, statements recognizing the anticipated receipt of the AIUS and socio-economic studies and identifying Aurora LNG's commitment to incorporate this additional information, as needed, into the environmental assessment can be found in the following sections: Section 12.1.2Section 12.2.1Section 12.4Section 12.5.4.1Section 12.5.4.10 Aurora LNG remains committed to working with Lax Kw'alaams Band to review this additional information, including the filing of supplemental information, as needed, with the EAO.
319	screening	Gitxaala Nation	12.8 12.9	Aboriginal Consultation	Gitxaala has informed Nexen on several occasions that they Nation has an outstanding concern regarding their lack of involvement in field studies for this Application. This issue remains unresolved.	Because of logistical and operational limitations associated with conducting field operations, Aurora LNG limited the field participation of Aboriginal Groups during the pre-Application phase of the environmental assessment. However Aurora LNG did offer and conduct aerial tours and two technical workshops with Aboriginal Groups to discuss and assess the data collected. One of the primary purposes of conducting the technical workshops was to ensure that Gitxaala Nation was provided with opportunities to understand and review the data collected, and to discuss any related concerns or issues. During the Application-review phase of the environmental assessment, Gitxaala Nation has been invited to a "field review session" to discuss baseline study findings and to visit key sampling/survey locations. This will include a review of baseline stud methodology and results, and how this information supported the assessment of key valued components.
320	screening	Dodge Cove	13.5	Public Consultation	13.5.1.1 The Dodge Cove Improvement District quality of life and use of Digby Island is not just recreational, but also traditional use and knowledge of Digby Island and harvesting resources that has sustained the community. 13.5.1.1. Does not include Casey Cove as a historical site. The entire area of Casey Cove has been used traditionally by Dodge Cove Improvement District residents and any changes to Casey Cove will also drastically affect the community. This needs to be assessed. 13.5.1.3 "Enjoyment of Visual Attributes and Natural Areas" "These physical qualities include visual quality, air quality, and the acoustic environment." This seems to not include water quality, soil quality, contanmination of surrounding areas and affects on sustainability due to decreased resources to harvest. Other "physical qualities" need to be included. 13.5.2.5. CNOOC-Nexen has failed to study the impacts due to their expectation "small and intimate rural marine community (would change) to something more akin to industry neighbour". Dodge Cove Improvement District believes that the impacts of this statement have not been properly studied. 13.5.3.2. Private Property Values "Issue Discussion" Hammerfest in Norway is used as an example to be the most similar to Prince Rupert. Since Norway owns 67% of Statoil, and Hammerfest doubled the property taxes on the land for the LNG terminal, and therefore earns $22 million a year in property taxes alone, and in turn uses that $22 million to enhance all areas of the town. Dodge Cove Improvement District feels that Hammerfest is hardly similar to Prince Rupert and Dodge Cove. Dodge Cove would like to see examples and data of other areas, as there are other studies that show decreased property values. Considering the health impacts Dodge Cove Improvement District will feel, air quality, water quality, noise, impact of a construction camp "in walking distance" it is not likely that property values will not be affected. A data report of all similar communities, not just one or two hand-picked, should be presented to determine effects. 13.5.3.5. Terrace and Kitimat are hardly good indicators - as no present LNG terminals are operating within 3 km and 0.5 km of either city. Before, during and after data should be used from many locations that actually have operating LNG terminals.	Aurora LNG recognizes that Dodge Cove community member use of Digby Island is not just recreational and identifies this in the application. Harvested food use is acknowledged and assessed in Section 6.4 Land and Resource Use. In addition, following Application screening, Section 6.4.5 was amended to better illustrate Dodge Cove community member use of Casey Cove. Additional consideration of the historical status of Casey Cove can be found in Section 7 Archaeological and Heritage Resources. While the assessment of 'Enjoyment of Visual Attributes and Natural Areas' does not capture effects on water quality, soil quality, contamination of surrounding areas or changes in the abundance of resources available for harvest, these topics are addressed across Sections 4.5 Water Quality, Section 4.6 Vegetation and Wetland Resources, Section 4.7 Wildlife Resources, Section 4.8 Freshwater Fish and Fish Habitat, Section 6.4 Land and Resource use (non-tenured land use), Section 6.5 Marine Use and Navigable Water (change in marine fisheries and other uses), Section 6.6 Community Health (change in harvested foods), and Section 8.2 Human Health. Aurora LNG acknowledges that not all potential case studies have been included in Section 13.5.3.2 (Issues Discussion). Case studies presented in Section 13.5.3.2 are used for illustrative purposes showing the array of potential effects (i.e., positive, neutral, and adverse) that have been documented to occur with industrial development in more rural areas. Section 13.5.3.5 (Status of Issue) concludes the following: "It is difficult to predict how property values in the community of Dodge Cove may be affected. On the one hand, property values may be positively affected by a generalized increase in property values in the Prince Rupert area due to increased economic activity; on the other hand, locational factors associated with the siting of the Project near the community of Dodge Cove could adversely affect property values. While research has shown that general economic factors can outweigh specific locational factors in regard to property valuations, in order to address potential adverse effects Aurora LNG is committed to ongoing engagement with the Dodge Cove community, including discussions on addressing Project-related changes to property values."
321	screening	Gitxaala Nation	14	Environmental and Operational Management Plans	It is not yet possible to determine if the Application is complete given the level of detail absent in the current management plans. In general, the nature of residual effects, and therefore the determination of significance, depends on the effectiveness of the mitigation and management being applied. Without sufficient detail in the management plans, it is therefore not possible to address their ability to reduce effects, accurately identify the nature of residual effects or, therefore, determine the potential significance of adverse effects with any level of confidence. Without sufficiently detailed management plans, the Application must therefore be considered deficient.	The description of the Environmental and Operational Management Plans provided in Section 14 is consistent with the requirements of the AIR and typical of the level of detail available during Application Review. In their response to screening comment 145, EAO confirms that Section 14 meets screening requirements, and additional Management Plan requirements will be developed as appropriate through EAC conditions, in consultation with Working Group members, including Aboriginal Groups.
322	screening	Metlakatla First Nation	14	Environmental and Operational Management Plans	A determination of significance of effects is predicated, in part, on an understanding of the effectiveness of mitigation and management strategies. A significant level of detail is required to assess the efficacy of these strategies. Many of the plans are not yet complete to the level of detailed required, meaning that the confidence in the predictions regarding effects must be considered to be considerably lower than indicated in the Application. In order for the Application to be deemed complete, greater detail in management plans is required	The description of the Environmental and Operational Management Plans provided in Section 14 is consistent with the requirements of the AIR and typical of the level of detail available during Application Review. In their response to screening comment 145, EAO confirms that Section 14 meets screening requirements, and additional Management Plan requirements will be developed as appropriate through EAC conditions, in consultation with Working Group members, including Aboriginal Groups.
322.1	round 1	Metlakatla First Nation	14	Environmental and Operational Management Plans	**As a follow up to screening comment #322** The approved Application Information Requirements (AIR) for this project directed that, "The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting, in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation." The Application, however, does not provide "comprehensive descriptions" of the EMPs. The brief descriptions largely identify information that is required for a "comprehensive description" without actually providing the description that the AIR demands. Further, as the Application states, "The EMPs describe the protection measures implemented onsite to avoid or reduce potential adverse effects." Since the EMPs are not provided - even in a preliminary form - we are therefore being asked to conclude on the significance of residual effects without the protection measures described in the EMPs. This issue should be resolved before day 90 of the Application review	The quoted text from the AIR outlines requirements for Section 15 of the Application with respect to follow-up programs and compliance reporting, rather than the section of the Application identified as the focus of this comment (i.e., Section 14). Section 14 of the Application provides a comprehensive list of proposed management plans to be developed as Project design details become available and the conditions of an approval are presented to the proponent. The proposed contents of these plans are substantively presented in the form of the many mitigation measures that have been developed for each VC and are summarized in Section 16. These mitigation measures, as well as design mitigation presented in the Project Overview, form the basis of the assessment of residual effects that is, in general, highly confident. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Environmental Management Plans.
323	screening	CEAA	15.2	Follow-up Programs and Compliance Reporting	In B.C.'s Assessment Report, the Agency will be seeking an analysis to support B.C.'s concluson on the potential significance of adverse environemntal effects of the Project. This analysis must demonstrate that the proposed mitigation measures and follow-up programs are appropriate and effective in addressing the effects. The Agency notes that measures to mitigate unanticipated effects identified during monitoring should be described (or outlined to the extent possible) instead of deferring the development of these measures to future permiting discussions (i.e. after the EA decision). It is worth noting that the Minister of Environment and Climate Change will take into consideration the implementation of mitigation measures as described B.C.'s Assessment Report 7 when reaching a decision on whether the project is likely to cause significant adverse environmental effects.	Comment noted. Please note that all tables listing mitigation measures in the VC Sections include columns that describe risks and uncertainties of each mitigation measure and the expected success.
323.1	round 1	CEAA	15.2	Follow-up Programs and Compliance Reporting	**As a follow up to screening comment #323** Response understood but remains outstanding. The issue has more to do with the need for examples of potential adaptive management measures within as a measns of addressing environmental monitoring results that identify unintended/unanticipated effects. This information should be included in Chapter 15. Standard adaptive mgt. clauses apply-- refer to general conditions at the start of condition statements for recent project examples.	Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Examples of potential adaptive management actions include:Aurora LNG expects that the scale and magnitude of deposition predicted at Charles Point will not drive changes in fish habitat that would adversely affect marine species, and this expectation will be confirmed via implementation of the Marine Sediment Deposition Monitoring Plan (Section 15.2.3). The plan will include the implementation of adaptive management measures if this expectation is not met. The Wetland Monitoring Program is intended to determine whether or not the compensatory habitat is functioning as intended. In the event that restored, enhanced, or created wetland habitat is determined, through monitoring, to be not functioning as intended, then adaptive management would be applied. Those adaptive management measures cannot be defined ahead of time without knowing what the issue(s) regarding function is, but could include such management measures as: adjustment to wetland hydrology through grading or channel design; replanting with more-suitable plant species; controlling herbivory; or removing invasive plant species. The precise measures would depend on the stressors and/or monitoring plan results.
324	screening	Lax Kw'alaams Band	15.3	Follow-up Programs and Compliance Reporting	Insufficient information on follow-up and EMP reporting is provided in Application. Please provide a clear description of the reporting structure for Air Quality (4.2) and GHG Emissions (4.3) as identified within the Environment Management Programs (EMPs) and monitoring plans in this section of Application so it is ready for review. This information is needed to determine whether compliance monitoring and reporting will effectively reduce residual impacts and avoid a significance determination.If this information is not provided, then the Working Group cannot meaningfully assess whether mitigation measures have been successful or not.	The implementation of EMPs will be overseen by environmental professionals to confirm compliance with monitoring and reporting requirements. Reporting from compliance monitoring programs (e.g., air quality and GHG emissions) will be conducted according to regulatory requirements and submitted for review to the appropriate authorities. The level of detail provided in Section 14 of the Application is consistent with the requirements of the AIR and typical of the level of information available during this phase of the environmental assessment process. In their response to screening comment 145, EAO confirms that Section 14 meets screening requirements, and additional Management Plan requirements will be developed as directed through EAC conditions, in consultation with Working Group members, including Aboriginal Groups, as required.
325	screening	Gitxaala Nation	18	Aboriginal Consultation	The Appendix S-2 and Aboriginal Consultation Report No. 2 does not contain information on how subsection 5(1)(c) has been considered as part of the assessment for the purposes of substitution. including: • A description of how each environmental effect listed in section 5 of CEAA 2012 was considered in the Application • An explanation of potential environmental effects as described in section 5 of CEAA 2012, including cumulative effects, where relevant • A list of mitigation measures that are being proposed to reduce these effects • Significance of residual effects, or with respect to section 5(1)(c) considerations, a conclusion regarding the adequacy of proposed mitigation measures • Recommendations from the Proponent on any follow-up program elements • How the factors to be considered under section 19(1) of CEAA 2012 were taken into account as part of the assessment and the conclusions drawn for each factor • Reference to the section in the Application where additional information requirements addressing sections 5 and 19(1) of CEAA 2012 can be found	Section 18 (Part F) of the Application contains a table which summarizes the predicted changes to the environment for a substituted environmental assessment, as defined in subsection 5(1), 5(2), and 19(1) of CEAA 2012.
326	screening	CEAA	18	Follow-up Programs and Compliance Reporting	The proponent has proposed three follow-up programs (great blue heron rookery, acidification and eutrophication, marine sediment deposition and monitoring). It isn't clear from Section 15 what criteria was used to determine which VCs require a follow-up program. Given the precedent from other LNG projects, it is likely that additional follow-up programs may be required.	The criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program as outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011). The criteria included a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the VC assessment. In cases where the criteria are met, the proposed follow-up program will be used to verify the accuracy of assessment predictions. For VC assessments that concluded moderate to high prediction confidence, these will be managed through the development of Environmental and Operational Management Plans (Section 14) designed to verify compliance of the Project with commitments in the Application and conditions in an Environmental Assessment Certificate.
326.1	round 1	CEAA	18	Follow-up Programs and Compliance Reporting	**As a follow up to screening comment #326** Response understood. However, rationale provided is inconsistent with broader considerations presented in referenced OPS. It would be anticipated that additional follow-up programs be included to determine the effectiveness of key mitigations. As a minimal additional consideration, a follow-up program would be expected for Harbour Porpoise as the Application has concluded significance on this VC sub-unit. In addition, as the assessment of likelihood was applied incorrectly for several VCs, the significance determinations for those VCs will remain in question until the correct methodology has been applied for those VCs-- additional mitigation measures may need to be proposed pending the revised outcomes.	As outlined in Section 14.2 of the Application, each environmental management plan (EMP) will include requirements for compliance and/or effectiveness monitoring and reporting. EMPs, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the EMPs will be undertaken, subject to the requirements of regulatory agencies, requirements of the program, and the effects being monitored. Should any issues be identified during the EMP reviews, the proposed modifications to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe BMPs and mitigation measures that will be implemented during construction and operations of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals, including harbour porpoise. A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area. Aurora LNG is also willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA. Descriptions of likelihood of residual and cumulative effects are consistent with the "Guideline for the Selection of Valued Components and Assessment of Potential Effects" (EAO 2013) and as outlined in sections 3.6.5 and 3.7.6 of the AIR.
327	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	1. All information received from Aboriginal Groups regarding the Project will be meaningfully considered by Aurora LNG EAO Rational / Comment - Kitsumkalum's comments are for discussion during Application Review.	Aurora LNG appreciates the time and effort that Kitsumkalum First Nation has put into the environmental assessment to date. Information received from Kitsumkalum First Nation during the pre-Application phase of the environmental assessment has been fully considered by Aurora LNG. This information has helped Aurora LNG form a better understanding of the Nation's traditional use of the land and resources around the Project, and how the Project may affect the exercise of their Aboriginal Interests. Aurora LNG is committed to further consultation with Kitsumkalum First Nation during Application-review.

328	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	2. Aurora LNG will treat all asserted rights as “Aboriginal Interests” for the purposes of this Application. Kitsumkalum has seen no evidence of this. [Concerns related to participation in fieldwork, engagement by Nexen in general.] EAO Rational / Comment - Based on a letter from Nexen to Kitsumkalum dated November 30, 2016, EAO understands that Nexen is proposing to conduct another technical EA meeting with a field study review early in the Application Review phase. EAO also understands that a key objective of this consultation activity is to address the concerns expressed by Kitsumkalum during the pre-application stage in relation to non-participation in EA fieldwork activities. Kitsumkalum’s comment is for discussion and action during Application Review.	Aurora LNG acknowledges that there have been limitations on Kitsumkalum First Nation's participation in field work due to logistical and operational limitations during the pre-Application phase of the environmental assessment. However Aurora LNG did offer and conduct aerial tours and three technical workshops with Aboriginal Groups to discuss and assess the data collected. One of the primary purposes of conducting the technical workshops was to ensure that Kitsumkalum First Nation was provided with opportunities to understand and review the data collected, and to discuss any related concerns or issues. During the Application-review phase of the environmental assessment, Kitsumkalum First Nation has been invited to a "field review session" to discuss baseline study findings and to visit key sampling/survey locations. Aurora LNG looks forward to further consultations with Kitsumkalum First Nation during the Application-review phase of the environmental assessment to more fully understand their Aboriginal Interests. Within this context, Kitsumkalum First Nation will be invited to a focused workshop to discuss, among other topics, assessment findings regarding the exercise of their Aboriginal Interests.
329	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	3. For each Aboriginal Group, Aurora LNG will consider and discuss residual effects that may interfere with ability of the Aboriginal Group to exercise their Aboriginal Interests within the Project vicinity. For the purposes of Section 12, the term “Project vicinity” means the spatial and temporal area where interactions between predicted Project-related effects and an Aboriginal Interest is anticipated to occur. This statement is false. Kitsumkalum anticipates project related effects to be felt throughout the territory from Arthur Island to Port Edward to Terrace. There is no evidence that Nexen is following their own approach. On the contrary, throughout Section 12 Nexen references the PDA as an assessment area. The Aurora LNG Application should not continue through to Application review until such time that this contradiction has been resolved.	Effects on Aboriginal Interests differ substantially depending on where the Aboriginal Interest is exercised, and which Project-related activities will occur in the area. As such, Aurora LNG is of the opinion that specifying whether the effect will occur only within the PDA, near the marine facilities, within the shipping route, or elsewhere in an Aboriginal Group's territory is an important element of assessing potential effects on Aboriginal Interests. Aurora LNG believes that the assessments set out in Part C are well-aligned with the principles described on page 12-2 (including the quote in Kitsumkalum First Nation's comment).
330	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	4. Consider and discuss the ability of each respective Aboriginal Group to continue exercising those related rights across their traditional territory, in the context of potential interference from the Project. Kitsumkalum welcomes to start these discussions. We would have preferred to have had discussions like this already, but since we have not, the Aurora LNG Application should not continue through to Application review until such time that Kitsumkalum has received a commitment from Nexen that they will actually honestly and sincerely engage with Kitsumkalum on this. There have also been no discussions with BC or Canada on this. The 180 day review period does not provide enough time for this issue to be addressed.	Aurora LNG has offered meaningful opportunities to discuss potential interference from the Project on Kitsumkalum First Nation's Aboriginal Interests, including a focused workshop prior to submitting the application. One of the main objectives of the workshops was to obtain Kitsumkalum's input regarding mitigation measures to avoid or reduce potential adverse effects from the Project on the exercise of Aboriginal Interests. Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
331	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	5. Aurora LNG will make best efforts to identify and discuss with Aboriginal Groups appropriate mitigation measures designed to avoid or reduce adverse effects on the exercise of Aboriginal Interests. If this statement is meant to include the time period between Nexen’s first contact with Kitsumkalum and today, it is false. If this statement is meant to describe what will happen after today, Kitsumkalum will welcome this and see this as a fundamental and positive change in Nexen’s approach to engage with Kitsumkalum. Other than being presented with various statements that seem to be considered mitigation by Nexen, we have not discussed any mitigation measures that were either suggested by Kitsumkalum or that have any relevance to Kitsumkalum. [Examples are 12.5.6.6 Assessment of Effects on Kitsumkalum First Nation Harvesting-Related Aboriginal Interests] [Mitigation Measures are included in the Kitsumkalum Nov 29 letter on page 4-6 of 12].	Aurora LNG has offered meaningful opportunities to discuss potential interference from the Project on Kitsumkalum First Nation's Aboriginal Interests, including a focused workshop prior to submitting the application. One of the main objectives of the workshops was to obtain Kitsumkalum's input regarding mitigation measures to avoid or reduce potential adverse effects from the Project on the exercise of Aboriginal Interests. Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
332	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	6. Aurora LNG will determine the degree of predicted residual adverse effects for each Aboriginal Interest asserted by an Aboriginal Group. This has absolutely not occurred with any of Kitsumkalum’s participation or consultation. Aurora LNG needs to commit here to do this work with full and early engagement of Kitsumkalum. To address this at this point will take longer than the 180 days provided for in the review period. The Aurora LNG Application should not continue through to Application Review until such time that these issues have been resolved.	Kitsumkalum First Nation was presented with multiple and meaningful opportunities to provide information and feedback during the pre-Application phase of the environmental assessment. The Nation participated in all three technical workshops (December 2, 2015; March 16-17, 2016; and July 28, 2016) hosted by Aurora LNG during this period. The workshops focused on Project infrastructure and design, field data collections, preparation of the Application, and incorporation of Kitsumkalum First Nation's project specific socio-economic and traditional use information into the Application. During the third technical workshop Aurora LNG presented its suggested approach to assessing Aboriginal Interests. Furthermore, Aurora LNG relied on documents generated by Kitsumkalum First Nation (including both project specific and non-project specific documents) to identify Kitsumkalum First Nation Aboriginal Interests, and to help assess potential effects on those Aboriginal Interests. Prior to submission of the Application for screening, Kitsumkalum First Nation also received a draft of the assessment of Kitsumkalum First Nation Aboriginal Interests. Aurora LNG then met with Kitsumkalum First Nation to discuss Part C of the Application (on October 25, 2016). Aurora LNG made changes to the Application as a result of Kitsumkalum First Nation's feedback on Part C. As evidenced by these efforts (in addition to several other meetings and correspondences detailed in Appendix S2), Aurora LNG is of the opinion that Kitsumkalum First Nation was consulted in a meaningful manner on Part C of the Application prior to submission. Aurora LNG looks forward to further consultations with Kitsumkalum First Nation during the Application-review phase of the environmental assessment. Within this context, Kitsumkalum First Nation will be invited to a focused workshop to discuss, among other topics, assessment findings regarding the exercise of their Aboriginal Interests.
333	screening	Kitsumkalum First Nation	Part C, Section 12, Aboriginal Consultation	Aboriginal Consultation	**Other Matters of Concern- Discussion and information missing in the application documents:** If one group loses access to one of their sites, they cannot just move over, because that would mean infringing on another house’s resources. The loss of access to traditional use resources from the project due to direct inability to access traditional use areas and indirectly from the influx of approximately 12,500 workers for the project will result in reduced access to foods for sustenance and materials for artists. See page 6 and 7 of the attached Kitsumkalum Nov 29 screening letter for further information regarding this comment	Aurora LNG believes that these points have been adequately addressed in Part C of the Application. Infringing on Another House's Resources: This potential effect is discussed in Section 12.5.7.8 (Traditional Governance). Aurora LNG also included this information in the discussion of "Relative Availability of Other Areas" in Section 12.5.7.6 (harvesting-related Aboriginal Interests) and Section 12.5.7.7 (Cultural Wellbeing). Influx of Workers: After receiving feedback from Kitsumkalum First Nation during consultation on the draft version of Part C, Aurora LNG included "increased pressure on resources" from an influx of workers as a potential effect mechanism in the assessment of potential effects on harvesting-related Aboriginal Interests (see Section 12.5.7.6).
334	screening	Kitsumkalum First Nation	Part C and Part B (BCEAA requirements), VCs Economic Benefits and Infrastructure and Services	CEAA 2012	For Part B VCs, Kitsumkalum members will be subjected to socioeconomic effects disproportionately when compared to the general population and therefore their baseline and predicted effects, mitigation, monitoring and significance determination need to be segregated out in the appropriate sections of Part B of the EA. The Aurora LNG Application should not continue through to Application review until such time that these issues have been addressed.	In accordance with the AIR, disaggregated characterizations are provided in Section 11 with an assessment of the degree of predicted residual adverse effect on rights and interests provided in Section 12. Effect assessments provided in Section 5 and 6 of the Application are completed at the LAA and RAA level at a level of aggregation that aligns with methods presented in Section 3 of the Application in accordance with the AIR. While overall characterizations and significance determinations are provided at the LAA and RAA level (i.e., aggregated), differentiations in magnitude characterizations by subpopulation groups are noted throughout the assessment of residual adverse effects for VCs within Section 5 and 6, where appropriate. In some instances, these differentiations relate to Aboriginal groups.
335	screening	Kitsumkalum First Nation	Part C and Part B (BCEAA requirements), VCs Economic Benefits and Infrastructure and Services	CEAA 2012	How Kitsumkalum had expected to be engaged in the characterization of Section 5(1)(c) effects thresholds, effects significance determination as they relate to the assessment of CEAA 2012 Section 5(1)(c) effects. Additional information is found on page 8 and 9 (first paragraph on page 9 only) of the attached Kitsumkalum Nov 29 letter	Aurora LNG believes that Kitsumkalum First Nation was provided a number of meaningful opportunities to comment on the characterization of Section 5(1)(c) Effects. As noted in Kitsumkalum First Nation's letter dated November 29, 2016, Kitsumkalum First Nation participated in all three technical workshops (December 2, 2015; March 16-17, 2016; and July 28, 2016) organized by Aurora LNG during the pre-Application phase of the environmental assessment. During the third technical workshop, Aurora LNG discussed proposed characterization criteria for the assessment of Project effects under CEAA 2012, section (5)(1)(c). Based upon feedback from Aboriginal Groups at this workshop, Aurora LNG made modifications to the characterization criteria. Furthermore, prior to submission of the Application for screening, Kitsumkalum First Nation received a draft of the assessment of Section 11.3 (CEAA Section 5(1)(c)). Aurora LNG met with Kitsumkalum First Nation to discuss draft versions of Section 11.3 and Part C of the Application prior to its submission to the EAO. Aurora LNG made a number of changes to the draft Application as a result of Kitsumkalum First Nation's helpful feedback during that meeting. Aurora LNG is committed to working with Kitsumkalum First Nation during the Application-review phase of the environmental assessment, including organizing a focused workshop with Kitsumkalum First Nation to discuss further, among other topics, the characterization of CEAA 2012 5(1)(c) Effects.
336	screening	Kitsumkalum First Nation	Part C and Part B (BCEAA requirements), VCs Economic Benefits and Infrastructure and Services	CEAA 2012	To go a step further, Nexen has not followed guidance given by the Agency which suggests that “reversibility” (of project effects…along with magnitude, geographic extent and duration) should be considered when determining significance (for the current use of land and resources for traditional purposes). Kitsumkalum suggests that without our input (as described above) and with missing criteria for significance determinations that the assessment of Section 5(1)(c) is not valid, and the Application should not be accepted into Application review until such time that these issues are resolved. **(See page 9 of 12 of the Kitsumkalum Nov 29th letter for reference only)**	Aurora LNG is confident that the determination of significance of residual and cumulative effects on current use of lands and resources meets the requirements of the AIR (see AIR sections 3.6.6, 3.8, and 11.3.6). Where an effect is characterized as irreversible, the duration is characterized as permanent. Therefore, by considering the duration of effects, the significance determinations for effects also consider reversibility--or more importantly instances where effects may be irreversible.
337	screening	Kitsumkalum First Nation	Section 11.3 - Mitigation Measures Associated with Section 5(1)(c) effects	CEAA 2012	Once residual effects predicted for the relevant environmental effects in Part B have been carried through to the Section 5(1)(c) effects assessment, Nexen’s assessment methodology asks the question: “Are predicted residual effects the same for Aboriginal and non-Aboriginal people?” (Figure 11.3-5). In the Application Section 11.3, there is no clear rationale as to the response to this question, simply a presentation of mitigation measures to minimize potential effects t the VC as originally presented for the VCs in Part B. None of these mitigation measures are specific to Kitsumkalum to address potential 5(1)(c) effects to our members. *See page 9-10 of the attached Kitsumkalum Nov 29th letter for further details*	As set out in Section 11.3.5.1, the first two steps (determine which VCs are relevant to the CEAA 5(1)(c) factors, and identify residual effects from those VCs) are completed in Section 11.3.6. The remaining steps, which include consideration of the question Kitsumkalum First Nation has identified ("Are predicted residual effects the same for Aboriginal and non-Aboriginal people?") are completed for each CEAA 5(1)(c) factor in Section 11.3.10. The assessments completed in Section 11.3.10 relied, in part, on Kitsumkalum-specific traditional use traditional knowledge information to determine whether residual effects are different for Kitsumkalum First Nation.
338	screening	Kitsumkalum First Nation	Section 11.3 - Mitigation Measures Associated with Section 5(1)(c) effects	CEAA 2012	For example mitigation measures to avoid or minimize effects to marine water quality are being presented as if they will mitigate potential Section 5(1)(c) effects to Kitsumkalum, yet Marine Water Quality is not a VC that has direct relevant potential effects for consumptive or non-consumptive current use. It can only be assumed that the usefulness of these mitigation measures is through an indirect pathway to affect Section 5(10(c) effects. If this is the case then why are indirect effects to current use through other VCs (pathways) not considered? See page 10 (paragraph 2) of the attached Kitsumkalum Nov 29 letter for context and additional information	Table 11.3-11 includes a list of mitigation measures from other sections of Part B that are considered relevant to effects on Current Use of Lands and Resources. The VCs listed under "Discipline" in Table 11.3-11 represent the VC for which the mitigation measure was primarily developed. However, mitigation measures developed to reduce effects on one VC are often relevant in reducing effects on related VCs as well. As such, many mitigation measures listed in Table 11.3-11 are relevant to other VC assessments as indicated in the column labelled "Copied In." All of the Water Quality VC mitigation measures listed in Table 11.3-11 are copied in VCs that are directly relevant to the assessment of effect on Current Use of Land and Resources as indicated in tables 11.3-9 and 11.3-10.Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
339	screening	Kitsumkalum First Nation	Section 11.3 - Mitigation Measures Associated with Section 5(1)(c) effects	CEAA 2012	Further, there are in fact no mitigation measures presented in Section 11.3 to offset Aboriginal health due to reduction in the quality or quantity of available harvested foods, either measureable or perceived changes or for Aboriginal socio-economic condition, through community health due to a change in harvested foods. See page 10 of the Kitsumkalum Nov 29th letter for context	Although there are no mitigation measures from the Community Health VC related to change in harvested foods presented in Section 11.3, several mitigation measures included from other VCs are anticipated to indirectly reduce adverse effects on harvested foods. Kitsumkalum First Nation is encouraged to review the mitigation measures in Part C, Section 12.5.7.6. Mitigation measures that are particularly relevant to effects on harvested foods include: Aurora LNG will continue to consult with Kitsumkalum First Nation throughout the life of the Project to address any Project-related issues pertaining to harvesting resources within the Project Vicinity In the event Aboriginal Groups identify specific harvesting sites within the appropriate LAA from Part B VC's, prio to construction, additional mitigation measures may be considered, such as monitoring of pre-construction harvesting Aurora LNG will continue to consult with Aboriginal Groups to identify additional mitigation measures through the life of the Project to reduce potential adverse effects on harvesting activities. Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).

340	screening	Kitsumkalum First Nation	Section 11.3 - Mitigation Measures Associated with Section 5(1)(c) effects	CEAA 2012	Given that there remains serious uncertainty regarding the Section 5(1)(c) effects to Kitsumkalum from Project activities, at minimum, Nexen should be committed to follow-up programs to verify the accuracy of the EA and determine the effectiveness of any mitigation measure that will be implemented. See page 10 of the Kitsumkalum Nov 29 letter for context	Aurora LNG's proposed follow-up and monitoring programs that are relevant to the assessment of Section 5(1)(c) Effects are as follows: A process will be implemented to investigate noise complaints in a timely manner Aurora LNG will implement a process to address vibration complaints in a timely manner A water quality monitoring program will measure turbidity during dredging to identify exceedances of predicted total suspended solids (TSS) values outside the work area Where effects to vegetation from NO2 and SO2 atmospheric concentrations, soil acidification or soil eutrophication are predicted to occur through modelling, vegetation and soils will be periodically monitored as necessary in consultation with the British Columbia Ministry of Environment Wetlands immediately adjacent to the PDA will be periodically monitored to determine the effectiveness of mitigation measures, specifically in relation to wetland hydrology A wetland monitoring program will be implemented to determine the effectiveness of restored, enhanced, or created wetland habitat associated with the Wetland Compensation Plan An environmental monitor will be on-site during all instream works to monitor for potential harm to fish An environmental monitor will be on site during active in-water impact pile driving and underwater blasting to monitor for fish kills. If a fish kill is observed, the activity will be suspended temporarily, and additional mitigation measures will be discussed with DFOA marine mammal monitoring program will be implemented to enforce an exclusion zone around the in-water blasting area. The exclusion zone will be a minimum of 500 m (to protect from shock waves, blast effects and flying debris)An underwater noise field verification program will be conducted to verify predicted sound pressure levels and the size of the exclusion zone for in-water blastingA Community Engagement Plan will be developed and implemented to facilitate ongoing and meaningful community engagement, including monitoring, recording, and addressing community complaints and concerns Aurora LNG will develop and implement a community grievance process for addressing issues related to the Project. Aurora LNG will share information on Project follow-up programs and monitoring plans in a manner consistent with the consultation objectives outlined in Section 3 of Aboriginal Consultation Report #2 (see Appendix S1). Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
341	screening	Kitsumkalum First Nation	Section 11.3 - Mitigation Measures Associated with Section 5(1)(c) effects	CEAA 2012	Without clear rationale to present the reasoning for not submitting mitigation measures specific to each Aboriginal Groups Section 5(10(c) effects and with no mitigation presented for some of the Section 5(1)(c) effects Kitsumkalum cannot be assured that there will not be residual effects to current use, Aboriginal health, Aboriginal socio-economic conditions and Aboriginal physical and cultural heritage. How can Kitsumkalum be assured that there will not be effects to our members directly, indirectly and cumulatively? These are not issues to be left to Application review, they cannot be solved with the 180 day Application review period. See Kitsumkalum Nov 29 letter (page 10) for context	Due to the incomplete nature of the information available within the RAAs regarding Section 5(1)(c) Effects for each Aboriginal Group relative to the list of projects and physical activities listed in Table 11.4‑1, Aurora LNG carried out a combined cumulative effects assessment for all of the Aboriginal Groups. Aurora LNG notes data deficiencies related to the extent and duration of Section 5(1)(c) Effects from past, present and reasonably foreseeable future projects in the RAAs, and usage relevant to possible interactions throughout the RAA. Aurora LNG is confident that the mitigations listed in Table 11.3‑11, Table 11.3‑12 and Table 11.3‑13 will be effective in reducing potential adverse cumulative effects on CEAA 5(1)(c) Effects. However, Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
342	screening	Kitsumkalum First Nation	Cumulative Effects Assessment of 5(1)(c) Effects	CEAA 2012	As per Section 3.7.3 of the Application cumulative effects assessment, the Project's contribution to each residual cumulative effects [should] also be described. This has not been completed for the cumulative effects assessment of Section 5(1)(c) effects. EAO Rational / Comment - Please clarify how the Project's contribution to residual cumulative effects is examined in the Application.	Consistent with the Application Information Requirements, Section 11.4 of the Application assesses cumulative Section 5(1)(c) Effects based on the methodology set out in Section 3.7 of the Application (with modifications where appropriate). The assessment was undertaken in a collective manner for all of the Aboriginal Groups using a two-step process. For each potential cumulative effect, the assessment examines information and findings related to the cumulative effects from the VCs that were deemed relevant to the assessment of Section 5(1)(c) Effects (i.e., based on steps #1 and #2 from Section 11.3.5.1). Qualitative conclusions were provided where possible. The assessment then characterized residual cumulative effects for each of the measurable parameters based on the findings related to cumulative effects from relevant VCs, Aurora LNG's understanding of relevant existing conditions for Aboriginal Groups, and considering the criteria and definitions outlined in Section 11.3.2.5. Section 11.4.3 describes how Project residual effects on consumptive and non-consumptive forms of Current Use have the potential to combine with the residual effects of past, present and reasonably foreseeable future projects and activities to result in cumulative residual effects on Current Use. Section 11.4.4 describes how Project residual effects on Aboriginal health have the potential to combine with the residual effects of past, present and reasonably foreseeable future projects and activities to result in cumulative effects on Aboriginal health. Section 11.4.5 describes how Project residual effects on Aboriginal Socio-Economic Conditions have the potential to combine with the residual effects of past, present, and reasonably foreseeable future projects and physical activities to result in cumulative residual effects on Aboriginal Socio-Economic Conditions. Section 11.4.6 describes how Project residual effects on Aboriginal Physical and Cultural Heritage have the potential to combine with the residual effects of past, present, and reasonably foreseeable future projects and physical activities to result in cumulative residual effects on Aboriginal Physical and Cultural Heritage.
343	screening	Kitsumkalum First Nation	Cumulative Effects Assessment of 5(1)(c) Effects	CEAA 2012	There are no significance thresholds for cumulative 5(1)(c) effects (none presented in Part B, Section 3.0 or in Section 11.3). In Section 11.4.3.6 Significance of Residual Cumulative Effects on Current Use of the Application, the summary of residual cumulative effects on current use (both consumptive and non-consumptive) (with the Project) is of medium magnitude, RAA for geographic extent, continuous for frequency, permanent for duration, irreversible for reversibility and moderate resilience for context (with a medium likelihood). The determination of cumulative effects associated with Section 5(1)(c) is "not significant" but there is no presentation of the thresholds for this determination. How then was the "no significance" determination made? With that level of residual cumulative effects presented, how can there not be significance ? Kitsumkalum stresses that cumulative effects to Part B VCs and thus to Section 5(1)(c) elements cannot be underestimated for Aboriginal Groups as we will be the most highly affects because of our known vulnerability as a distinct group and our complete dependence of the marine and terrestrial resources for our culture and survival.	Section 11.4 of the Application explicitly states that the assessment of cumulative Section 5(1)(c) Effects characterized residual cumulative effects using the criteria and definitions set out in Section 11.3.2.5. However, Aurora LNG also used the definitions for likelihood of residual effects set out in Section 11.3.2.6 and the significance thresholds for residual effects set out in Section 11.3.2.7 for the cumulative effects assessment. This should have been made clear in section 11.4, but was inadvertently not included. The threshold used to determine the significance for both residual adverse effects and residual cumulative adverse effects on Current Use is as follows (see section 11.3.2.7 of the Application): "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activity is no longer considered viable within existing conditions, it would be considered significant." The overall magnitude of residual cumulative effects on consumptive and non-consumptive forms of Current Use range from "Low to Moderate" to "Moderate". As per Table 11.3-7, a "Low Magnitude" effect on Current Use is defined as: "Little to no change from existing conditions and Current Use is able to continue at current levels. Little to no alteration of behaviour is required to continue the current traditional land and resource use practices" A "Medium Magnitude" effect on Current Use defined in Table 11.3-7 as: "A measurable change from existing conditions but Current Use is able to continue at a reduced level; or Noticeable changes to current practices or knowledge; or Some restrictions on current practices; or Some alteration of behaviour is required to continue current practice in preferred ways or at preferred use locations." Using these definitions, Aurora LNG concluded that participation by Aboriginal Groups in Current Use activities will remain viable, and the effects are not significant. Aurora LNG anticipates that Current Use of lands and resources by Aboriginal Groups will be able to continue with some modification, and the Project's contribution to residual cumulative effects on species, locations, access or the experience of using sites for traditional purposes will not result in substantial restrictions on Current Use activities. Aurora LNG looks forward to further discussing Kitsumkalum First Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30).
344	screening	Transport Canada	Accidents and Malfunctions	Accidents or Malfunctions	There are various stakeholders that could be impacted by the proposed infrastructure and resulting air instability including VFR operations transiting the airspace around the facility - both low level float traffic and general VFR traffic (helicopter, fixed wing). After some internal discussion between Transport Canada and Nav Canada's aviation experts, the following information is needed in order to determine if impacts can be mitigated on Air Navigation in the area of Prince Rupert as a result of the proposed project: a) Location, height, flare design, flame size, duration, horizontal distance, brightness, ignition pressure wave strength/duration, ambient air movements. b)More information is required to define the potential risks to aviation from use of the emergency Burn Off Gas Flare stack and associated mitigations to address identified risks. c)How much notice will be available in the event of an emergency flare. d)What are the timelines associated with the runway extension at Prince Rupert airport. e)Will Nexen be updating the above reports with the newly acquired 12 month wind data. f) What will the overall impact be from all flares/plumes on airport approaches and touch down zones. What danger areas are there for aircraft. (This information should be provided with specific dimensions eg. "it will be dangerous for aircraft within 1000ft horizontally and 3000ft vertically".) g) Ideally and preferentially, recent reports have indicated that smaller ground flare stacks would have little need for change to our airspace system and would not create a hazard to aviation.	Aurora LNG is currently updating the plume rise assessment previously provided to Transport Canada to be consistent with the most recent facility layout assessed in the Application. It is anticipated that this updated report will be available to share with Transport Canada in early to mid-February. Aurora LNG would appreciate the opportunity for a meeting with Transport Canada at that time to review this updated study and discuss responses to the questions and additional information requested. Aurora LNG has provided responses where possible to Transport Canada's questions; however the study will contain additional information to address some of the specific model related questions as noted below. a) Flare Location - Updated plume rise model was prepared with the following dataset configuration:cLat 54°15.5' North and cLong 130°22.5' WestLocal Coordinates are cx = 410431m and cy = 6013137m Flare design would be a typical operations/emergency flare that would be designed to follow all regulations and standards associated with flaring in Canada. Alternate designs are currently being considered, including a ground flare as noted in the Application. Information on flame size will be included in the updated Plume Rise Assessment report. Duration will vary depending on release volumes/intensity; however typical duration of an emergency flare event is anticipated to be between 10 minutes and 1 hour. During start-ups and turnarounds, the duration of flaring events would be longer however the volume/intensity is anticipated to be less. Brightness – the Flare Visible Light Estimation study provided to Transport Canada includes information on brightness of the flare. Aurora LNG is willing to further discuss this study at the next meeting between Aurora LNG and Transport Canada. Information on ignition pressure wave strength/duration will be available in the updated Plume Rise Assessment to be provided to Transport Canada. Information on ambient air movement will be available in the updated Plume Rise Assessment to be provided to Transport Canada. b) Information regarding the boil off gas (BOG) flare will be included in the updated Plume Rise Assessment report to be provided to Transport Canada. c) If there is a controlled release to the flare a NOTAM (Notice to Airmen) will be issued to the aviation authority. Notification will be issued in a timely manner to allow for appropriate response to aviation pilots. Additional courtesy calls may be given through communication to the Prince Rupert Airport. Methods could include radio communication, cellular communication or other methods that can be agreed upon by the all stakeholders. In the unlikely event of an uncontrolled release there will be minimal notification, as it will not be known until the release is about to occur. As the Project design progresses, Aurora LNG anticipates having discussions with Transport Canada and the Prince Rupert Airport regarding communication protocols in the case of an emergency flare event. d) As per the Prince Rupert Go Plan and Prince Rupert Airport Master Plan advancement changes to the airport runway may occur as increased traffic and passenger usage warrants the expansion. This expansion would be under the control and timeline of the Prince Rupert Airport. As noted in the report titled Nexen Aurora LNG Study 1 – Aviation Impact Digby Island & Air Transportation Requirements – Update provided to Transport Canada, a runway extension would not affect the Aurora LNG project and vice versa. e) Aurora LNG is currently updating the model and this will include the newly acquired 12 months of wind data. The model requires 5 years of data, therefore the wind data will include a combination of the past 12 months of wind data collected and the historical 5 years of data from the Prince Rupert Airport. f) This information will be provided in the updated Plume Rise Assessment and Aurora LNG would appreciate the opportunity to have a meeting with Transport Canada to review and discuss the results of this updated report. g) Aurora LNG is currently unable to comment on the indication that a ground flare would have little change to the airspace system. If Transport Canada has access to such studies, Aurora LNG would appreciate if Transport Canada would be able to share these reports. Aurora LNG is investigating various flare design alternatives, including an elevated flare and ground flare as assessed in the Application, but has only assessed the elevated flare as part of the plume rise assessment.
344.11	round 1	Transport Canada	Accidents and Malfunctions	Accidents or Malfunctions	"As a follow up comment to comment #344 Thank-you for the response. TC is awaiting the Plume Rise Assessment report in order to provide a more fullsome response. Regarding Nexen's response to g) , below are links to the documentation referenced. It is TC's interpretation that a ground flare system would have little to no impact on aviation activity and would be the preferred system of use. https://www.kbr.com/Documents/LNG%20White%20Papers/Ground%20Flares%20-%20out%20of%20sight%20out%20of%20mind.pdf http://www.ogp.org.uk/pubs/288.pdf "	Comment noted.
344.12	round 1	Transport Canada		Accidents or Malfunctions	"As a follow up to screening comment #344 b)More information is required to define the potential risks to aviation from use of the emergency Burn Off Gas Flare stack and associated mitigations to address identified risks. "	Section 9.7.3 of the Application speaks to potential risks to aviation from flaring. "Flaring activities could temporarily interfere with civil aviation. Gas plumes and heat radiation from the flare stack could influence air turbulence along the southern take-off and landing approach and increase the probability of loss of aircraft control. The Project design currently includes mitigation measures to reduce the geographical extent and vertical velocity of gas plumes from the Project during the operations phase, which will also apply during flaring from an LNG plant malfunction scenario. Close collaborative planning will also take place with the Prince Rupert Airport Authority to identify the affected airspace during these flaring events (i.e., flaring from both the operations phase and an LNG plant malfunction scenario requiring flaring)." The plume rise assessment report has been shared with Transport Canada and Nav Canada and no concerns with current flare stack location have been identified.
345.1	round 1	Gitga'at First Nation	6.6.2 Scope of Assessment	Community Health	As a follow up to #22 in the dAIR tracking table Is the mentioned Northern Health's Prince Rupert Community Health Profile in Nexen's response to our category 1 and 2 screening comment included in the Application? If not, the Application should be revised to include this important baseline condition. " IR #22 in the dAIR public tracking tableIn response to Gitga'at's comment #22 in dAIR Public Tracking Table (regarding tracking the number of asthma incidents before and after the Project commences), Nexen described that "Baseline asthma incidence will be addressed as part of the Community Health and Wellness VC". This is missing from Part B, Section 6.6. Final proponent response Based on the Northern Health's Prince Rupert Community Health Profile (see following link), there are approximately 41 newly diagnosed cases of asthma in Prince Rupert for the 2012 year (Ministry of Health, Chronic Disease Registries 2013). From 2001 to 2013 the age-adjusted rates of asthma within Prince Rupert have declined steadily from 0.71% (2001) to 0.54% (2013). Link: http://communityhealth.phsa.ca/HealthProfiles/HealthReportHealthStatusAndChronicDisease/Prince%20Rupert	The report "BC Community Health Profile - Prince Rupert 2014" is referenced in Section 6.6 and referred to as Provincial Health Services Authority (PHAS) 2014a.

346.1	round 1	Gitga'at First Nation	6.6.2.5 Boundaries	Community Health	As a follow up to category 1 and 2 screening comment It is not a matter of Hartley Bay being ""too physically distant from the Project location to be part of the LAA"". The concern relates to the residents of Hartley Bay's connection and direct socio-economic reliance on Prince Rupert. Gitga'at has voiced this concern repeatedly (e.g., see dAIR comment #27 in the Public Tracking Table, dated October 1, 2015), and Nexen's continual ignorance is inappropriate at this stage of the EA process. The community of Hartley Bay must be assessed within the LAA for all socio-economic parameters and the Application must be revised. See further comments in the economic and social sections below made by an external socio-economic expert."	Aurora LNG's understanding of Gitga'at First Nation's comments requesting the inclusion of Hartley Bay in the LAA to be as follows: Members who either move to Prince Rupert for work, live in both Prince Rupert and Hartley Bay, as well as those members who work in Prince Rupert and send money to family members in Hartley Bay could experience adverse residual effects of the ProjectMembers living in Hartley Bay who draw upon goods and services in Prince Rupert, Terrace and Kitimat could experience adverse effects related to changes in the cost of goods and services due to the ProjectThat member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectOut-migration of members from Prince Rupert to Hartley Bay due to changes in the affordability and/or availability of housing in Prince Rupert could increase demand for housing in Hartley Bay (of which limited capacity exists to absorb increased demand).Socio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following economic and social VCs: Sections 5.2 Economic Conditions, 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2) and 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 5.2, 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions, infrastructure and services, and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.
347.1	round 1	WG Action Item - February 6, 2017		Heritage	Aurora LNG will categorize the items presented in the mitigation measures summary table as mitigations, legal requirements, best management practices aor management plans.	Aurora LNG is committed to numerous mitigation measures to manage potential effects of the Project, as summarized in Table 16-1. Technical memo "Revised Mitigation Measures Table" further categorizes mitigation measures to indicate whether a mitigation measure is outside of permitting requirements (legal requirement, industry standard/Best management practice and/or Aurora LNG additional mitigation measure). This technical memo will be filed with the BC EAO.
348.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Integrate the floating camp into a tech memo and provide a summary on changes to VC assessment, effects related to CEAA 5(1)(c) and note what responsibilities are allocated to Aurora LNG versus the third party owner of the floating camp.	Please see the "Floating Camp Review" technical memo which will be filed with the BC EAO.
349.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	References drugs or alcohol stats in this social VC	Section 6.6.3.2 (Community Health VC) subsection 'Crime' provides baseline information relevant to illicit drug use, while subsection 'Personal Health Practices and Coping Skills' provides baseline information on healthy eating, physical activity and alcohol consumption (including heavy drinking). Changes in drug and alcohol use are recognized as mechanisms affecting community health and wellness (effects assessed in Section 6.6), as well as mechanisms affecting community infrastructure and services and health care infrastructure and services (effects assessed in Section 6.3).
350.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Confirm if the 73 specialists is correct as stated in the infrastructure and services VC	The information provided in Table 6.3-9 of the Application for LHA 88 - Terrace regarding the number of physicians, specialists and supplementary practitioners per 100,000 population is accurately summarized as reported in the Provincial Health Services Authority publication "BC Community Health Profile - Terrace 2014" as available from: http://www.phsa.ca/Documents/Community-Health-Profile/Terrace.pdf.
351.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Confirm if the baseline costs for the RCMP building was included in the Application and if included indicate where it was located.	Baseline information regarding capital expenditures estimated by the City of Prince Rupert to replace the existing RCMP facility was incorrectly included under the total cost estimate provided for the subsection 'Fire and Emergency Response'. Noted in the 2015 KPMG report (which is cited throughout Section 6.3.3.2), the City of Prince Rupert estimates a capital cost of $12 million to replace the RCMP facility so as to sustain existing operations, and an additional $3.2 million annually for increased policing services to support LNG-related operations. An errata document is being compiled that captures this correction and it will be filed with the BC EAO. KPMG. 2015. City of Prince Rupert Preparing for Growth – KPMG Report. Available at: http://www.princerupert.ca/sites/default/files/Planning/MajorProjects/City%20of%20Prince%20Rupert%20-%20Preparing%20for%20Growth%20-%20KPMG%20-%20Jan%2022%2C%202015.pdf. Accessed: February 2017. An errata document has been created that captures these corrections and it will be filed with the BC EAO.
352.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Consider if a topic specific workshop/meeting on the SMP is required.	Aurora LNG will be developing the Social Management Plan as part of the FEED process. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan. A topic specific workshop will be scheduled when additional detail from FEED is available.
353.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Provide Aurora LNG with a copy of the helipad regulations.	Transport Canada provided Aurora LNG with information regarding helipads on March 31, 2017, as follows: Helicopter Staging Areas and Flight Inspections TC-Civil Aviation may need to issue approvals for helicopters landing in built-up areas as per section 602.13(1) of the Canadian Aviation Regulations (CAR). If landings within a built-up area are to occur over a short period of time (such as less than 90 days), or if any helicopter operations (that may or may not include landings) are to occur below 1000 ft over a built-up area, then the operator may need to apply for authorization under 702.22 of CAR to conduct such flights. If the helicopter operation intends to land/take-off from within a built-up area for a longer time frame, then the requirements to meet CAR 305.02(1), 305.03, 305.08(1)(b) and associated heliport standards would apply. This would require the certification of a heliport. The Canadian Aviation Regulations can be accessed online at: http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm Aurora LNG is reviewing the information and is aware that an authorization or certification may be required.
354.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Aurora LNG to provide an update on the status of the plume rise study, expecting it by mid-February.	The Plume Rise Impact Assessment report was circulated to the working group and posted on the EAO Project Information & Collaboration (e-PIC) website on February 22, 2017.
355.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	Aurora LNG will circulate notes from the First Nation workshops to First Nations by the end of this week	Aurora LNG circulated draft meeting notes from the First Nation workshops on February 16, 2017, and finalized notes February 22, 2017 and June 5, 2017 based on feedback received from the participants.
356.1	round 1	WG Action Item - February 6, 2017		Economic Conditions	Review of how property tax is outlined in the Economic and social VCs.	Property tax is not addressed as an economic or social effect. Rather, preliminary estimates of property tax that will be paid by the Project ($50 million over the course of Project construction and $15 million per year once the Project is operational) is provided in Section 1.4.5 - Government Revenue. The precise amount of local taxes payable will be based on the value of assessable Project assets for any given year, multiplied by the applicable mill rate.
357.1	round 1	WG Action Item - February 6, 2017		Infrastructure and Services	EAO to consider if a special topic workshop should be set up to discuss social determinants of health and how we characterize these effects and considered in Social Management Plan requirements.	Aurora LNG will be developing the Social Management Plan as part of the FEED process. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan. A topic specific workshop will be scheduled when additional detail from FEED is available.
358.1	round 1	WG Action Item - February 6, 2017		Economic Conditions	Make sure the rationale for why these trap fisheries were not included is in the Marine Transportation and Use VC.	Please see Section 6.5.5.3 of the Application for the complete assessment of change in marine fisheries and other uses. For ease of clarification, information relevant to some trap fisheries is provided here: Gear types such as a string of traps or longlines are set along the bottom and remain largely submerged (except for two surface floats, one at either end), such that shipping traffic could safely pass over the bottom line and between the two buoys. More often, fishers targeting prawn, Dungeness crab, or groundfish, for example, are expected to place gear parallel to shore outside of the shipping route (LNG Canada 2014). As a result, fishing using these gear types will either be able to continue with minor precautions taken by the fishers (e.g., gear should be set and retrieved when LNG carriers are distant), or will not interact at all (if gear continues to be set parallel to shore outside of the established shipping route).
359.1	round 1	WG Action Item - February 6, 2017		Economic Conditions	Update mitigation measures related to training to include timeframes associated with these mitigation.	Mitigation 5.2.5 states Aurora LNG will identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation. Assuming the Project is approved to move forward by both the BC EAO and CEAA (assuming 2017 decisions), Aurora LNG will then start its front end engineering and design (FEED) process. During that process, Aurora LNG expects to identify the specific skill sets and trades required for both construction and operation of the Project. Once FEED is completed (tentatively planned for late 2019), Aurora LNG will work with local training organizations and colleges to evaluate the existing training programs and identify potential skill gaps that may need to be addressed.
360.1	round 1	WG Action Item - February 6, 2017		Visual Quality	Inform TC (Tanya Marin) which First Nation concerns have been raised regarding lighting and the status of this concern (addressed, resolved, etc).	Please see the "Concerns of Aboriginal Groups – Lighting Effects" technical memo which will be filed with the BC EAO.
361.1	round 1	WG Action Item - February 6, 2017		Visual Quality	Aurora LNG to consider additional viewpoints of concern including Casey Cove, shoreline sites, sites of interest identified by Aboriginal Groups and Dodge Cove, etc. through further consultation and engagement.	Aurora LNG has undertaken further visual quality assessment to include additional viewpoints, night time renderings and flaring events. Please see the technical memo "Additional Visual Quality Renderings" that will be filed with the EAO.

362.1	round 1	WG Action Item - February 6, 2017		Marine Use and Navigable Waters	Provide TC with a table of all the mitigation measures relevant to First Nations and navigation and flag the status	The following mitigation measures from the Marine Use and Navigable Waters VC assessment are also relied upon in the assessment of potential effects on Aboriginal Current Use (Section 11.3.6.1, Table 11.3-11): 6.5.1; 6.5.2; 6.5.3; 6.5.4; 6.5.5; 6.5.6; 6.5.7; 6.5.8; 6.5.9.
363.1	round 1	WG Action Item - February 6, 2017		Marine Use and Navigable Waters	Aurora LNG will look review information included in the PNW Assessment to see if if includes relevance data on small craft activity	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
364.1	round 1	WG Action Item - February 6, 2017		Marine Use and Navigable Waters	Aurora LNG will follow up with Dodge Cove on the SIGTTO numbers.	With respect to the SIGTTO, the document entitled Site Selection and Design Guidelines for LNG Ports and Jetties (August 2000 reprint) provides siting guidance that is focused on jetty location. In this regard, this guidance document does not identify exclusion zones, rather it focuses on identifying design considerations for jetty safety and presents a series of risk reduction options, which, in relation to jetty location, includes the recommendation that jetties be located away from populated areas and removed from other marine traffic and port activity. This SIGTTO guidance also promotes a flexible approach to jetty location that is focused on a localized determination based on the specific circumstances associated with the proposed facility and identifies measures (e.g. static and dynamic mooring analysis and the collection of site specific wind /wave data) that can be employed to reduce location risk. As such, Aurora LNG is of the view that its current facility siting, including the jetty location is consistent with available SIGTTO guidance.
365.1	round 1	WG Action Item - February 7, 2017		Air Quality	Aurora LNG received the MOE IR request regarding mass balance calculations and we will follow up after this meeting and confirm the status.	A detailed facility wide hydrocarbon balance will not be available until completion of front end engineering design (FEED). However, the natural gas consumption rate for each emission source is detailed in the emission tables for each emission source in Section 4 (Appendix 2 of the Air Quality - TDR: Appendix A of the Application). The gas consumption for each of the Project emission sources is summarized as follows: 1. 16 compressor gas turbine drivers with each gas turbine burning 14,817 sm3/h of boil off gas. 2. 6 gas turbine generators with each gas turbine burning 11,653 sm3/h of pipeline specification natural gas. 3. 2 camp power generators with each gas turbine burning 3,851 sm3/h of pipeline specification natural gas. 4. 4 heaters with each heater burning 12,628 sm3/h of boil off gas. 5. 4 thermal oxidizers with each oxidizer burning 3,112 sm3/h of boil off gas in addition to the acid gas. 6. 3 flare stacks that each burn 349 sm3/h of pipeline specification natural gas for purge and pilot gas purposes. The total fuel gas usage for the Project emission sources is 378,700 sm3/h of which 79% is boil off gas and 21% is pipeline specification natural gas. In total, approximately 9.1 million cubic metres of gas per day is consumed in Project combustion equipment.
366.1	round 1	WG Action Item - February 7, 2017		Air Quality	Aurora LNG will follow up with MOE on the modelling of a ground flare. EAO requested that Aurora LNG connect with MOE and likely OGC to discuss this further. Aurora LNG will schedule a meeting.	Aurora LNG provided MOE with a draft ground flare model plan on May 8, 2017, and held a conference call with MOE on May 10 to discuss the approach and clarify technical details. The outcome of this conference call was MOE providing verbal approval of the modelling plan and approach. Results of the ground flare model, including tables and isopleth maps, has been captured in a technical memo titled "Ground-Flare Model Assessment" that will be filled with the EAO.
367.1	round 1	WG Action Item - February 7, 2017		Air Quality	Aurora LNG to determine if it's possible to ascertain the difference between using 10% vs. 30% without re-doing any air quality modelling.	Please see the "Air Quality Model Assumptions, Datasets and a Comparison to Prince Rupert Airshed Study" technical memo which will be filed with the BC EAO. The "Air Quality Model Assumptions, Datasets and a Comparison to the Prince Rupert Airshed Study" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Air Quality Figures, Datasets and a Comparison to the Prince Rupert Airshed Study".
368.1	round 1	WG Action Item - February 7, 2017		Air Quality	EAO suggested follow-up call between the proponent, MOE and MOH to discuss VOCs, and how to adequately assess its impact to human health including how they relate to the Accidents and Malfunctions.	Aurora LNG and the BC EAO held a meeting with the Working Group on April 19, 2017. A number of air quality and human health concerns were discussed at this meeting including VOCs. Also, refer to the "Volatile Organic Compounds and Human Health Assessment" technical memo to address VOCs during the operations phase of the Project. The technical memo will be filed with the BC EAO . The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
369.1	round 1	WG Action Item - February 7, 2017		Acoustic Environment	Aurora LNG confirmed that the work camp was not considered as a receptor. Aurora LNG will follow up on the importance of health for the workers during all hours and if this needs to be incorporated into the assessment and potential effects of the 2016 Health Canada Noise guidelines. Aurora LNG will review the ECCC DAS guidelines and set up a meeting for next steps. EAO wants this meeting to include First Nations (Lax Kwa'alaams and Metlakatla) so please put forward a path and timing.	The potential noise effect for workers (i.e. sleep disturbance) in the work camp) is discussed in the "Sleep Disturbance and Speech Interference" technical memo which will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Aurora LNG has reviewed the ECCC DAS guidelines and, on April 28, 2017, hosted a topic specific workshop with EAO and members of the working group including First Nations. Topics discussed at the workshop included a discuss on next steps for DAS.
370.1	round 1	WG Action Item - February 7, 2017		Acoustic Environment	Request from Kitsumkalum First Nation that the definition of daytime hours be amended to an earlier stop other than 10pm (per OGC guidelines). Aurora LNG will take this information back, as it was flagged in the First Nation Workshops as well, and discuss it with their engineers.	The definition of daytime hours (7 am to 10 pm), utilized in the Aurora LNG Application, is based on the BC OGC noise guideline. This daytime definition is consistent with the daytime period definition by both Health Canada and the World Health Organization noise guidance. As per mitigation 4.4.1, high disturbance noise activities will be scheduled to occur during daytime hours. In response to concerns received, Aurora LNG will endeavor to schedule high disturbance activities to occur before 8 pm, where possible. Regular construction activities will be scheduled over a 24 hour period as required to complete specific tasks or meet schedules. Aurora LNG will be developing a Noise Management Plan that will include a description of requirements for notifying local residents of high disturbance noise activities, and outlining how noise complaints will be addressed. Aurora LNG will engage with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended), and other key stakeholders regarding the development of this plan.
371.1	round 1	WG Action Item - February 7, 2017		Water Quality	Aurora LNG will circulate back on how they will meet the BC water quality standards during construction and what technology will be used.	Stormwater runoff during the construction phase is expected to have elevated total suspended solids (TSS). Mitigation strategies will be detailed in the Marine and Freshwater Resources Management Plan, and will include best management practices for soil erosion and sediment control. During the construction phase, a temporary drainage and stormwater management system will be established to collect and control stormwater flows and runoff from the Project Development Area. Stormwater will be directed through internal and perimeter ditches, and erosion and sediment control measures (e.g., silt fences) that are appropriately designed for local site conditions. Water from construction areas will be collected in ditches and allowed to settle in sediment traps or larger sediment ponds, as required to ensure that basic water quality parameters e.g., turbidity (total suspended solids [TSS] are met prior to being discharged to the freshwater or marine environment. In clear water conditions, BC and CCME WQGs for the receiving environment are for a maximum increase of 25 mg/L TSS for up to 24 hours or 5 mg/L over longer periods.
372.1	round 1	WG Action Item - February 7, 2017		Water Quality	Aurora LNG will follow up with MOE in terms of water quality and ensure we capture their requirements.	During the February 7, 2017 working group meeting, Ministry of Environment asked questions about potential nutrient loading to the drinking water reservoir on Digby Island. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo addresses concerns related to ecological and human health associated with nutrient nitrogen critical load exceedances on Digby Island. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting.
373.1	round 1	WG Action Item - February 7, 2017		Marine Fish and Fish Habitat	Aurora LNG to consult with DFO on the Offsetting Plan including discussing what habitat types require offsetting and if additional areas will be needed? Aurora LNG will follow up with TC once specific locations are known in terms of proposed reef construction.	A meeting to discuss habitat offsetting took place on April 28, 2017 with DFO, EAO and other members of the Working Group. Aurora LNG will continue to engage with DFO and Transport Canada through development of the Fish Habitat Offsetting Plan.
374.1	round 1	WG Action Item - February 7, 2017		Marine Fish and Fish Habitat	Aurora LNG will continue to follow the ECCC guidance on DAS selection criteria and will discuss this DAS site selection further with ECCC (including Adam Leuw at ECCC).	The EAO hosted a meeting on April 28, 2017 with Aurora LNG and members of the Working Group to discuss DAS and potential alternative sites. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
375.1	round 1	WG Action Item - February 7, 2017		Marine Fish and Fish Habitat	Aurora LNG indicated that they didn't anticipate dredging above the high tide line in Casey Cove but would confirm this is correct.	Based on preliminary engineering and design plans, dredging is expected to be required in the intertidal zone in Casey Cove. Figures 4.9-4 and 4.9-5 in the Marine Fish and Fish Habitat VC chapter delineate the areas of proposed dredging that overlap with the intertidal zone (pink colour) and subtidal zone (blue colour) for the concrete caisson MOF option and pile-and-deck MOF option, respectively.
376.1	round 1	WG Action Item - February 7, 2017		Marine Fish and Fish Habitat	Aurora LNG will review the ECCC DAS guidelines and set up a meeting for next steps. EAO wants this meeting to include FNs (Lax Kw'alaams and Metlakatla) so please put forward a path and timing.	The BC EAO scheduled a meeting for Friday April 28, 2017 to discuss DAS and potential alternative sites. Results of the workshop were incorporated into the technical memo"Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
377.1	round 1	WG Action Item - February 7, 2017		Marine Fish and Fish Habitat	EAO suggested follow up discussion with ECCC, DFO, Lax Kw'alaams and Metlakatla on the topic of DAS alternatives. A written plan of engagement should support this to ensure it is properly managed.	The BC EAO scheduled a meeting for Friday April 28, 2017 to discuss DAS and potential alternative sites. Results of the workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
378.1	round 1	WG Action Item - February 7, 2017		Marine Wildlife - Marine Mammals	Aurora LNG will meet with DFO to discuss the marine mammal exclusion zone	Aurora LNG met with DFO on April 25th to discuss fish habitat offsetting as well as the proposed marine mammal exclusion zone. As stated in Mitigation Measure 4.10.1, an underwater noise field verification program will be conducted to verify predicted sound pressure levels and the size of the exclusion zone for in-water blasting.
379.1	round 1	WG Action Item - February 7, 2017		Human Health	Aurora LNG will follow up on this issue and provide clarity to the numbers used for consumption in the human health assessment.	Refer to the document titled, "Supplemental Information for Traditional Marine Foods" that will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

380.1	round 1	WG Action Item - February 7, 2017		Accidents or Malfunctions	Aurora LNG will follow up regarding vessel grounding, collisions and the probability of this happening and confirm if this information is available.	LNG shipping has one of the best records in the shipping industry with more than 90,000 LNG cargoes delivered without a single cargo loss since the first commercial cargo was shipped in 1964. A large part of the reason LNG shipping boasts such an excellent safety record is because the ships are designed and built to only transport LNG, and to very high standards. All LNG carriers adhere to rigorous safety standards and requirements that have been established through years of commercial LNG operations. All LNG carriers have double hulls, are insulated and use a cryogenic cargo containment system. Each of these features contributes to the ship's overall safety and integrity. Strong international regulations, very well defined operating procedures, and over 50 years of experience, contribute to ensuring safe operations of these vessels. The LNG carriers will be required to have a BC Coast Pilot aboard, one or more escort tugs of sufficient size to manage the carrier, and all of the vessels will be travelling at a reduced speed. The potential for a collision or grounding event occurring are considered extremely low.
381.1	round 1	WG Action Item - February 7, 2017		Accidents or Malfunctions	Metlakatla requested that EAO send links to the LNG information session documents on EAO's website.	Aurora LNG requests that EAO respond to this request.
382.1	round 1	Kitselas First Nation	5.2.3.2 page 52	Economic Conditions	The 2014 Kitselas Country Food Survey that is cited was carried out in the context of a different location (Kitimat area). In reporting the survey results at that time, Stantec noted "Of the 512 surveys 24 were completed and returned for an overall response rate of **4.7%.**. Due to a low response rate survey bias is considered moderate to high." (Stantec, LNG Canada Export Terminal Socio-Economic Baseline Report, page 111, emphasis added). Please include these caveats in the Application.	An errata document is being prepared that will revise the text as follows:"Results of the Kitselas First Nation harvest baseline report (which had a response rate of 4.7% and is therefore considered to have moderate to high survey bias)"suggest that resources available for current harvest are "well below the amount required to comfortably sustain food, sharing, trading and cultural needs" (Pulla 2016). The errata document will be filed with the BC EAO.
383.1	round 1	Kitselas First Nation	6.3.3.2 page 19	Infrastructure and Services	Baseline "demand data" has been provided for Prince Rupert Regional Hospital, but not for Mills Memorial Hospital in Terrace. Mills Memorial is a regional referral hospital, and is in the LAA. Please include this data.	Baseline information on Mills Memorial Hospital is provided in Section 6.3.3.2 subsection Health Care Infrastructure and Services. The level of detail provided on the Prince Rupert Regional Hospital was provided by Northern Health to Aurora LNG. At the time of the assessment, Aurora LNG did not have access to this same level of detail for the Mills Memorial Hospital in Terrace.
384.1	round 1	Kitselas First Nation	6.6.3.1 page 13 on	Community Health	The methods used to analyze community health are confusing in that a population health approach (using the determinants of health, which are factors that influence health) is used to assess community well-being (usually considered to be a social construct). Population health should be assessed under the Health pillar, and the full set of determinants should be used, as per PHAC: "(the determinants of health) do not exist in isolation from each other. It is the combined influence of the determinants of health that determines health status." While determinants such as gender are not modified through project interactions, including them in the assessment of baseline health vulnerability is crucial. A population with a higher proportion of young women is at greater risk for the adverse health outcomes that can be associated with an influx of predominantly male unattached workers into a community, such as sexually transmitted diseases and unwanted pregnancies. Community well-being is a socio-economic value that encompasses population health as well as other objective criteria (such as crime levels, income levels, children at risk rates etc.) and a strong subjective component ("How good is life in this community?"). Each community under assessment should be given the opportunity to identify their unique "well-being values" (what they feel makes, or would make, their community a good one to live in) and to choose indicators that best measure the well-being of their community. This particularly true for Aboriginal communities. The approach taken by Nexen in their assessment establishes a reasonable baseline using objective data, but it is not a full community well-being analysis. Missing is a qualitative analysis using tools such as a "quality of life" questionnaire and key informant interviews. Full impact assessments for community well-being should be undertaken (drawing on expertise in social research methods) for Prince Rupert, Dodge and Crippen Coves, all First Nations in the LAA, and vulnerable subpopulations such as indigenous women. The methods and outcomes of this primary social research should be provided in a technical report appendix.	As specified in the AIR, community health is included under the 'social pillar' with the potential effect 'change in community health and wellness' assessed through the use of the following measurable parameters: occurrence-rates for medical and mental health incidents; and select social determinants of health (income and social status, social support networks, social environments, personal health practices and coping skills). The assessment of community health draws on both primary and secondary research. While 'quality of life' is not included as a measurable parameter in Section 6.6, numerous other measurable parameters that affect 'quality of life' such as 'social support networks' (which includes consideration of 'sense of place') and 'social environments' are included. In addition, Section 13.5.1 addresses concerns and issues related to quality of life/community identity using a case study-based approach.
385.1	round 1	Kitselas First Nation	6.6.5.4 and 6.6.6.4	Community Health	The assessments of residual and cumulative effects on harvesting appear to based on an assumption of "interchangability" of harvesting locations. In other words, if the project causes changes in access to a harvesting site, or reduces the availability of food at that site, or results in a perceived change in quality of food at that site (as has occurred off-shore of LNG facilities near Gladstone, Australia), then harvesters can simply move to another location. This is a significant assumption to make for Aboriginal rights holders, given historic and cultural attachment to place. Please provide evidence that this assumption is valid (such as confirmation from harvesters). If this assumption of "they will harvest elsewhere" is not supportable, then the characterization of residual effects should be re-examined.	The concept of interchangeable harvest sites or 'go-elsewhere' is used, among other considerations, in the qualification of residual effects. However, as noted in Section 6.6.5.4 (Characterization of Residual Effects for Change in Harvested Foods) "it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields)." Effect characterizations acknowledge and capture adverse effects associated with the use of alternative harvesting locations.
386.1	round 1	Kitselas First Nation	6.6.7 page 114	Community Health	The conclusion that there will not be a persistent or substantial decline in the availability or perceived quality of harvested foods appears to be based on the conclusion that the "socio-economic context is resilient". Please provide more information as to what this resiliency is and how it is manifest, in particular for First Nations populations. If this resiliency is based on the concept of interchangeability of harvest sites, please provide evidence that this is a valid assumption for Aboriginal harvesters (such as confirmation from Kitselas harvesters). Note that Part B section 11 (CEAA) concludes that resiliency is low for Kitselas for current consumptive use for hunting (marine) and fishing.	The assessment and characterization of change in harvested foods considers numerous parameters (e.g., magnitude, duration, frequency) including socio-economic context (either resilient or not resilient). Defined in Table 6.6-5 of the Application, resiliency refers to the existing condition and sensitivity of community health in the areas where effects occur. A resilient characterization means that there is high capacity for community health to recover from a perturbation, with consideration of existing levels of disturbance. In the case of change in harvested foods, baseline information provided in Section 6.6.3 (Harvested Foods) and supporting sections of Part B of the Application (e.g., wildlife and wildlife habitat, economic conditions, land and resource use, and marine use and navigable waters) all indicate that the socio-economic context for the LAA (i.e., not on a sub-population or Aboriginal Group basis), in consideration of existing levels of disturbance, has high capacity to recover from potential changes associated with the Project. Contextual characterizations provided in Section 11 of the Application are provided on a Aboriginal Group basis as opposed to an aggregate population as provided in Section 6.6 and may therefore differ. The concept of interchangeable harvest sites is used in the qualification of residual effects. However, as noted in Section 6.6.5.4 of the Application (Characterization of Residual Effects for Change in Harvested Foods) "it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields)."
387.1	round 1	Kitselas First Nation	11.3.11.3 page 289	CEAA 2012	The conclusion is reached that while there will be moderate effects on some current uses for consumption in the LAA by Kitselas, the "Project residual effects on species, locations, access or the experience of using sites for traditional purposes will not result in substantial restrictions on activities." How has the threshold for significance been determined , given that Pulla (2016) has identified that KFN's current harvests are already "well below the amount required to comfortably sustain food, sharing, trading and cultural needs". Arguably, in that context, any residual effects are significant.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. Aurora LNG acknowledges that Kitselas First Nation may have differing views regarding significance and the associated threshold as it relates to predicted residual effects on Current Use. Prior to the submission of the Application, Aurora LNG held one-on-one workshops with Aboriginal Groups to discuss the incorporation of TU/TK information from the proponent funded studies into the Application, including a workshop with Kitselas on June 15 and 16, 2016. As part of these workshops, Aurora LNG described and requested feedback on the methodology (e.g. characterization definitions) for assessing 5(1)(c) effects identified in the AIR, including Current Use. As part of the Application, pre-existing levels of Current Use weretaken into account by Aurora LNG to characterize residual effects. The "Context" characterization represents Aurora LNG's understanding of Kitselas First Nation's vulnerability or resilience to a change in Current Use. Aurora LNG characterized Current Use hunting (marine), fishing, and use of spiritual and cultural species, sites, and landscapes as "low resilience". Aurora LNG is of the opinion that this characterization appropriately considers the issue raised in Pulla (2016). In the context of the Application, significance was evaluated against the thresholds established in Section 11.3.2.7 (pg. 11-42). For Current Use, the significance threshold is triggered "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activityis no longer considered viable within existing conditions". Based on the information contained in Section 11.3.11.2 (Existing Conditions for Kitselas First Nation) andSection 8 (Kitselas First Nation) of Appendix S.2 (Aboriginal Consultation) and the analysis in Section 11.3.11.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes), the Application concludes that Current Use of lands and resources by Kitselas First Nation members will be able to continue with some modification and that Current Use of lands and resources for traditional practices by Kitselas First Nation is expected to remain viable, and predicted effects of the Aurora LNG project are considered to be not significant (pg. 11-290).
388.1	round 1	Kitselas First Nation	14.12	Environmental and Operational Management Plans	The Social Management Plan is listed as a mitigation measure/tool. Insufficient detail is provided to be able to determine if the plan will be effective.	The Social Management Plan (SMP) will follow guidance provided by the Ministry of Community Sport and Cultural Development (MCSCD 2014) and will be informed through SMP-specific engagement with various stakeholders, Working Group members and Aboriginal Groups. As such, the description of the SMP provided in Section 14.12 provides a basic framework and commitment from Aurora LNG from which further development of the SMP will occur. This level of detail is consistent with that of other applications and the AIR.
389.1	round 1	Northern Health	6.3 6.6	Infrastructure and Services	As per our Standard Comments document "The assessment should only be conducted by qualified health impact assessors and/or professionals with extensive education, experience and (when available) professional designation(s) for the specific VC under assessment." Please confirm and provide information on the public health and health services expertise of the author(s) of the Health Services and Infrastructure and Community Health sections.	Qualified professionals in environmental assessment (inclusive of the assessment of community health and health infrastructure and services) authored and reviewed these sections. Information on authorship and their qualifications are included under the Authorship section of the Application (beginning on page xcix).
390.1	round 1	Northern Health	6.3.2.1	Infrastructure and Services	Under regulatory setting, it should be recognized that the Industrial Camps Regulations, Sewage Disposal Regulations and Safe Drinking Water Regulations are not related to our Guidelines for Industrial camps (although they are referenced within) but are independent provincial regulations that should be referenced separately.	Comment noted. The second bullet under Section 6.3.2.1 should be separated into two separate points as follows: Northern Health Authority's (NHA) Guidelines for Industrial CampsBC Reg 427/83 Industrial Camp Regulations; BC Reg 411/85 Sewage Disposal Regulations; BC Reg 230/92 Safe Drinking Water, Regulations" An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.

391.1	round 1	Northern Health	6.3.3.2	Infrastructure and Services	**Population Change** - Information is provided only up to 2011. Additional information should be provided on changes in population that were observed between 2011 and 2017, given the increased activity related to LNG and other industrial projects in the area during that time period. If quantitative information is not available, this information should be supplemented by qualitative information. At the very least, it should be recognized that the numbers provided are old and may not be representative of current conditions. **Shadow Population** - Information is not provided related to the shadow population in the RAA (e.g. Terrace). Given the LNG (and other industrial) activities occurring in the RAA in recent years, additional information should be provided about the shadow population in the RAA. If this is not available quantitatively, qualitative information should be included to supplement this information gap Education Infrastructure and Services - Baseline information on the RAA is not provided. Anecdotally, we have been told that due to increases in cost of living (related to increased LNG activity in the area), one school in theTerrace school district has seen a drop of enrollment equivalent to one classroom of children as residents are being pushed out of the community. It would be important to confirm or refute this information. Please also see Northern Health's screening comments which we don't feel were satisfied by the proponent's response. We are not sure why early childhood education would not be captured under Education Infrastructure and Services as an in-migration of workers and/or a change in the available local workforce has the ability to impact things like daycare spaces. **Health Care Infrastructure and Services** - The text notes that "Northern Health Authority is responsible for the full spectrum of health services in the NHHSDA". Please note that Northern Health is only one partner in delivering health services in the NWHSDA and other partners, like First Nations Health Authority and private physicians are important stakeholders to recognize. - The test reads "two primary health care facilities in the LAA are the Prince Rupert Regional Hospital … and Mills Memorial". Please recognize that the word "primary" has a specific meaning in health care and the hospitals noted are acute care not primary care facilities. **Hospital and Health Care Capacity -** Please refer to our screening comments provided. The responses provided by Aurora, although satisfactory for the screening portions of the review, does not adequately address our concerns for the Application review phase. Additional baseline information provided by Northern Health to Stantec that is worth recognizing in the Application is the fee-for-service model with physicians and the fact that health authority infrastructure and services are designed and resources primarily for the resident permanent population and not a shadow population (this helps to focus and support the mitigations strategies that have been identified). We appreciate the recognition of the capacity challenges that exist and would like to point out that these extend not only to the hospital but also to community, primary and public health services. - as part of the baseline, is it possible to get information on how current temporary workers (e.g. contractors, consultants, etc.) working on the Aurora project in the feasibility/planning phase of the project are accessing health services? - it should be recognized that the 2015/16 data that was provided will likely include impacts from the higher level of LNG-related activities that was evident in the northwest communities at that time and therefore may not represent a true baseline. Municipal/Regional Services - Please provide details on how close Dodge Cove's source water is from the project footprint. Information on the existing Boil Water Notice should also be captured here (http://www.healthspace.ca/nha).	Population Change - Use of Statistics Canada's 2011 NHS dataset is a recognized technical limitation of the assessment (see Section 6.3.2.5 of the Application). However, this information is the most up-to-date, spatially-relevant and cross-comparable (among communities within the LAA and RAA) dataset available. The subsequent section (Population Projection and "Shadow Population") supplements information provided in the preceding section (Population Change) with publicly available information (dated 2015) from the City of Prince Rupert's 'Planning for Major Projects' initiative as well as that available from Indigenous and Northern Affairs Canada (dated 2016). Shadow Population - As noted by Northern Health, information on shadow populations, as provided in Section 6.3.3 of the Application, is limited to that of the City of Prince Rupert. Aurora LNG understands that 'shadow populations' are present within the City of Terrace and the RAA and that these individuals, as is the case in the LAA, can affect the capacity of infrastructure and services. It is further understood that as these individuals may not be captured in local population estimates and that their demand on infrastructure and services may not be accounted for in local budgets. However, the assessment of cumulative effects completed at the RAA level, which includes the City of Terrace, concludes that effects on health care infrastructure and services as well as effects on accommodation are high in magnitude and significant. As the assessment already concludes that high magnitude and significant adverse effects would likely occur in the cumulative case, the addition of 'shadow populations', which would be minor in comparison to cumulative population change attributable to the construction of identified projects, would not increase the magnitude or change the conclusions of the assessment. Transportation and municipal infrastructure effects are characterized as high in magnitude but not significant; the addition of 'shadow populations' would not change conclusions presented in the Application. Education Infrastructure and Services - Additional baseline information on educational infrastructure and services within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo. The technical memo also includes additional information on day care capacity within the LAA and RAA with consideration of how this information does or does not affect conclusions provided in Section 6.3 of the Application. Presented in the memo, enrollment (kindergarten to grade 12) across the Coast Mountain School District has been declining since 2011 with continued decline into 2036 anticipated. Aurora LNG is aware that numerous issues relate to declining enrollment (e.g., out-migration of young families, changing family structures, increased enrollment in independent schools) ; however, at this time is unaware of any one leading cause. Health Care Infrastructure and Services - The following correction to the first paragraph under section 6.6.3 (Health Care Infrastructure and Services) has been captured in an errata document: "The Northern Health Authority (NHA) is one of several partners (not limited to the First Nations Health Authority and private physicians) responsible for the delivery of health services in in the NHSDA." The following change to the first sentence of the subsection titled "Hospitals and Health Care Services" has been captured in the errata: Two acute care facilities are located in the LAA. These include the Prince Rupert Regional Hospital located in Prince Rupert and Mills Memorial Hospital in Terrace. Hospital and Health Care Capacity - All information provided to Stantec for the Aurora LNG Project has been incorporated into the assessment. Information on fee-for-service was not included in the information provided to Stantec for the Aurora LNG Project. With respect to information on the use of health care infrastructure and services by contractors and consultants working on the Project, Aurora LNG is only privy to that associated with WorkSafeBC recordable incidents. While this information is not publicly available, Aurora LNG is committed to ongoing communication with Northern Health and monitoring of Project-related demand on health care infrastructure and services and fully expects such monitoring to be part of the proposed Social Management Plan. Municipal/Regional Services - Additional information and assessment of potential adverse effects on Dodge Cove's source water is provided in Sections 4.5 (Water Quality) and 8.2 (Human Health Risk Assessment) of the Application. Information on the existing boil water order is provided in both sections. Table 6.4-41 of Section 6.4 (Land and Resource Use) provides metrics regarding project overlap with the watershed notation of interest (NOI) Crown land file 6402027. This area encompasses that classified as 'watershed' in the Dove Cove Official Community Plan (see figure 6.4-5). The accommodation camp and power plant are the nearest proposed infrastructure to be built in relation to the NOI that do not have a spatial overlap (the access road overlaps a portion of the NOI). The distance from the accommodation camp to the nearest boundary of the NOI is approximately 700 meters (1.1 km to the center) while the power plant is approximately 675 meters to the nearest boundary of the NOI (1.3 km to the center). An errata document is being created that captures the noted corrections and it will be filed with the BC EAO. Additional baseline information on housing and accommodations within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo which will be filed with the EAO.
392.1	round 1	Northern Health	6.3.3.2	Infrastructure and Services	**Housing and Accommodations** **Housing Availability** - Current information from the City of Prince Rupert shows large changes in home selling prices, building permits sold and value of building permits in recent years. While this quantitative information is important, this section is missing the qualitative information around what is driving these changes. Based on our understanding, these have been driven largely by the activities and speculation related to LNG which would be important to recognize, given that this project has contributed to, or will cumulatively contribute to, these trends. - similar information was not presented for RAA communities like Terrace. Again, if the quantitative information is not available, this should be supplemented by qualitative information. It is our understanding that housing prices in Terrace have doubled in recent years due to the LNG activity in the region. **Core Housing Need and Salary to Income Ration** - Data is limited to quantitative data up to 2011. Given the recent and significant changes that were observed in Prince Rupert (and Terrace) related to housing cost and availability, it is important that more recent information is presented. If this information is not available in quantitative data, primary and qualitative information should supplement this fairly significant data gap, including what (e.g. LNG) is driving this change. The baseline information should adequately describe what is happening in the community and the current baseline information does not align with the many stories and anecdotal information that has been provided to Northern Health regarding renovictions, residents living in the parking lot of the Terrace Walmart due to rent increases, Terrace residents being displaced to other communities, etc. due to a rapid change in the housing market, driven largely by the proposed LNG industry. **Summary** The Application concludes that most infrastructure and services in the LAA have the capacity to accommodate increased population demand with the exception of temporary housing and health infrastructure and services. Affordable housing in the LAA and RAA should also be included in this summary.	**Housing Availability** Qualitative information related to LNG development speculation and housing is not provided in Section 6.6.3 Housing and Accommodations. Baseline information does show (on average) an increase in home selling prices and increased issuance of building permits. It is likely that anticipation of LNG projects (or other already announced projects) in the LAA has contributed to these changes. However, numerous other macro-economic considerations have also likely affected home selling prices and the number of building permits issued. The Project and other projects considered in the cumulative case will likely affect housing affordability and availability. Section 6.3.5.3 of the Application assesses effects related to the Project on the availability of accommodations within the LAA, and Section 6.3.6.4 addresses the availability of accommodations within the RAA. Additional consideration of changes in property values and cost of living are provided in Sections 13.5.3 and 13.5.4 respectively. Additional baseline information on housing and accommodations within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo which will be filed with the EAO. Consideration of how this information affects/does not affect conclusions provided in Section 6.3 of the Application is also discussed in the technical memo. **Core Housing Need.** Use of Statistics Canada's 2011 NHS dataset is a recognized technical limitation of the assessment (see Section 6.3.2.5 of the Application). However, this information is the most up-to-date, spatially-relevant and cross-comparable (among communities within the LAA and RAA) dataset available. Since the 2011 NHS data represents a technical limitation, a conservative approach has been applied to the interpretation of this dataset. Noted in Section 6.6.5.2 of the Application, "whenever uncertainty exists in the characterization of residual effects, such as data limitations and availability, and where potential data gaps have the potential to affect the reliability of residual effects characterization, the assessment assumes a relatively higher level of effects". The percentage of the population within the LAA and RAA in core housing need is therefore conservatively understood to be greater than that described in Section 6.6.3 for the purpose of assessment in Section 6.3.5 and 6.3.6. **Summary** Additional consideration of changes in cost of living as well as property values is provided in Section 13.5 of the Application.
393.1	round 1	Northern Health	6.3.4	Infrastructure and Services	**Project Interactions with Infrastructure and Services** Please note that any waste management activities that will need Northern Health authorizations under the Public Health Act and/or Environmental Management Act approvals that will require consultation with Northern Health would interact with Health Services and Infrastructure.	The following text will be added to Section 6.3.4 to address this potential interaction: Aurora LNG acknowledges that any waste management activities that require Northern Health authorizations or involve consultation with Northern Health under the Public Health Act and/or Environmental Management Act will result in an interaction with health care infrastructure and services. However, as the magnitude of this interaction is expected to be negligible in comparison to that associated with increased demand from population change this interaction is not considered further. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
394.1	round 1	Northern Health	6.3.5	Infrastructure and Services	**Assumptions:** - We appreciate that these assumptions are summarized and provided in this section. - For the purpose of assessing and mitigating health service impacts (and community impacts like Communicable Disease impacts), we ask that additional information be provided on: - Expected gender and age demographic of the temporary workers (this was provided as a small note in a later section but would be important to capture in the overall assumptions) - Approximate percentages and likely country(ies) of origin of potential international workers - The expected health care status (e.g. immunization records), medical coverage and pre-health screening requirements of international workers. This information would help to clarify health care needs and public health risks - FIFO work schedule - Additional information is needed on the expected floating camp and how that relates to the Health Services and Infrastructure and Community Health VC. - How robust are these assumptions and will there be an onus for the project to adhere to these? Knowing that there have been several projects whose assumptions have vastly changed just prior or after approval, it will be important that some of these assumptions (e.g. peak project workforce and where they will be housed), be included in the Certified Project description. Significant changes to these assumptions, should trigger additional assessments and/or mitigations	As noted in Section 6.6.5 of the Application, "Mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationship (Nichols Applied Management 2007)". This information is carried through the assessment. As the Project is in pre-FEED stage of planning, information regarding the country of origin, gender and age demographic of construction, operations and turnaround workforces is unknown. With respect to the health status of workers, as noted during screening, privacy laws in BC such as the Personal Information Protection Act. S.B.C. 2003, c. 63 [PIPA] protects a person's health information. Under PIPA, subject to limited exceptions, an employer is prohibited from collecting, using, or disclosing personal information without informed and meaningful consent of an individual. Given the relatively restricted access or potential for the workforce to interact with local populations, the need for a full health risk assessment is not anticipated. Aurora LNG, its consultants, contractors and workforce will all be expected to comply with the Occupational Health and Safety (OHS) Regulations and Part 3 of the Workers Compensation Act to ensure the health and safety of the workforce during construction and operation of the Project. All Project workers will be expected to meet minimal fit-for-duty requirements. The construction FIFO workforce schedule is uncertain at this stage but it is expected to be similar to other projects under construction at the same time (i.e., each project will need to compete for skilled labour so most or all projects will need to have comparable working conditions). Based on information from other similar projects, this is assumed to include a fourteen day work period followed by a fourteen day off-work period (see assumptions list in Section 6.3.5.1 of the Application). This will be subject to change due to the labour market conditions closer to the construction period. Additional consideration of effects related to the lodging of workers in a floating camp in Casey Cove on economic and social VCs can be found in the technical memo "Floating Camp Review", which will be filed with the BC EAO. Use of assumptions is a normal and expected practice in EAs and changes often occur as projects move from pre-FEED to FID. As noted by Northern Health, a certified Project Description will be developed. Following BC EAO guidance, changes to the Certified Project Description may require additional analysis.

395.1	round 1	Northern Health	6.3.5.2	Infrastructure and Services	**Project Mechanisms for Community Infrastructure and Services** - Recognizing that the drinking water source for Dodge Cove is in close proximity to the project footprint and is currently on a Boil Water Notice due to a lack of source treatment, what is the potential that the project will impact the quality and/or quantity of the drinking water source of Dodge Cove through changes in drainage, deforestration, vibrations, emissions/effluent from the Site? Even though this information may be captured in other sections, it would be important to capture potential impacts as they specifically relate to community infrastructure and services **Mitigation for Community Infrastructure and Services** We are aware that other companies have required (as opposed to encouraged) that all non-local project workers and contractors stay at the construction camp and/or have eliminated per-diems to ensure that the maximum number of workers stay within the construction camp as opposed to in communities. Was this considered for this project? **Table 6.3-21** - Under Mitigation 6.3.1, expected success: we question whether the expected success can be rated as high, given that this is a new process for British Columbia, has limitations (e.g. does not manage for indirect effects), and that many important aspect are difficult to monitor on a spatial and temporal scale that is responsive to project impacts. - Given the limited nature of the Social Management Plan (e.g. only for direct project-level community level infrastructure and services effects), we ask that this plan we named something that more accurately reflects its intent. We are aware that for the LNG Canada projects, it was titled a Community Level Infrastructure and Services Management Plan (CLISMP) which appears more accurate. If it is referred to as a Social Management Plan, it should manage for all of the residual social impacts identified under the Social Pillar (including those under the Community Health VC). - Under Mitigation 6.3.2, the mitigation should also focus on a harm-reduction approach and ensure that those struggling with alcohol and drug addictions are supported in seeking help. In regards to the expected success, we also question whether it can be considered as high, given that substance above in the oil and gas industry is still a reality, even with the drug and alcohol policies that have been implemented. **Characterization of Residual Effects for Community Infrastructure and Services** - The Application indicates that the camp will be "closed-access" to help mitigate impacts to the community. Please also consider worker wellness when developing camp policies like these. Camp policies should be designed to promote physical and mental wellness for workers while minimizing negative and maximizing positive impacts to communities. It is our understanding that some camps have opted to provide workers the opportunity to interact with the local community through company and community supported mechanisms (e.g. company buses) to allow workers to seek activities that are beneficial to their physical and/or mental wellbeing, communities to benefit financially from workers in their community (e.g. reduce the "fly-over" effect) while managing for negative interactions. Camp policies should be developed in collaboration with local community(ies). - Residual Effects during Operations should include turnarounds.	Project Mechanisms for Community Infrastructure and Services The Project PDA does not overlap with existing drinking water infrastructure used by residents of Dodge Cove nor does the Project anticipate to source or draw water using Dodge Cove's infrastructure or services. As such an assessment of adverse effects is not completed for Dodge Cove drinking water infrastructure and services. Additional information regarding Project overlap with the crown lands file 6402027 watershed notation of interest can be found in Section 6.4 (Land and Resource Use) while Section 4.5 assesses potential effects on water quality and Section 8.2 potential effects on human health (both of which consider sources of water used by residents of Dodge Cove). As discussed in Section 4.5 of the Application, based on BC topographic and Lidar data, lands that drain into the Dodge Cove watershed (and subsequent reservoir) are not expected to be affected by the Project. Mitigation for Community Infrastructure and Services Noted in Section 6.6.5.3 subsection 'Mitigation for Change in Community Health and Wellness' and similar sections of subsequent effects (as well as other social VCs), "the worker camp will be a closed-access camp, meaning that Project employees will be encouraged to remain onsite (See Section 1.2 Proposed Project Description). Failure to adhere to the camp policies, will result in worker termination". Since it is Aurora LNG's preference that workers remain in the closed camp during their work shift, Aurora LNG does not plan to issue per-diems, living-out-allowances (LOA) or similar compensation. Table 6.3-21 Noted in Table 6.3-21 "Expected success is high since Aurora LNG will be required to provide a monitoring and reporting mechanism to ensure implementation activities of the Social Management Plan are effective and the results are publicly available". The Social Management Plan will be based on an adaptive management framework as follows: the plan will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the plan will be discussed with appropriate regulatory agencies. While the Plan will not mitigate indirect effects or all potential social effects, it is expected to be effective at mitigating adverse effects within the control of Aurora LNG. Aurora LNG has been informed that provincial guidance materials regarding the development of a Socio-Economic Effects Management Plan (SEEMP), as issued as a condition for PNW LNG, and a Community Level Infrastructure and Services Plan (CLISMP), as issued as a condition for LNG Canada, may change in the near future. Given this uncertainty, mitigation 6.3.1 proposes that a Social Management Plan be developed. Following issuance of new guidance, the name of the plan to be developed under mitigation 6.3.1 may be changed. Considering the Project will be using a closed-access camp (see above response under 'Mitigation for Community Infrastructure and Services') and that failure to adhere to camp policies will result in worker termination, mitigation 6.3.2 (Drug and Alcohol Policy) is expected to have a high likelihood of success. It should be noted that the plan is not limited to testing but also includes awareness, prevention and control mechanisms (see Table 6.3-21). , Aurora LNG acknowledges that "the success of mitigating potential drug and alcohol-related effects on local residents will depend on the level of engagement and standards communicated to the workforce when they are not working" (see Table 6.3-2). Characterization of Residual Effects for Community Infrastructure and Services In consideration of issues and concerns expressed by local residents and due to operational challenges related to the continual shuttling of workers from nearby communities and Digby Island, the accommodation camp is closed-access (meaning that Project employees will be encouraged to remain onsite). Aurora LNG acknowledges that this accommodation strategy, while effective at mitigating adverse effects on nearby communities, also reduces potential benefits of increased worker spending within local communities. To increase local spending, Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases and develop work packages that consider the capacity and capabilities of local and regional businesses (see mitigation 5.2.1, Section 5.2). Potential effects on community infrastructure and services from turnarounds were not assessed; however, as the assessed peak operations workforce and major turnaround workforces are relatively similar in size (with respect to potential demand on community infrastructure and services) and because the same camp and site management policies apply to operation and turnaround workers (e.g., on-site lodging where workers are required to stay onsite for the duration of their shifts) mitigation measures and conclusions provided in Section 6.3.5.2 are considered appropriate and apply to the turnaround workforce.
396.1	round 1	Northern Health	6.3.5.3	Infrastructure and Services	**Mitigation for Change in Accommodations** - It is recommended that the Worker Lodging Plan consider eliminating per-diems or require temporary non-local workers to stay in the camp to minimize impacts to housing affordability. It is our understanding that even local workers are expected to stay in the camp and we question whether this will be a barrier for employment for the local population, especially vulnerable populations (e.g. women, single-parent families, etc.). Again, we recommend that project policies be designed to promote physical and mental wellness for workers while minimizing negative and maximizing positive impacts to communities. Project policies should be developed in collaboration with local community(ies). **Characterization of Residual Effects for Change in Accommodations** - Please see Northern Health's comments provided during screening. While these comments are satisfactory for screening, they do not adequately address the comments we provided for the purpose of Application review. Given that the baseline for accommodations includes information on core housing need and salary-to-income ratio, the effects assessment should also reflect on how these are likely to be affected by the project. Given the well-known reno-viction phenomenon that has occurred in the northwest related to LNG activity and housing speculation which has doubled housing prices and resulted in displacing residents from Northwest communities, information should be provided (here and/or in the baseline) around how the LNG industry has already been affecting access to safe and affordable housing. Even though a worker accommodation strategy will be in place and there are plans to house workers in camps, we suspect that positive Final Investment Decision(s) will likely further impact housing prices which can further affect access to safe and affordable housing, not just in the LAA but also the RAA. We appreciate the inclusion of cost of living in the Community Health discussions, but feel it is important to link this to the Accommodations sections, especially since section 6.6.5.3 indicates that the availability and affordability of accommodations is addressed in Section 6.3). We understand that the City of Prince Rupert has developed a new tool to be able to better understand and manage housing pressures in their community. We strongly recommend that Aurora work collaboratively with local governments in the LAA and RAA to manage not only for the demand in housing but also in ensuring that access to safe and affordable housing (especially for vulnerable populations) is not compromised due to project impacts. This is especially true given the relative high proportion of renters in the LAA. - Will residual housing impacts be different in Dodge Cove compared to the rest of the LAA? We have heard of concerns that living in Dodge Cove will become less desirable once a major industry is established so close in proximity, potentially result in people leaving the community. What is the expected impact to home values in Dodge Cove and will mitigations be in place to ensure that the equity in people's homes are protected? -Based on our understanding of boom and bust effects, the rise in demand is just as important as the fall in demand once construction and/or operations ceases. We recommend that Aurora work collaboratively with local communities on strategies that would buffer a rapid rise and then fall in housing prices as the project moves through its project phases.- given the impacts already felt by Terrace due to LNG activities in the region, we argue that project residual effects would be felt within the RAA (even in the absence of cumulative effects) Likelihood of Residual Effects for Change in Accommodations - we disagree that adverse interactions with the project and accommodations can largely be avoided, given that interactions have already occurred in the feasibility/planning phase of the project.	Mitigation for Change in Accommodations In consideration of issues and concerns expressed by local residents and due to operational challenges related to the continual shuttling of workers from nearby communities and Digby Island, the accommodation camp will be closed-access (meaning that Project employees will be expected to remain onsite). It is Aurora LNG's plan to not issue per-diems, living-out-allowances (LOA) or similar compensation but rather to lodge workers in the accommodation complex on site. Aurora LNG acknowledges that this accommodation strategy, while effective at mitigating adverse effects on nearby communities, could have adverse effects on local employment (as noted by Northern Health could be a barrier to employment). To increase local employment, Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases and develop work packages that consider the capacity and capabilities of local and regional businesses (see mitigation 5.2.1, Section 5.2 of the Application). Characterization of Residual Effects for Change in Accommodations Qualitative information related to LNG development speculation and housing is not provided in Section 6.6.3 Housing and Accommodations. Baseline information does show (on average) an increase in home selling prices and increased issuance of building permits. It is likely that anticipation of LNG projects (or other already announced projects) in the LAA has contributed to these changes. However, numerous other macro-economic considerations have also likely affected home selling prices and the number of building permits issued. The Project and other projects considered in the cumulative case will likely affect housing affordability and availability. Section 6.3.5.3 of the Application assesses effects related to the Project on the availability of accommodations within the LAA, and Section 6.3.6.4 addresses the availability of accommodations within the RAA. Quantitative estimations of changes in shelter-cost-to-income ratios for the LAA and RAA are not provided in Section 6.3.53 or 6.3.5.3. Additional consideration (qualitative) of changes in property values and cost of living are provided in Sections 13.5.3 and 13.5.4 respectively. Sections 13.5.3 and 13.5.4 provide additional discussion of changes in property values and cost of living with respect to Dodge Cove. "We understand that the City of Prince Rupert has developed a new tool to be able to better understand and manage housing pressures in their community" – comment noted "We strongly recommend that Aurora work collaboratively with local governments in the LAA and RAA to manage not only for the demand in housing but also in ensuring that access to safe and affordable housing (especially for vulnerable populations) is not compromised due to project impacts. This is especially true given the relative high proportion of renters in the LAA" – comment noted Boom and bust - Discussion of 'boom and bust' is included in Section 5.2 Economic Conditions. "We recommend that Aurora work collaboratively with local communities on strategies that would buffer a rapid rise and then fall in housing prices as the project moves through its project phases" - comment noted. Additional baseline information on housing and accommodations within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo which will be filed with the EAO. Consideration of how this information affects/does not affect conclusions provided in Section 6.3 of the Application is discussed in the technical memo. Given the impacts already felt by Terrace due to LNG activities in the region, we argue that project residual effects would be felt within the RAA (even in the absence of cumulative effects)" - comment noted Likelihood of Residual Effects for Change in Accommodations Comment noted.
397.1	round 1	Northern Health	6.3.5.4	Infrastructure and Services	**Project Mechanism for Change in Transportation and Infrastructure** - We understand that a project access road is proposed in close vicinity to Dodge Cove and that there is concern that the location and proximity of the access road will interfere with the quality of life in Dodge Cove. We question whether consideration has been given to locating the proposed access road further from Dodge Cove to minimize noise, dust and traffic related concerns as well as to maintain access to recreational opportunities for Dodge Cove residents. The importance of Healthy Built Environment principles are recognized and supported by Northern Health (please refer to the following provincial document: http://www.phsa.ca/Documents/linkagestoolkitrevisedoct16_2014_full.pdf) **Mitigation for Change in Transportation and Infrastructure** - What mitigations will be in place (regarding safety, noise, dust, access to recreational activities, etc.) to ensure that the proposed roadway to the Site will minimally impact the quality of life of Dodge Cove residents? Will healthy built design principles be incorporated when this road is being developed?)	Aurora LNG is aware of Dodge Cove's concerns related to the proximity of the proposed access road to the community and its water supply. To address these concerns, Aurora LNG has revised the corridor for the access road to shift the proposed road to the west side of an elevated ridge and outside of the watershed that drains into the Dodge Cove drinking water supply. At its closest point, the modified access road is approximately 550 meters from Dodge Cove with trees and an elevated ridge between the proposed road and the community (the original access road was approximately 200 meters from Dodge Cove). The shift to the west will mitigate concerns regarding potential effects on the drinking water supply and the increased distance along with the elevated ridge and treed area will mitigate potential effects of road dust and vehicle noise to residents of Dodge Cove. For more information regarding potential effects to the Dodge Cove drinking water supply and a map of the modified access road, refer to the "Dodge Cove Water Supply and Watershed" technical memo, which will be filed with the EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting. Mitigation for Change in Transportation Infrastructure Personnel will not have access to recreational vehicles during work shifts. As identified in Table 6.3-23, "A Transportation Management Plan will be implemented to address Project-related road, ferry and airport traffic". The Transportation Management Plan, among other considerations, will set out policies regarding the strict adherence to posted speed limits; this in turn will also reduce potential noise and dust along the proposed access road. Additional information on the Transportation Management Plan can be found in Section 14.12.3. Combined with the Transportation Management Plan, Aurora LNG will implement a logistics plan that will coordinate the movement of workers to and from the Prince Rupert Regional Airport via buses and trucks. The policy will also reduce potential noise and dust along the access road by managing the level of vehicle traffic associated with the transport of workers. See Section 4.2 Air Quality and Section 4.4 Acoustic Environment for respective assessments and mitigation measures related to potential fugitive dust and noise.

398.1	round 1	Northern Health	6.3.5.5	Infrastructure and Services	**Project Mechanism for Change in Health Care Infrastructure and Services** - As noted above, information on anticipated demographics, health care status, countries of origin, medical coverage, etc. is needed to inform this section. **Table 6.3.2** - Mitigation 6.3.2: Please see previous comments regarding the "expected success" - Mitigation 6.3.13: - We appreciate the inclusing of this mitigation strategy but ask that the HMSP be a separate plan and Condition from the Social Management Plan. While both plans will interact with each other, our experience on other projects suggests that it is simpler (for both Northern Health, the proponent and EAO) if the HMSP is developed as a stand-alone plan (which we are happy to discuss further) - While we fully agree that we have seen success with other projects through the development and implementation of a HMSP, we caution that this is a new process for Northern BC and has not been implemented on a project at this size and scale. Therefore, while we are confident that this will help to offset potential impacts on health services, we also recognize that there will be learnings through this process and that the development of this plan will not offset all pressures (e.g. any medical escalations will still require support from the health care system). The expected success, risk and uncertainty should reflect this. - We are very supportive that the timing of this mitigation will be throughout all project phases and commencing immediately. Mitigation 6.3.15: - instead of " first aid personnel", as per our guide, we ask that a higher level of care is provided at the Site. Perhaps "medical personnel" as opposed to "first aid personnel" would be more appropriate. - Mitigation 6.3.15 - Please note that weather in Prince Rupert can limit the success of this mitigation. Please confirm that this mitigation has been vetted by the BC Ambulance Service and that the proposed patient transfer mechanisms will not compromise services to resident populations. Given recent experiences with a different industrial camp, we know that conversations with BCAS around patient transfer is important to ensure that services to local populations are not affected. - Mitigations 6.6.1 and 6.6.2 should be referenced here as they will be very important for minimizing impacts to the health care system - As noted in the Accidents and Malfunction section, We are aware that major mines are legally required to have Mine Rescue teams on-site. These teams have extensive and specific training and expertise in first aid response and rescues specific to mine sites and scenarios. We ask whether a similar requirement will be put in place for the LNG industry and/or whether this has been explored as a mitigation strategy.	Project Mechanism for Change in Health Care Infrastructureand Services As noted above and in in Section 6.6.5 of the Application, "Mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationship (Nichols Applied Management 2007)". This information is carried through the assessment. As the Project is in pre-FEED stage of planning, information regarding the country of origin, gender and age demographic of construction, operations and turnaround workforce is unknown. With respect to the health status of workers, as noted during screening, privacy laws in BC such as the Personal Information Protection Act. S.B.C. 2003, c. 63 [PIPA] protects a person's health information. Under PIPA, subject to limited exceptions, an employer is prohibited from collecting, using, or disclosing personal information without informed and meaningful consent of an individual. Given the relatively restricted access or potential for the workforce to interact with local populations, the need for a full health risk assessment is not anticipated. Aurora LNG, its consultants, contractors and workforce will all be expected to comply with the Occupational Health and Safety (OHS) Regulations and Part 3 of the Workers Compensation Act to ensure the health and safety of the workforce during construction and operation of the Project. All Project workers will be expected to meet minimal fit-for-duty requirements. Mitigation 6.3.2 Mitigation 6.3.2 – Considering the Project will be using a closed-access camp (see above response under 'Mitigation for Community Infrastructure and Services') and that failure to adhere to camp policies will result in worker termination, mitigation 6.3.2 (Drug and Alcohol Policy) is expected to have a high likelihood of success. It should be noted that the plan is not limited to testing but also includes awareness, prevention and control mechanisms (see Table 6.3-21). , Aurora LNG acknowledges that "the success of mitigating potential drug and alcohol-related effects on local residents will depend on the level of engagement and standards communicated Mitigation 6.3.13 The HMSP will be developed as a standalone plan as opposed to a sub plan of the Social Management Plan. Table 6.6-18 and Section 14.12 have been updated to account for this change. Changes will be reflected in an errata document. Mitigation 6.3.15 Mitigation 6.3.15 requires Aurora LNG to provide an onsite medical clinic with first aid equipment, supplies, and trained first aid personnel and support staff for primary care including health promotion, injury/illness prevention, and injury/illness management, to manage potential impacts on the local public health care system. This mitigation aligns with WorkSafeBC legislated requirements. Additional consideration for higher-level trained personnel will be provided during development of the HMSP. Mitigation 6.3.16 As outlined in the Project Description dated June 27, 2014 and in Section 1.2.5, a heliport is proposed to enable emergency evacuation of injured personnel to appropriate medical facilities. Aurora LNG acknowledges that weather considerations could affect use of the heliport. To limited the potential for patient transfers to affect services to resident populations, as noted in Mitigation 6.3.16, "...Aurora LNG will coordinate with local and provincial health providers for evacuation to appropriate medical facilities". This coordination would include all involved parties, not limited to Northern Health, Patient Transfer Network (PTN), and BC Ambulance Services (BCAS), where applicable. Additionally, per Section 4 of Northern Health's guidance document 'Health and Medical Services Plan Best Management Guide for Industrial Camps' (the guide), additional information will be provided in the HMSP (mitigation 6.3.13) regarding medical escalations and the process through which patient transfer to Northern Health will occur. Also, per Section 4 of the guide, a mechanism will be available through which Northern Health, PTN, and BCAS can share information and address arising concerns. Mitigation 6.6.1 and 6.6.2 Mitigation 6.6.1 and 6.6.2 have been added to Table 6.3-26 and Table 16-1 (under the header 6.3 Infrastructure and Services). Changes will be reflected in an errata document. See Section 14.16 for an overview of the Emergency Response Plan. This plan will describe the procedures to be implemented to respond to all incidents and emergencies, which will be submitted to the BC OGC under s.8 of the Liquefied Natural Gas Facilities Regulation. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
399.1	round 1	Northern Health	6.3.5.5	Infrastructure and Services	**Characterization of Residual Effects for Change in Health Care Infrastructure and Services** - Has patient transfer and interactions with the BC Ambulance Service and Patient Transfer Network been discussed with these agencies and how is that captured in this section? - It is noted that "during operations" minor incidents of injuries will likely be addressed by certified first aid attendants". Please confirm that during larger turnarounds, temporary workers will have access to the same/similar services as those during construction. - It notes that "these measures are anticipated to manage potential increased demand from workers while onsite". While we agree that on-site services as described in our HMSP Guide have the ability to significantly reduce the pressures of the local health care system, a recognizable percentage of workers will still require a higher level of care only available at the hospital (given our recent experiences from industrial camps with on-site clinics). Based on the above and considering baseline capacities, we would argue that residual effects within the LAA with respect to direct project demand may still be high. **Table 6.3-27** - Given the change in accommodations already experienced in Terrace and the fact that a single FID (or subsequent closure of a facility) would likely impact housing prices in Terrace, we argue that the Geographic Extent (even in the absence of cumulative effects) has the geographic extent RAA. - Given that select trauma care, public health and community health services located in Terrace would be needed by the Aurora Project, we argue that the geographic extent (even in the absence of cumulative effects) be the RAA for construction and operations.	Characterization of Residual Effects for Change in Health Care Infrastructure and Services -Detailed discussions regarding patient transfer with BC Ambulance Service (BCAS) will occur during development of the HMSP (mitigation 6.3.13). -During major turnarounds workers will have access to similar health care services as those during construction. - Residual effects (within the LAA) on health care infrastructure and services are characterized as moderate to high in magnitude during construction and operations and moderate in magnitude during decommissioning and abandonment. Table 6.3-27 Project residual effects on accommodations are characterized as extending throughout the LAA. In the cumulative case (which considers the City of Terrace as well as other large industrial projects in the RAA) the Project's contribution to residual cumulative effects on accommodations extends to the RAA. As noted in Section in Table 6.3-3 of the Application, the LAA for Infrastructure and Services includes "Highway 16 up to and including the Northwest Regional Airport Terrace Kitimat (YXT) and Mills Memorial Hospital (Terrace) ...". The characterization of Project residual effects within the LAA therefore captures effects on Mills Memorial Hospital. Residual effects on other health care infrastructure and services, given the Project location (on Digby Island), accommodation policies (closed-access), anticipated effects on local and regional populations (see Section 6.3.5.2), and mitigation measures (e.g., 6.3.2, 6.3.13, 6.3.14, 6.3.15, 6.3.16), are anticipated to be limited to the LAA (see Section 6.3.5.5). Residual cumulative effects with the Project (see Section 6.3.6.6) are characterized as extending throughout the RAA, are high in magnitude, and significant.
400.1	round 1	Northern Health	6.3.6	Infrastructure and Services	**Table 6.3-28** - A number of proposed and existing projects that rely or are likely to rely on services in the RAA are missing including the following: Brucejack Mine, Red Mountain Mine, Red Chris Mine, Pacific Futures and Kitimat Clean. **Residual Cumulative Effects** - It needs to be recognized that the project (cumulative with other projects) has already resulted in fairly significant impacts in the RAA. Further information (either here or in the baseline) is required on the impacts that have been experienced in the RAA related to the proposed LNG industry. These should incorporate qualitative information around impacts, not just on demand, but what this has meant for different populations regarding access to safe and secure housing. The current Application does not align with the many stories and information that we have received related to housing pressures and impacts that have already been realized. - It notes that "Aurora LNG and other project proponents are therefore expected to manage to an acceptable level the cumulative adverse effects on accommodations within the RAA in the long" term. Please expand further on what is meant by "acceptable levels" given that some would argue that the LNG industry has already pushed housing pressures beyond acceptable levels in the RAA. - This section needs to expand on the potential impacts that may occur once the construction phase ends and prices adjust down. That in itself will have impacts on homeowners. **Cumulative Effects Mitigation** - We ask that if multiple Certificate Holders/Proponents in the Prince Rupert area move forward with their project, that these industries work collaboratively to engage and problem solve with Northern Health and other stakeholders on impacts/issues that are common across projects. **Significance of Residual Cumulative Effects** - While we agree that the assumed forecast is highly conservative, we argue that even if only one or two big LNG project move forward, the characterization for impacts to health services and infrastructure has the potential to be significant, given the proposed size of the temporary workforces related to the size of the community for which local health services were designed. **Conclusion** It is noted that the predicted confidence is "low" given the uncertainty around population forecasts. Please see our last comment.	Table 6.3-28 The assessment of cumulative effects on infrastructure and services considers projects and physical activities identified in Table 6.3-28 of the Application. Projects identified in Table 6.3-28 are the same as those identified in Section 3 Assessment Methods (see Section 3.7.1, Table 3-4 for the cumulative effects inclusion list). The following projects were not included in the cumulative effect assessment inclusion list due to either their distance from the LAA and RAA communities and/or because they are in very early planning stages and did not qualify as "reasonably foreseeable": Brucejack Mine – is located 65 km northwest of Stewart (more than 5 ½ hours north of Prince Rupert by road) and too great a distance from the Project to be considered in the cumulative effects assessment. The mine is currently under construction with a commercial production currently estimated in 2017. Red Mountain Mine Underground Gold Project – is proposed to be constructed 15 km northeast of Stewart (approximately 5 ½ hours northeast of Prince Rupert by road) and too great a distance from the Project to be considered in the cumulative effects assessment. This project is in very early planning stages (BC EAO classifies this project as pre-application [since November 2015]) and therefore is also not considered for this reason. Red Chris Porphyry Copper-Gold Mine – is proposed to be constructed 80 km south of Dease Lake [approximately 8hrs northeast of Prince Rupert by road) and too great a distance from the Project to be considered in the cumulative effects assessment Pacific Future Energy Refinery Project – proposed to be constructed within an industrial site known as Dubose Flats between Terrace and Kitimat. This project is in very early planning stages (BC EAO classifies this project as pre-application [since July 2016]) and therefore not considered in the cumulative effects assessment. Kitimat Clean Refinery Project – proposed to be constructed 13 km north of Kitimat, this project is in very early planning stages (BC EAO classifies this project as pre-application [since May 2016]) and therefore not considered in the cumulative effects assessment. Residual Cumulative Effects The current housing situation in the RAA is reflected in the assessment of residual cumulative effects on change in accommodations, particularly in the characterization of the RAA socio-economic context as having low resiliency to change. Additional baseline data on accommodations within the RAA is provided in the technical memo "Supplemental Baseline Information for Infrastructure and Services", which will be filed with the BC EAO. The technical memo also provides consideration of how this information affects/does not affect conclusions provided in Section 6.3. An acceptable level of the cumulative adverse effects on accommodations within the RAA can be understood as adverse effects that are managed to not exceed the threshold for significance of cumulative effects. See Section 6.3.2.8 for the definition of a significant effect. Cumulative Effects Mitigation As stated in Section 6.3 of the Application, Aurora LNG will participate in government-led initiatives with respect to managing cumulative effects on community infrastructure and services. Significance of Residual Cumulative Effects and Conclusion Comment noted.
401.1	round 1	Northern Health	6.6.1	Community Health	**Regulatory and Policy Setting** - Please see comments made in previous section related to the provincial regulations Please note that the draft "Infection Control Best Management Guide for Industrial Camps" has been renamed to "Communicable Disease Best Management Guide for Industrial Camps" and should be available on our website shortly.	Comment noted.
402.1	round 1	Northern Health	6.6.1 6.6.3	Community Health	**Influence of Consultation on the Assessment/Methods for Existing Conditions** - Please refer to our screening comments provided. The responses provided by Aurora, although satisfactory for the screening portions of the review, does not adequately address our concerns for the Application review phase. What questions were asked of "key informants" related to community health and which agencies and population representatives were queried related to this specific VC? How were vulnerable populations considered (e.g. children, women, low income, minorities, etc.) when this information was collected (e.g. were they adequately represented and were they able to provide input and how)? How were the open houses structured (e.g. were they accessible to vulnerable populations across the LAA, did they require a certain literacy level, how were they facilitated, etc.). Other than the open houses, was there an opportunity for residents to answer and respond to specific questions related to community health? As we become more familiar with social and health impact assessments, we are learning that the methodologies of the assessment (e.g. how communities and stakeholders are engaged in the process) is just as important as the outcomes of the assessment. To adequately understand the baselines and concerns of the community, primary data collection through methods that were designed in collaboration with communities is important. While we appreciate the efforts taken by the proponent to include community health as a valued component, we feel that the assessment continues to rely too heavily on desktop information and misses some important community level qualitative information that characterizes the social aspects of the community. This is especially true given that much of the desktop information relies on 2011 StatsCan data and significant changes (related to industrial activities in the area) have occurred in more recent years. **Determinants of Health** - the Application notes that the measurable parameter "occurrence-rates for medical and mental health incidents" aligns with the determinants of health "biology and genetic endowment". This is an inaccurate comparison. Biology and genetic endowment are non-modifiable determinants of health, whereas occurrence-rates of medical and mental health incidents would be health outcomes that would be driven by both the modifiable and non-modifiable determinants of health. -the Application notes that "after engagement with various stakeholders and a review of the PHACs ten SDOH…. The following have been selected for assessment in community health VC". We would like to point out that Northern Health was not engaged in this discussion and does not agree with the SDOH that were selected and/or the rationale that was provided for those DOH not included in Section 6.6 (as per our screening comments which are not satisfactorily addressed by Aurora's response). We feel that a better approach would have been to consider whether each determinant of health would have been modifiable by the Aurora project and exclude only those for which there was no potential interaction. It is not sufficient to refer to previous sections to rationalize why things like education and literacy, employment and working conditions, physical environments, etc. were excluded from the community health section as the assessment in the prior sections were not conducted for the purpose of considering these aspects in the context of community health. While the community health section should rely and incorporate the findings of previous sections, these results should be discussed in the context of community health in the community health VC. We appreciate the consideration of the four very important SDOH that were carried forward in the assessment but note the following about Table 6.6-6 (next cell):	Influence of Consultation on the Assessment/Methods for Existing Conditions The response provided to screening comment #222 remains applicable for purposes of the review of the environmental assessment and satisfying the requirements of the AIR. Determinants of Health - Aurora LNG acknowledges that the determinant of health 'biology and genetic endowment' refers to "[t]he basic biology and organic make-up of the human body" (PHAC 2013) and for this reason this determinant of health is not assessed in Section 6.6 of the Application. Rather, Section 6.6 assesses changes in health status, stress and anxiety and communicable disease. However, as the PHAC recognizes that "[g]enetic endowment provides an inherited predisposition to a wide range of individual responses that affect health status…" (PHAC 2013) and that "in some circumstances genetic endowment appears to predispose certain individuals to particular diseases or health problems" (PHAC 2013), it is appropriate to align, for the purpose of comparison, the determinant of health 'biology and genetic endowment' with the measurable parameter 'occurrence-rates for medical and mental health incidents'.

403.1	round 1	Northern Health	6.6.3	Community Health	Education and literacy: While baseline information on “education and training” was provided in Section 5.2 of the Application, it did not link this to community health and did not actually assess the impact of the project on this important SDOH as it was not a “potential project effect.”. We do not feel that the rationale provided justifies its exclusion from the assessment. Employment and Working Conditions We do not agree with the rationale that was provided for the exclusion of this SDOH, especially given that later sections within the Community Health section link Fly-in/Fly-out (FIFO) working conditions, EFAP programs, camp policies, etc. to community health. Section 5.2 did not assess employment and working conditions in the context of community health. Physical environments Physical environments does not only refer to natural environments but also the built environment (please see: http://www.phsa.ca/Documents/linkagestoolkitrevisedoct16_2014_full.pdf). The proposed project has the ability to significantly alter the healthy built environment, particularly of Dodge Cove related to light, visual, noise and air impacts, access to recreational opportunities, road access, etc. While these aspects are assessed separately in different sections, we feel it is important to consider them holistically in the context of a healthy built environment and overall Community Health, including how these will factor together to affect the quality of life in Dodge Cove. To us it seems obvious that having a major industry located in such close proximity to the very small community of Dodge Cove will strongly influence the built environment of this community. Similarly, the physical environment includes having access to safe and secure housing. Since the link between housing and community health is made in later sections of the Community Health VC, again, we do not feel that this SDOH should have been excluded from Section 6.6. Healthy Child Development: Northern Health searched Section 5.2 for the word “child” and no reference was found. For Northern Health’s screening comments regarding Early Childhood Education for Section 6.3 Aurora’s response was “early childhood education is outside the scope of the assessment”. Given that early childhood education “is arguable one of the most important determinants of health” (see Northern Health’s report on Child Health Status https://northernhealth.ca/Portals/0/About/Community_Accountability/documents/CMHO-Child-Health-Status-Technical-Report.pdf), the assessment should include if and how childcare and early childhood education would be impacted by the project. We understand that early childhood education is recognized in LNG Canada’s Community Level Infrastructure and Services Management Plan and therefore we would expect that a project of similar size and nature in Prince Rupert also has the ability to interact with local child care and early childhood education services. Gender: While gender is a non-modifiable risk factor, later sections note that “mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35” and that this fly-in/fly-out (FIFO) workforce, while present, will increase the proportion of non-Aboriginal males in the LAA affecting the social determinant of health ‘Social Environments’.” Knowing about literature that is emerging around gender impacts related to industrial development including some work on this topic specific to the Prince Rupert and LNG industry (see: http://www.princerupertlng.ca/socialinvestment/womensleadershipnetwork, Indigenous Communities and Industrial Camps; Promoting Healthy Communities in Settings of Industrial Change report, the Amnesty International Report and http://www.cim.org/fr-CA/Publications-and-Technical-Resources/Publications/Proceedings/2014/5/304464/304490.aspx) we feel that this is an important SDOH to recognize. Overall, we feel that while this section does a good job of recognizing the importance of the determinants of health, but is missing certain SDOH. All SDOH that have the ability to be modified by the Aurora LNG project should have been considered holistically in relation to community health.	Education and Literacy Identified in Table 6.6-6, the social determinant of health 'education and literacy' is not included in Section 6.6 of the Application. Health indicators related to existing levels of educational attainment are provided in Section 5.2 (Economic Conditions) and referenced where applicable in the assessment of residual and cumulative effects in Section 6.6. As such, education is a foundational consideration in the assessment of residual and cumulative effects on 'health status', 'income and social status', and 'personal health practices and coping skills'. Where relevant to the assessment, a discussion of how educational attainment influences these SDOH is included. Employment and Working Conditions Identified in Table 6.6-6 the social determinant of health 'employment and working conditions' is not included in Section 6.6 of the Application. Information on current conditions and changes in employment is provided in Section 5.2 (Economic Conditions) of the Application. Health indicators associated with employment are referenced in the assessment of select SDOH where applicable. In addition, the Project will adhere to engineering best practice, regulated building codes and practices, and all workplace health and safety and employment regulations. Despite this, Section 6.6.5.3 does consider changes in 'workplace incidents'; however, this assessment is aligned with health status rather than 'employment and working conditions'. Physical Environments The social determinant of health 'physical environments' is not included in Section 6.6 of the Application; however, health indicators associated with country food consumption are captured in Section 6.6 under the measurable parameters ‘volume of foods harvested’ and ‘harvested foods consumption’. Related sections of the Application that consider measurable parameters associated with physical environments include: Air Quality (see Section 4.2), Greenhouse Gases (see Section 4.3), Acoustic Environment (see Section 4.4), Water Quality (see Section 4.5), Visual Quality (see Section 6.2), Human Health (see Section 8.2) and Accidents or Malfunctions (see Section 9.0). Conclusions of these sections are appropriately referenced throughout the assessment of community health and wellness. Section 13.5 further addresses issues not included in Part B of the Application by compiling relevant conclusions from Part B VCs, and through case study analysis determines a resolution status. Topics include quality of life/community identity, social cohesion, private property values, and cost of living. Healthy Child Development Additional baseline information on educational infrastructure and services within the RAA is provided in the technical memo "Supplemental Baseline Information for Infrastructure and Services", which will be filed with the BC EAO. The technical memo also includes additional information on day care capacity within the LAA and RAA with consideration of how this information affects/does not affect conclusions provided in Section 6.3 of the Application. Gender As noted in the comment, changes in demographic composition of the LAA is considered in the assessment of change in community health and wellness; however, the social determinant of health 'gender' is not specifically assessed.
404.1	round 1	Northern Health	6.6.3.2	Community Health	**Mental Health:** This section should be supplemented by more current and qualitative community level information related to how the proposed LNG industry has affected mental health in the community. Anecdotally, we have been informed that things like housing pressures, social friction between those for and against the project, etc. have led to mental health concern at the individual level. For Dodge Cove specifically, we have been told that helicopter noise and general anxiety about the project have had impacts to mental health. Qualitative feedback such as this would be important to capture in the baseline section. **Low Income and Fixed Income Earners/Income Inequality:** This section should be supplemented by qualitative information collected from the community. What are the thoughts behind what is driving the difference between the 15% and 22% low income classifications. Is there thought among the community that things have changed over recent years? **Housing Vulnerability** This section needs to be supplemented by qualitative community level information. We have been provided with anecdotal information from numerous sources about the housing concerns in Terrace and Prince Rupert related to reno-victions, increased homelessness, overcrowding, local populations being forced to re-locate due to high rents, etc. Access to safe and secure housing is an important determinant of health and the very real and important impacts related to increased industrial and LNG activities in the region related to housing need to be captured in this Application. **Crime:** Again, this should be supplemented with more recent qualitative information. **Personal Health Practices:** The link between a healthy built environment and personal health practices and coping skills should also be made. Given the recent conversations and work around industrial projects/construction camps as they relate to vulnerable aboriginal women and girls and violence against women (e.g. see: Amnesty International Report, Indigenous Communities and Industrial Camps; Promoting Healthy Communities in Settings of Industrial Change report, http://www.cim.org/fr-CA/Publications-and-Technical-Resources/Publications/Proceedings/2014/5/304464/304490.aspx, etc.), we feel that this issue, which is important to many communities in the Northwest, should be recognized somewhere in the baseline. Mitigations for this project should be developed to ensure that projects like these don’t contribute negatively to the vulnerabilities that have contributed to the unfortunate events along the “Highway of Tears” but instead, that mitigations support the efforts that have been taken to address these vulnerabilities.	Mental Health, Low Income and Fixed Income Earners/Income Inequality, Housing Vulnerability, Crime Baseline information provided in Section 6.6.3 of the Application is sufficient to support the assessment of change in community health and wellness. Primary research in these areas is not a requirement of the AIR. Personal Health Practices The scope of the assessment as it relates to 'personal health practices' does not include consideration of potential effects related to the Highway of Tears / Missing and Murdered Aboriginal Women. Change in crime, as influenced through changes in population (and demographic composition) and personal health practices and coping skills (among other inter-related social determinants of health) is considered in the assessment of community health and wellness with appropriate mitigation measures proposed.
405.1	round 1	Northern Health	6.6.5.2	Community Health	**Assumptions:** Please see our comments on assumptions in the Infrastructure and Services Section. It notes that the camp will be “dry”. We understand that some camps have moved to a model where responsible drinking is permitted at a licensed lounge to support a healthy social atmosphere for workers and reduce end-of-shift binge drinking in communities. We would recommend that camp policies be designed to promote physical and mental wellness for workers while minimizing negative and maximizing positive impacts to communities. Camp policies should be developed in collaboration with local community(ies).	As noted in Section 6.6.5.2 (Assumptions) the construction camp will be 'dry', meaning that the consumption of alcohol is prohibited. Worker possession and use of illicit drugs while lodged in the construction camp is also prohibited. Strict adherence to fit-for-work standards and policies will be enforced. This assumption aligns with corporate operational and health and safety polices. To help promote mental and physical wellness, recreational, entertainment and communication amenities will be provided at the camp (mitigation 6.3.6).
406.1	round 1	Northern Health	6.6.5.2	Community Health	**Project Mechanisms for Change in Community Health and Wellness** - It is noted that “changes in availability and affordability of accommodations was addressed in Section 6.3. Please recognize that this assessment was limited to demand and did not focus on affordability. - It should be recognized that the BC Ambient Air Quality Objectives for pollutants like particulate matter are not a threshold for health effects and health impacts can occur even at lower concentrations and therefore, still have the potential to add to community health impacts - How were VOCs considered in relation to health, given that there are currently no Ambient Air Quality Objectives for VOCs in BC? - We have been informed that existing helicopter and other project-related noise is already impacting the quality of life at Dodge Cove. While quantitative information related to noise is important, qualitative information should also be incorporated in the Community Health VC - While Northern Health did not review the “Acoustic Environment” section in detail we have the following questions/comments: * Other health endpoints, like interference with speech comprehension, sleep disturbance and overall quality of life need to be considered and recognized, especially given concerns already raised by resident in Dodge Cove. We look to Health Canada to provide expertise in this area but are of the opinion that the modelled noise level has the potential to significantly change the quality of life in Dodge Cove. *Recreational areas (e.g. Wahl Lake, recreational trails, etc.) should be considered as receptor locations, given that noise at these locations could impact the Healthy Built Environment and quality of life of residents * The construction camp needs to be a receptor, given that worker wellness during off hours should be included * Did the baseline noise encompass project-related noise impacts that are already being experienced in the LAA (e.g. geotechnical drilling, helicopters, etc.) and if so, how does that impact the conclusion of the acoustic environment assessment. - Please ensure that the health of workers during off hours (e.g. residing in the industrial camp) are incorporated into the assessment.	Project Mechanisms for Change in Community Health and Wellness - See Section 13.5.4 of the Application for a case-study based approach to changes in cost of living. This includes consideration of changes in housing affordability. - Refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" for information regarding VOCs. This document will be filed with the BC EAO. - See Section 13.5 of the Application for additional consideration of noise and changes in Quality of Life/Community Identity. he "Volatile Organic Compounds and Human Health Assessment" technical memo was presented in draft to the Working Group for pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Acoustics Issues The following topics are addressed in the “Sleep Disturbance and Speech Interference" technical memo (which will be filed with the BC EAO): Sleep disturbance at noise receptor including the workers’ camp Speech comprehension at noise receptor Additional mitigation measures The “Sleep Disturbance and Speech Interference" technical memo was presented in draft to the Working Group for pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Wahl Lake can be considered a recreation area (i.e. skating during winter time) noise receptor. The predicted noise level at Wahl Lake during the Project Operation phase is 34.9 dBAduring both daytime and nighttime periods. The predicted results during the Project Construction Year 1 phase is 44.8 dBA (daytime period) and 43.9 (nighttime period). The predicted results during the Project Construction Year 5 phase is 48.5 dBA during the daytime and nighttime period. The existing ambient sound level at Wahl Lake is similar to a rural environment. The BC OGC noise guidance recommends the sound level of 45 dBA and 35 dBA for rural areas during the daytime and nighttime period, respectively.Thepredicted noise levels are comparable or higher than the assumed ambient sound level at Wahl Lake. When the operation phase noise level of 34.9 dBA is combined with ambient sound level of 35 dBA, the result is 38 dBA (3 dB increase from the ambient sound level). The Project is predicted to result in a measurable increase in existing sound level during both operation and construction phase. Health Canada noise guidance recommends additional noisemitigation measures should be considered when a change in the calculated percent annoyance (%HA) at any given receptor location exceeds 6.5%. The %HA calculation assumes Wahl Lake as a rural location where “peace and quiet” is expected. The change in %HA at Wahl Lake is 0.9 %, 5.2 %, and 10.3 % during the Operation, Construction Year 1, and Construction Year 5 phases, respectively. The change in %HA value of 10.3 % during Construction Year 5 exceeds the Health Canada threshold of 6.5%. Additional mitigation measures will be implemented to reduce the predicted nighttime noise level from 48.5 dBA to 42.6 dBA during Construction Year 5, resulting in a lower change in %HA value of 5.2 % (below the 6.5 % threshold). These additional mitigation measures are summarized in memo "Sleep Disturbance and Sleep Interference". The baseline monitoring measurements were conducted at Dodge Cove from August 29 5:00 PM to August 30 4:00 PM. During the nighttime period (10:00 PM to 7:00 AM), no project-related IUL activities (i.e., project-related helicopter, geotechnical drilling, and clearing) were identified from the audio recording of the measured data used in the baseline analysis. Aurora LNG records indicate no project related activities during the nighttime period . During the daytime period (7:00 AM to 10:00 PM), Aurora LNG records indicate some project related activities during the daytime period . There was no drilling or clearing activities; however, there were some helicopter activities between north of Fredrick Point to south of Casey Cove. No project-related IUL activities were distinguishable from the audible recording during the daytime period. The daytime ambient sound levels are typically higher due to increase in local activities. Noise effects from non-project related activities can be identified from the audible recording. The project-related IUL activities (helicopters, geotechnical drilling, clearing, etc.) may have contributed to the daytime baseline measures but it cannot be quantified.

407.1	round 1	Northern Health	6.6.5.2	Community Health	**Health Status** We appreciate that this section identifies both positive and negative impacts that can occur, however, this section should consider impacts that go beyond being able or unable to secure employment (e.g. related to changes to the determinants of health) and incorporate additional resources. It would have been more effective to place the "Health Status" section last as it will be influenced by the discussions of the SDOH. Overall, the goal of mitigations should be to minimize potential direct and indirect impacts so that the potential benefits can be realized. We feel that this is best done through an effective social management system (see comments in mitigation). **Stress and Anxiety** - Please provide more information related to the link between FIFO/DIDO work and mental health - Please also recognize the link between social cohesion and stress/anxiety, especially as it relates to the conflicts that can arise within and between communities and families (e.g. people for and against the project) when a project of this size and nature moves into a community. It is our understanding these types of conflicts are a reality and it would be important to recognize the link as well as provide qualitative baseline information in this regard. - Please recognize that for those living in close proximity to the project, additional noise, light, etc. could add to stress and anxiety. So can the fear of a potential accident or malfunction. **Communicable Disease** - Either here or in the "Characterization of Residual Effects for Change in Community Health and Wellness" more information is needed on the health care status and health screening requirements of workers, especially of international workers - The Application should have referenced the following review http://www.sciencedirect.com/science/article/pii/S2214790X15001422 **Income and Social Status** - Either here or in the "Characterization of Residual Effects for Change in Community Health and Wellness" it should recognize that income and social status can impact and change family dynamics (e.g. feedback from communities has indicated that work environments that are largely male dominated, can change the patriarchal/matriarchal balance in families/communities) - Another consistent feedback we have heard from Northern communities is that increased income while positive in many ways, can also lead to poor lifestyle choices (e.g. drug use, drinking, risky outdoor activities, etc.) and poor spending habits (especially when employment is expected to be short-term only during construction periods and/or no financial literacy is provided). This should be recognized here. **Income Inequality -** changes in income status can also increase the cost of living which can further increase the gap between high and low income earners. - The link to cost of living should be provided somewhere in this section, including the information provided by the Prince Rupert Housing Study related to the maximum rental increases that Prince Rupert populations could manage. In the "Characterization of Residual Effects for Change in Community Health and Wellness" section, information on estimated rental increases should be discussed in this context. - please provide case study information (if available) on what the experience has been related to projects of similar size and nature **Social Support Networks** - The potential tensions between and within families/communities that can develop when some groups benefit while others are impacted by projects also need to be recognized as these can be significant. - the concerns specifically expressed by Dodge Cove in relation to community cohesion should be recognized here. While we appreciate the links made in this section, this section oversimplifies the various project pathways to SDOH and health status impacts. Additional information, supported by literature and case studies would be of benefit.	Health Status As noted in Section 6.6.5.3 of the Application, mechanisms affecting health status go beyond securing employment. Mechanisms include changes in employment, social capital (e.g., social support networks and social environments), and personal health practices and coping skills (e.g., use of drugs and alcohol, and other lifestyle choices and eating habits). It is also noted that combined changes in social determinants of health could also affect health status. Stress and Anxiety - Description information on mechanisms affecting stress and anxiety as provided in the Section 6.6.2 is sufficient to support the assessment of potential change in community health and wellness. - The connection between stress and anxiety and population and demographic change is recognized in Section 6.6.2 "Population and demographic change could adversely affect levels of stress and anxiety (see 'Social Environments')..." while additional considerations (with a focus on those living within close proximity to the Project) related to quality of life/community identity are addressed in Section 13.5 of the Application. Communicable Disease Aurora LNG will require that all Project workers meet minimal fit-for-duty requirements. However, with respect to the health status of workers, privacy laws in BC such as the Personal Information Protection Act. S.B.C. 2003, c. 63 [PIPA] protects a person's health information. Under PIPA, subject to limited exceptions, an employer is prohibited from collecting, using, or disclosing personal information without informed and meaningful consent of an individual. In combination with privacy laws, it is noted that Aurora LNG will not discriminate against workers on the basis of health status. Health status of workers cannot be determined at this point (as the Project is pre-FEED) in any event. Income and Social Status Consideration of changes in patriarchal/matriarchal balance of families/communities was not included in the scope of the assessment. Effects of increased income on drug and alcohol misuse, poor diet, and participation in high risk activities (collectively referred to as negative coping mechanisms) is assessed under the social determinant of health 'physical health practices and coping skills'. Income Inequality Effects of increased income and changes in cost of living were not assessed. Baseline information on the maximum rental increase that Prince Rupert populations could manage is included in Section 6.3 of the Application. Additional consideration of changes to cost of living, using a case study approach, is provided in Section 13.5.4. Social Support Networks Disparity between community members due to the uneven distribution of Project benefits (e.g., employment and income) is addressed through the social determinants of health 'income and social status', 'income inequality', and 'social environments'. Specific issues raised by residents of Dodge Cove and not addressed in Part B of the Application with respect to social cohesion are addressed in Section 13.5.2 of the Application (Social Cohesion). Aurora LNG is confident that the assessment of social determinants of health (SDOH) is not oversimplified. Rather, the assessment approached a complicated set of interrelated determinants of health through a manageable approach that identifies potential project interactions, effect mechanisms, and potential effects following the application of mitigation measures. This approach is appropriate in the context of environmental assessment (recognizing that the scope is not intended to be a full health impact assessment). To inform the assessment, records of consultation as well as peer-reviewed and government literature were used to inform the definition of SDOH and to describe potential effect mechanisms, mitigation measures and residual effects. Each selected SDOH was assessed on the basis of effect pathways (recognizing that positive, negative and mixed effects could occur) through the use of indicators with attributes that are effective and useful in describing potential change (see BC EAO's attributes of indicators [i.e., relevant, practical, measurable, responsive, accurate, and predictable]). As noted in Section 6.6.2.5 of the Application, the assessment of residual effects is largely qualitative rather than quantitative in nature due to generally accepted technical limitations with respect to health impact assessment.
408.1	round 1	Northern Health	6.6.5.2	Community Health	**Mitigations for Change in Community Health and Wellness** - While we appreciate the multitude of mitigations that have been linked to the Community Health VC, we strongly urge that an overarching Social Management System be included as a mitigation strategy that is not limited to direct infrastructure and services effects but one that aligns with the International Finance Corporations' Performance Standard 1 (IFC PS1) and managed for both direct and indirect social impacts related to the project. Mitigation 6.6.1: instead of Aurora LNG encouraging its subcontractors to make employee assistance programs available, this should be made a requirement. Mitigation 6.6.2: Thank you for committing to this mitigation strategy. Please note that this document has been changed to "Communicable Disease Control Best Management Guide for Industrial Camps" to align with Northern Health terminology. Please note that an important aspect to the success of this plan is to ensure that all employees and contractors are able to take time off (and be remunerated) if they fall ill. Please consider this when negotiating contracts. **Characterization of Residual Effects for Change in Community Health and Wellness** - Please provide further information on stress and anxiety residual effects (see previous comments) **Communicable Disease and STIs:** -We appreciate the mitigations proposed and agree that these (especially adhering to Northern Health's Communicable Disease Best Management Plan for Industrial camps), are likely to reduce impacts. Nevertheless, it should be recognized that the sheer size of the (male dominated) workforce, the absence of health status/immunization data and screening information (especially for international employees) and the current gaps in knowledge related to the association between RD projects and community STI prevalence (see http://www.sciencedirect.com/science/article/pii/S2214790X15001422), leave this as an important residual impact. **Social Support Networks:** - Please see comment in previous section. **Social Environments:** - It is noted that "in the extreme, demographic change associated with non-local workers could lead to increased crime, prostitution, and drug and alcohol use within local communities". It is our understanding that these impacts do not only occur "in the extreme" but are a realistic possibility that needs to be carefully managed for. Summary - The Application states that "Adverse effects are anticipated to be moderate in magnitude, to extend to the LAA, short term in duration, to occur continuously, are reversible and will occur in a socio-economic context that is resilient to change" - Given that the difference in the definition between "moderate" and "high" magnitude is related to whether impacts will or won't result in chronic/fatal effects and the fact that many of the changes to the determinants of health that were recognized are risk factors for chronic illnesses trhat can impact mortality rates, we argue that the magnitude classification should be "high". Similarly, the extent should be to the RAA since even a single project will see residual impacts in Terrace and many statistics used are for the whole HSDA. Lastly, given that changes to the determinants of health are linked to chronic conditions, these would only be reversible over a long period of time and on a population scale - In section 6.6.5.3, the Application notes that adverse effects will occur in a socio-economic context that is resilient to change", yet in section 6.6.7.1, it notes that the socio-economic context is "not resilient to change". Please provide further information on how resiliency was determined.	Mitigations of Change in Community Health and Wellness - The suite of mitigation measures proposed throughout section 6.6 are appropriately captured under higher-level management plans (see the column titled 'Management and/or Compensation Plans' in Table 6.6-18 and 6.6-21 of the Application). - Regarding the renaming of Northern Health's draft "Infection Control Best Management Guide for Industrial Camps" to "Communicable Disease Best Management Guide for Industrial Camps"and consideration of paid sick leave - comment noted. Characterization of Residual Effects for Change in Community Health and Wellness - Stress and anxiety - See responses to Northern Health comments 56 and 61. Communicable Disease and STIs The assessment does anticipate that adverse residual effects related to communicable disease and STIs will occur (see Section 6.6.5.3 subsection 'Communicable Disease and STIs'). These residual effects will be managed through accommodation policies (e.g., closed-access camp) and mitigation measures, specifically mitigation 6.3.1, 6.3.3, 6.3.13, 6.61 and 6.6.2, identified in Table 6.6-18 of the Application. Social Support Networks The sentence "In the extreme, demographic change associated with non-local workers could lead to increased crime, prostitution, and drug and alcohol use within local communities (see below)" has been replaced with "demographic change associated with non-local workers could lead to increased crime, prostitution, and drug and alcohol use within local communities (see below)". This change is reflected in an errata document being created which will be filed with the EAO. Summary In consideration of mitigation measures identified in Table 6.6-18 of the Application, the Project location (on Digby Island without a fixed link to Prince Rupert), accommodation policies (a closed-access camp), and the relatively short-term duration of construction (in comparison to the life of the Project), Aurora LNG is confident in the conclusions of the assessment and characterization of residual effects.
409.1	round 1	Northern Health	6.6.6.3	Community Health	**Residual Cumulative Effects:** - The Application notes that "over the long term, increased levels of individual and household income and a more diversified population and economic base are expected to beneficially affect SDOH and health status." While we are hopeful that this would be the case and agree that the economy and access to employment is an important determinant of health, we also would like to point you to experiences in our Northeast region where unemployment was very low, yet our health status was significantly lower than the provincial averages and comparable to the Northwest. It is our assumption that health status would only improve if efforts are taken to minimize potential negative impacts so that the positive benefits to health status can be realized. - Again, we argue that the project's contribution to cumulative effects on community health and wellness would extend beyond the LAA. Even a single FID in the Northwest region would affect Terrace. **Significance of Project Residual Effects:** - Based on the information provided and the mitigations proposed, we are not confident that the adverse effects won't be significant. Reflecting on the complexities of predicting and managing SDOH impacts as well as the definition of significance ("significant adverse residual effects are those that are highly distinguishable from current conditions and trends; and cannot be managed or mitigated through adjustment to programs, policies, plans and other mitigations"), we agree that there is a likelihood that significant adverse residual effects could be managed through programs, policies, plans and mitigations (on behalf of the proponent but also other stakeholders) but only if it is supported by a system that would assess and monitor risks/impacts throughout the project phases and would allow the proponent's programs, policies, plans and mitigations to be adjusted and responsive to potential unpredicted effects, if they are identified. Again, we refer back to IFC PS1. As well, we do not feel that this applies to the Dodge Cove community. Given the many aspects in which the determinants of health will be impacted for this population that would not be preventable through mangement strategies, we would argue that residual project effects for this population would be significant.	Residual Cumulative Effects The suite of mitigation measures proposed in Section 6.6 are expected to reduce the magnitude of adverse residual effects on community health while enhancing benefits of the Project. Aurora LNG acknowledges that potential cumulative effects on community health could extend into the RAA, including Terrace, however, as indicated in section 6.6.7.2 with the application of mitigation measures adverse cumulative effects on community health and wellness are predicted to be not significant. Significance of Project Residual Effects With the implementation of mitigation measures proposed in Table 6.6-18 Aurora LNG is confident that adverse residual effects will not be highly distinguishable from current conditions and trends and that effects can be managed or mitigated through polices, plans and mitigation measures. In particular, the closed camp and dry camp policies, Social Management Plan (mitigation 6.3.1) and the Health and Medical Services Plan (mitigation 6.3.13) will mitigate adverse effects of the Project on local communities, including Dodge Cove. The Social Management Plan (see Section 14.12) will also integrate anadaptive management approachto engage with concerned stakeholders, identify concerns and issues, evaluate the effectiveness of mitigation measures, and adjust accordingly. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) and key stakeholders. Aurora LNG acknowledges that residents of Dodge Cove may be disproportionally affected by the Project (in comparison to other populations within the LAA); however, policies, plans and mitigation measures are expected to reduce the magnitude of adverse effects.
410.1	round 1	Northern Health	9.1	Accidents or Malfunctions	The Application notes that the LNG Industry has an exceptional safety record. We ask that further information is provided regarding this safety record. Northern Health found the following summary of LNG related accidents and malfunctions: http://www.ch-iv.com/assets/documents/Safety%20History%20of%20International%20LNG%20Operations.pdf?/pdfs/Safety%20History%20of%20International%20LNG%20Operations.pdf. We ask that a similar and unbiased summary of LNG related accidents and malfunctions be provided to get a better idea of potential and likely accidents and malfunctions as part of this Application.	The Application as written meets the requirements of the Application Information Requirements. The likelihood and probability of each accidents and malfunctions scenario is discussed in each scenario section.
411.1	round 1	Northern Health	9.2	Accidents or Malfunctions	In section 9.2, it notes the various accidents and malfunctions that were considered as part of this assessment. We feel that it is important to recognized that these are just a subset (and proxies) of the potential accidents and malfunctions that can occur at a facility of this size and nature. Based on our understanding, a much wider range of potential accidents and malfunctions, especially higher likelihood, lower magnitude events can occur, including those that are typical during construction (e.g. electrocution, machinery accidents, equipment failure, objects falling from heights, etc.).	It is acknowledged that the scenarios in 9.2 are a subset of possible accidents or malfunctions; this is explained in section 9.3. In general, Project-related accidents for workers on-site (such as electrocution, falling objects) are covered under occupational health and safety guidelines under the juridiction of WorkSafe BC and are not included in the assessment of VCs except where an industrial accident could affect the capacity of municipal emergency response and healthcare systems.
412.1	round 1	Northern Health	9.2	Accidents or Malfunctions	We question why off-shore spill events were not considered.	The Application, Section 9.9 describes potential vessel grounding or collision events associated with LNG carriers and Material Offloading Facility-bound vessels servicing the marine terminal. Vessel collisions, as described in the section, may occur in either nearshore or offshore waters.
413.1	round 1	Northern Health	9.2.3	Accidents or Malfunctions	This section relies on the threshold criteria that were developed for each VC. For impacts to health services and infrastructure, the VC threshold reads as follows: "a significant adverse residual effect occurs when there is an exceedance of available capacity, or a substantial decrease in the quality of a service provided, on a persistent and ongoing bases, which cannot be mitigated with current or anticipated programs, policies or other mitigation measures" We argue that given the nature of Accidents and Malfunctions (infrequent, unforseen and generally short term in duration) the health services and infrastructure threshold criteria (for Accidents and Malfuctions only) should be changed to remove "persistent and ongoing" (as that would go against what an accident and malfunction is) and instead be replaced with something along the lines of "resulting in increased risk to human health and safety"	The application of threshold criteria for accidents and malfunctions for each VC is the same criteria as was considered in the specific VC chapter. This is consistent with the Application Information Requirements and is standard environmental assessment practice. The threshold for health services and infrastructure is appropriate for measuring potential for a significant residual adverse effect resulting from accidents and malfunctions.

414.1	round 1	Northern Health	9.4.1	Accidents or Malfunctions	Northern Health has concerns with the assumptions, conclusions and level of information in this section, as follows - It is not clear whether the public has access to the roadways in the PDA or whether the risk would be solely for Aurora LNG employees and/or contractors - This scenario describes an accident only within the PDA. What about Aurora buses and/or vehicles outside of the PDA (where the speed limit is higher and/or no on-site care is available)? All potential accidents and malfunctions related to project-related motor vehicle collisions need to be considered - It is noted that "external resources such as hospitals, emergency medical helicopters or fire and clean-up crews is not anticipated". We strongly argue against this assumption since there are many instances where motor vehicle collisions, even if they occur at low speeds, will require hospital support. For instance, any suspected breaks, electrocutions, eye injuries, shock (to name a few) would require a higher level of care that would be unlikely to be provided on-site. - It is noted that "accident scenarios involving motor vehicles and pedestrian workers at the site falls within occupational health and safety guidelines …. And are not included in this scenario". Given that Worksafe BC injuries (like all other injuries) rely on the health care system (including hospitals, ambulances, etc.) to provide health services to injured workers, we insist that these scenarios not be omitted from the assessment - It is noted that "a maximum speed limit of 30km/hr will apply… which will mitigate the potential for serious injury to vehicle occupants….". We disagree with this assumption/conclusion. While a speed limit can help to reduce injuries, we know that events (e.g. vehicle malfunctions, mental/physical illness of the driver, intentional or unintentional recklessness of driver, etc.) can occur that cannot protect against all speeding. Furthermore, and as mentioned above, even low speed accidents can result in serious injuries that will require hospital support. - The scenario seems to describe an accident between single and multiple vehicle accidents but does not provide detail on the number of people that may be injured. While injury severity is important to consider when assessing impacts to the health infrastructure and services project effect, so is the volume of potential casualties. Given that multi-passenger vehicles like buses will be providing transportation, there is a potential that a relatively large number of people would need to seek hospital care. Similarly, it is possible that the vehicle would collide into an area that contains numerous people (e.g. the work camp, a gathering site, a structure that contains workers, etc.). This could quickly result in significant impacts to the Health Services and Infrastructure project effect, given the capacities available in Prince Rupert. - Earlier sections of the Application note that "motor vehicle incidents can occur regardless of engineering controls and health and safety programs and policies" and estimate that the project could result in an additional 0.3 motor vehicle related fatalities per year and 22.3 motor vehicle related injuries per year during the peak construction period (0.1 fatalities/year and 4.4 motor vehicle injuries per year for operations). This is important to recognize in this section (page 6.6-69). - Overall, we strongly disagree that this scenario will have no interactions with the Health Services and Infrastructure VC and would argue, that under certain scenarios, there is a likelihood for this scenario to have significant adverse impacts to the Health Services and Infrastructure project effect, especially in light of the fact that, under regular operating conditions, it is already predicted that "adverse residual effects are highly likely".	Comments are noted. Section 9.4 states that it considers single or multiple motor vehicle collisions accidents along the roadways in the PDA. PDA access will be restricted to Project personnel only. It is true that some Project vehicles (i.e., buses) will be used outside the PDA. However, in those instances the same preventative and response measures will be applied to minimize likelihood and consequence of a motor vehicle accident. A comprehensive Transportation Management Plan will address movement of vehicle not only within the PDA but outside those boundaries. As such, potential effects on various VCs remain unchanged and the assessment of likelihood, consequence, risk and significance is also unchanged. Project transportation activities resulting in a motor vehicle collision have a potential effect on Health Services and Infrastructure VCs. Existing public medial services are well trained to respond to these types of incidents. As such if medical aid is required, potential effects on Health Services will result in a disruption of services over the short-term, reversible and not significant. Similarly, motor vehicle collision effects on Infrastructure will result to short-term disruption in services that are reversible and not significant. Preventative and response mitigation measures outlined in the Transportation Management Plan will focus on minimizing these effects.
415.1	round 1	Northern Health	9.5.3	Accidents or Malfunctions	**Infrastructure and Services** Residual Effects under Infrastructure and Services does not consider likely effects to the Health Services and Infrastructure project effect. We argue that residual effects to this project effect would be significant, given that an event of this nature would engage Health Emergency Management BC, place the hospital under a Code Orange (changing the operation of the hospital) and would have long-term fallouts within Northern Health. To understand (and prepare for) likely residual effects to the Health Services and Infrastructure, more information is required on the approximate number of casualties. It should be recognized that, depending on the severity and nature of injuries, even a small number of casualties (e.g. less than 5) could easily push the Prince Rupert Hospital beyond its capacity. There is no diversion capacity in Prince Rupert (Terrace being the next closest hospital). Any high volume of casualties would require a coordinated response with health care centres across the region and likely across the Province. Furthermore, more information is needed on how those needing medical care would be transported off the island. It also needs to be recognized that if additional medical aid is required, Northern Health relies on the airport to bring in additional support staff/equipment and transfer patients. If there is the potential for access to or the function of the airport to be compromised this could lead to additional complications to respond to such an incident. Given that there may be as many as 5000 construction workers at the Site, we argue that the risk characterization for residual effects to infrastructure and services be very high and that they are significant. We strongly encourage proactive planning among emergency responders, the proponent and stakeholders to identify if and how mass casualty events such as these would be manageable given local capacities and the proactive mitigations that need to be put into place and that these plans include consideration of available health services. **Community Health** It notes that "if facility impacts from an aircraft resulted in the loss of human life, the magnitude of residual effects to community health would be high and within the geographical extent of the LAA" - Detail is required on how community health would be impacted (and why this would be limited to within the LAA), drawing from research and studies related to similar events. Why would residual effects not be very high? What mitigations would be supported by the proponent to support the management of the identified potential impacts? **Table 9.5-1** Based on the above, we argue that for Health Infrastructure and Services, the consequence would be "very high", the risk matrix rating would be "very high" and the significance would be "significant"	In Canada, safety and security activities associated with aviation are with the jurisdiction of Transport Canada. The Project will be designed in consultation with Transport Canada to identify, prevent and reduce risks associated with the proximity of the project to the Prince Rupert Airport. As such, the location of the Project's LNG facility is not expected to measurably increase the probability of a aircraft impact associated with Prince Rupert Airport. Due to the large number of factors that may influence the number of injuries or fatalities following an unlikely facility impact from an aircraft (e.g., aircraft type, timing of incident, phase of project, location of impact, magnitude of impact), it is not reasonably practicable to estimate the occurrence or number of injuries or fatalities that may result. As such, focus is given on understanding likelihood and consequences in the context of preventative and response measures. The Emergency Response Plan will include engagement with emergency medical services. Indirect effects of an aircraft collision with the facility in the context of on-shore fires or explosions and on-shore hazardous spills are discussed in Sections 9.6 and 9.8, respectively.
416.1	round 1	Northern Health	9.6.1	Accidents or Malfunctions	**Description of Event or Interactions:** - Would these scenarios include fuel transport vehicles? - This section mentions that there will be large volumes of flammable liquids on-site. Please provide additional information around potential quantities and fuel types, including differentiation between the construction and operational phases of the project. - It notes that the probability of a fire or explosion is very low. We feel that it would be pertinent to reference Algeria's Skikda LNG facility explosion in this section (which killed 27 and injured 74) and identify if a similar scenario would be possible at the proposed Aurora LNG facility (including a detailed rationale around why or why not). - As above, for the assessment of impacts on the health infrastructure and services project effect, please provide an estimate of approximate casualties (number and type) for this scenario.	Although not explicitly stated, preventative and mitigation measures outlined in Section 9.6 for on-shore fires and explosions would be applied to a fuel transport vehicle resulting in a fire or explosion. Section 9.6 focuses on large volumes of flammable liquids or gases. Flammable substances transported by vehicles would be much smaller in quantity and would be mitigated through measures proposed in Section 9.6. Details specific to the volumes of flammable on-site liquids during the construction and operations phases are provided in Section 9.8 (on-shore hazardous spills). The explosion that occurred at the Skikda LNG facility on January 19, 2004 is understood to have be caused by a gas leak from a pipeline, when vapours entered a unit's gas-fired boiler and the boiler was re-lit by workers (Dweck and Boutillon 2004). Modern LNG facilities do not use pressurized boilers or steam turbines, which was the expected cause of the explosion at Skikda LNG facility. Further, adherence to standards such as Canadian Standards Association Z276 ('Liquified natural gas [LNG] - Production, storage, and handling'), would reduce the potential consequences of an explosion event through measures including minimum setback distances between refrigerants, flammable liquids and gases. Reference Dweck, J. and S. Boutillon. Deadly LNG incident holds key lessons for developers, regulators. Sutherland Asbill & Brennan LLP. Pipeline & Gas Journal, May 2004. Available at: https://us.eversheds-sutherland.com/portalresource/lookup/poid/Z1tOl9NPluKPtDNIqLMRV56Pab6TfzcRXncKbDtRr9tObDdEuW3Cu0!/fileUpload.name=/PGJLNG.pdf (Accessed: March 2017).
417.1	round 1	Northern Health	9.6.2	Accidents or Malfunctions	The Application mentions that a quantitative risk analysis will be performed for the facility. We feel that this information would be important to include in the Application.	The quantitative risk assessment will be completed as part of detailed design (FEED) stage.
418.1	round 1	Northern Health	9.6.3	Accidents or Malfunctions	Infrastructure and Services. This section does not adequately assess and capture impact to the Health Services and Infrastructure project effect as follows - It is highly unlikely that any fires and explosions involving injuries such as burns or smoke inhalation would be able to be managed by the on-site health and medical service providers and will likely require hospital and patient transport support. - Similarly to the airplane scenario, any scenario with several injuries would engage HEMBC, put the hospital under a Code Orange and will require a regional response (given the lack of diversion capacity in Prince Rupert) and have potential long-term impacts to Northern Health operations. This is based on experience related to the Babine Forest Products (Burns Lake) and Lakeland Mills (Prince George) mill explosions. - It is noted that emergency medical helicopters may be required to assist. Please ensure that there has been consultation with BC Ambulance Service to ensure that there is capacity at the local level and that this wouldn't impact services available to the local population. - Please refer to comments on the Aircraft Impact scenario for additional considerations and concerns related to potential mass casualty events. Based on the above, we strongly argue that the magnitude of residual effects to health infrastructure and services is high and regional (likely even provincial) in extent, given that health care infrastructure and services cannot accommodate moderate levels of increased demands (as per conclusions provided in the Effects Assessment under the Health Services and Infrastructure project effect). We argue that the likelihood, consequences and risk matrix for residual effects to the Health Services and Infrastructure has the potential to be very high and significant. Community Health - It is noted that "worker safety is beyond the scope of this assessment". We request that worker safety be included in the assessment of the Health Services and Infrastructure project effect given that more serious worker injuries will require health care system support. - From our understanding, death or serious injuries can also impact the health of first responders, not just workers and their families - An explosion, with or without the loss of human life would also result in additional fear and anxiety for people living in close proximity to the project. - Since it is noted that "death or serious injury to workers … will affect community health and well-being in those communities in which the workers and their families live" and given that many workers are expected to originate outside of the RAA, we argue that the residual effects for scenarios that involve the loss of human life, would be larger than the LAA. Human Health - It notes that the magnitude of effects to human health would be low since smoke and particulate from a fire or explosion would be localized to the LAA. Please provide additional rationale why it would be localized to the LAA and, even if localized to the LAA, why health impacts would be low and reversible. Acute exposure to smoke and particulate matter can trigger asthma attacks, result in breathing problems, trigger heart attacks, result in increases in ER visits and increase mortality rates, especially among the elderly, children, pregnant women and those with pre-existing respiratory or cardiovascular conditions. - It notes that "there is a high capacity for human health to recover from a perturbation". While this would be true from a population health perspective, this is not true from an individual health perspectives, given that deaths from things like heart attacks, asthma attacks, etc. (epidemiologically linked to acute exposure to smoke and particulate matter) could not be recovered from. - Could a potential explosion scenario occur during construction or turnarounds? If yes, please ensure that health impacts to the temporary workforce population which would be residing within the project footprint is considered in this conclusion.	- The Project will be designed, built and operated to eliminate/minimize potentials for onsite fires and explosions. This in combination with preventative and response measures (Section 9.6.2) is assessed to result in a low likelihood of an onsite fire or explosion. The Project will engage the ERP and, through ICS, coordinate response measures with applicable response agencies. If a fire or explosion results in burns or smoke inhalation, injuries will be treated onsite by certified trained personnel and external medical aid will be requested if assessed as required. External medical aid (i.e., patient transport and hospital services) may be requested over the short term within the LAA that is reversible within a month. If local services require further support, the Project will work with these agencies to include regional response measures. As such, consequence on Infrastructure Services is assessed as low and not significant. - Worker safety is not within the scope of the Application Information Requirements developed in consultation with the Working Group members. However, potential effects of accidents do consider Community Health. If external medial aid is required, these services maybe provided non-Project first responders. Counselling and trauma support services for affected family members or first responders may be required. After mitigation and response measures have been implemented following an on-shore fire or explosion resulting in a loss of life, the likelihood of residual effects to community health is high, while the consequence is very high. Based on these factors, the risk matrix ranking is very high. The residual effects to community health in the case of an on-shore fire or explosion are predicted to be significant with and without the loss of human life. Potential effects of a fire or explosion on human health were assessed to be localized to the LAA (30 km by 30 km area centered on the PDA). Air emissions from such an event are expected to be short-term in duration, disperse with distance and reversible within a few days. The framework for the assessment of potential health effects is based on population level effects. The evaluation of an individual's health is assessed by a medical professional given the circumstances of the individual's injury. The ERP will include jurisdictional overlap to ensure stakeholders were informed of the incident. Exposure to air emissions could be minimized or eliminate by remaining indoors and closing windows to reduce inhalation exposure during the event. - Although a realistic worst case scenario for a fire or explosion was identified to apply to operational conditions, it still applies to construction but less in magnitude in extent. The overall assessment conclusions do not change.
419.1	round 1	Northern Health	9.7.3	Accidents or Malfunctions	**Human Health** - It notes that dispersion modelling of flaring scenarios predicts that all concentrations would be below the BC Ambient Air Quality Objectives. Does this consider worst-case flaring events? Does this consider exposures at the work camp? - How are VOCs considered, given that there are currently no BC Ambient Air Quality Objectives for VOCs? Knowing that VOCs can lead to health outcomes, what is the potential for VOCs or other non-criteria contaminants to be elevated above health-based thresholds? - It should be recognized that the BC Ambient Air Quality Objectives for Particulate Matter are not a threshold for health effects and that health effects can occur, even at lower concentrations.	This scenario focuses on the worst-case scenario (four-train emergency shutdown) during operations, not during the construction phase.Workcamp air quality will comply with provincial and federal ambient air quality objectives and occupational health and safety requirements. Regarding VOCs, refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. The Human Health Technical Data Report (Appendix R of the Application) discussed the emissions of particulate matter (both PM10 and PM2.5) from the Project, which are predicted to be very low, and that the concentrations would not exceed the BC ambient air quality objectives. These objectives were applied as screening level guidelines. Therefore, if there were no exceedances of PM2.5 and PM10 over residential/populated areas, a detailed assessment would not be required.
420.1	round 1	Northern Health	9.8.1 9.8.2	Accidents or Malfunctions	**Description of Event or Interaction** - Please provide details on the volumes of the types of liquids that could spill under a worst-case scenario spill **Preventative and Response Measures** - It notes that standards requires that "LNG storage systems be located far enough from the facility boundary to mitigate levels of radiant heat flux from fires and mitigate the potential for spills to generate vapour concentrations beyond acceptable limits at the facility boundary." Please confirm that these set-backs would also protect from these potential impacts at the proposed construction camp where a large workforce is expected to reside during construction and turnarounds. - Please confirm that enough materials, equipment, and trained personnel would be present at the facility to be able to manage a worst-case scenario spill. Based on our experience, supplies, equipment and personnel such as booms/absorbent materials, hydrovacs, remediation contractors, etc. that need to be brought in from other areas can significantly limit the response time to large spills.	Typical liquids that will be stored on site include diesel, gasoline and LNG. A complete list of products classified under the federal Transportation of Dangerous Goods Act or the Workplace Hazardous Materials Information System legislation will be developed onceFEED and detail design is complete. The Emergency Response Plan will contain specifics on spill response, including spill response materials, equipment and resources to be available on site, and contacts for appropriate resources. This plan will be subject to review through the BC OGC Facilities Permitting process. The location of the construction camp considers safety requirements and appropriate setbacks from potential releases or fires on site. As per section 5.2.3.3, the distance between the LNG tank impounding area and the nearest property line(including that of the camp) will be established such that, in the event of a design spill, the average concentration of methane in the air would be less than half the lower flammability limit at the property line. Distance will be defined based on dispersion modelling that accounts for LNG vapour dispersion, heat transfer, wind speed, and other physical parameters. Calculated distances will be validated by experimental test data. As per section 5.2.5.3, integral heated vaporizers will be located at least 30 m from a property line that can be built upon and at least 15 m from other structures such as flammable liquids and refrigerants, any impounded LNG and control buildings. As per section 5.2.6.1, process equipment containing LNG, refrigerants, flammable liquids and gasses shall be located at least 15 m from ignition sources, property lines that can be built upon and other occupied structures including theworker camp.

421.1	round 1	Northern Health	9.8.3	Accidents or Malfunctions	Infrastructure and Services - Impacts to health services and infrastructure need to be considered. Based on the potential community and human health impacts that may be experienced (see comments below), in addition to the support that will be needed from HEMBC and our Public Health Protection teams to assess and communicate the risk to human health (including putting in place things like health advisories if the spill has the potential to contaminate recreational water, drinking water or country foods, etc.), there will be impacts to the Health Infrastructure and Services project effect that will not be negligible and low. - In order for Northern Health adequately implement and rescind appropriate human health advisories (e.g. country foods consumption advisories, drinking or recreational water advisories, etc.) it will be imperative that the Certificate holder be required to fund risk characterization studies, such as human health risk assessment, following a significant spill event. These would need to be conducted by independent third parties with expertise in that field of study. We ask that this be included as a Condition in the Certificate. Community Health- We argue that there will be interactions between this scenario and the Community Health VC. Please see http://www.ncceh.ca/sites/default/files/Health_Effects_Oil_Spills_Nov_2014.pdf and https://www.vch.ca/media/VCH-health-impacts-oil-spill.pdf for recent literature summaries related to health effects from oil spills. Table 9.8-1 - For Infrastructure and Services, we argue that the likelihood (for a larger spill) would be high and the consequence medium. Extent should be at least RAA since response for health risk communication will require support from HEMBC and PHP staff located in Terrace and Prince George. For Community Health VC, we argue that the likelihood (for a large spill) would be high and the consequence high	Section 9.8.3, page 9-30, "Infrastructure and Services" has been updated to include the following text: "The Emergency Response Plan will contain specifics on spill response procedures, including communication requirements with Emergency Management BC and the BC OGC's Emergency Officer. An assessment of contamination (i.e., soil sampling and/or water quality sampling) would be conducted as a standard part of spill response and clean up assessment. The volume of the release, type of product, location and environmental conditions at the time of the release will help determine the appropriate type of sampling and analysis to be carried out. The magnitude of residual effects from a large on-shore hazardous spill to local/regional infrastructure and services is predicted to be low and within the geographic extent of the LAA (contained to the PDA and an adjacent portion of Digby Island). The frequency of the residual effect would be a single event that is short-term in duration and reversible within a month. The context of residual effects is resilient (moderate) because infrastructure and services can accommodate moderate levels of increased demand. After mitigation and response measures have been implemented following a large spill of hazardous materials, the likelihood and consequence of residual effects to infrastructure and services are low. Based on these factors, the risk matrix ranking is low. Residual effects on infrastructure and services are predicted to be not significant." Aurora LNG acknowledges that while the characterization of other VCs has considered both small and large volume releases, the characterization relevant to infrastructure and services only considered a small volume release. In the event of a large spill, Aurora LNG will use its own resources to implement the Emergency Response Plan and through the Incident Command System will incorporate support from other public emergency services where required. An errata document will be created that will capture these corrections and it will be filed with the BC EAO.
422.1	round 1	Northern Health	9.9.1 9.9.2	Accidents or Malfunctions	**Description of Event or Interaction** -The application indicates that in the event of a vessel grounding or collision, up to 48,000m3 of LNG may be released. Is there a potential for cryogenic burns to workers or other water users on or near the vessel? Given what is described about the release of energy from its transition from liquid or gas, is there a potential for injury? If yes, please describe the number and types of injuries that may be expected and ensure that these are carried forward when considering the impacts to the health infrastructure and services project effect. -Please provide additional detail in regards to comment "diesel degrades quickly within one to two months through naturally occurring processes". While we understand that natural processes can degrade diesel, we know that diesel contamination can exist in natural environments for many years after an event. From our understanding, the speed of degradation depends on a variety of factors, including temperature, exposure to sunlight, aeration, bacteria, the type of material that is contaminated, etc. The statement that diesel degrades within two months oversimplifies this process and is misleading. **Preventative and Response Measure:** As per previous comment, we ask that additional detail be provided on LNG's safety record. As per previous comment, please confirm that on-site emergency personnel, equipment and materials (with support from local response organizations) is sufficient to handle a worse-case scenario event.	Although possible, cryogenic burns to workers or other water users are not likely, even in the event of a LNG release given likely visible plume and ability to detect the spill and keep away. As such, Aurora LNG anticipates the ability to implement the Emergency Response Plan with onsite resources, and the potential for an effect of concern on Infrastructure and Services is negligible. Resource cascading from regional, national, and international response resource bases is typical for emergency response to large incidents, especially following unlikely worst case credible events. Due to the hydrocarbons high proportion of light ends, diesel typically disperses and evaporates rapidly following release in the marine environment. As noted in the comment, a number of additional weathering processes may act on the diesel that further degrade the product. Persistence of dispersed diesel in marine environments with fine-grained sediments (typically near river mouths) may be extended if adsorption occurs, but due to dispersion and biodegradation measurable effects to marine resources resulting from sediment contamination are not expected from small releases (500-5,000 gallons; NOAA 2017). References National Oceanic and Atmospheric Administration (NOAA). 2017. Small Diesel Spills (500-5,000 gallons). Available at: http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/small-diesel-spills.html. Accessed: February 2017.
423.1	round 1	Northern Health	9.9.3	Accidents or Malfunctions	**Infrastructure and Services** Please see our comments under the onshore hazardous spill scenario. Our comments on this section are the same. **Community Health** Additional comments specific to this section: - This section needs to include the health effects identified in http://www.ncceh.ca/sites/default/files/Health_Effects_Oil_Spills_ Nov_2014.pdf and https://www.vch.ca/media/VCH-health-impacts-oil-spill.pdf - Learnings and experiences from the recent vessel sinking near Bella Bella should help to inform the Community Health section, which includes impacts to community cohesion, fear, anxiety, exhaustion and loss of economic opportunities (e.g see https://www.youtube.com/watch?v=_B0RJC5KGKo) - It notes that the community health impacts would be reversible within one year. This does not align with the literature conducted by the NCCEH which notes that Post Traumatic Stress Disorder symptoms could persist for 1.5 to 8 years. **Human Health** - Based on the above-noted literature review, the greatest exposures are usually among first responders. Please ensure that any local first responders would have adequate training and access to personal protective equipment. - Please recognize that a ban on country foods can have other important health impacts such as economic hardship (which is a determinant of health), reduced food security and access to healthy foods, reduced connection to the land (especially important to First Nation populations), anxiety and stress, etc. Furthermore we recognize that even though country food bans may be in effect, country food harvesters may still decide to harvest and consume these foods. Therefore, the residual effects to human health should not be seen as negligible. Please provide a detailed rationale why impacts to country foods would be reversible within one year. - As above, in order for Northern Health to adequately implement and rescind appropriate human health advisories (e.g. country foods consumption advisories, drinking or recreational water advisories, etc.) it will be imperative that the Certificate holder be required to fund risk characterization studies, such as human health risk assessment and health impact assessments by independent third party experts in that field of study following a significant spill event. We ask that this be included as a Condition in the Certificate. **Table 9.9-1** Infrastructure and Services: Magnitude should be moderate (high if there is a potential for significant injuries), extent should be RAA (since response for health risk communication will require support HEMBC and PHP staff located in Terrace and Prince George.), likelihood should be medium to high, duration should be medium term, consequence should be moderate (high if there is a potential for significant injuries), risk matrix ranking needs to be higher and it would be significant if there is a potential for significant injuries. Community Health: Magnitude should be moderate to high, duration should be medium term, risk matrix should be higher and significance should be significant, likelihood should be medium or high. Human Health: Magnitude should be medium, likelihood should be medium, consequence should be moderate, risk ranking should be higher.	Infrastructure and services Section 9.9.3 of the Application discusses the residual effects (on the Infrastructure and Services VC) of a vessel grounding or collision resulting in a hull breach and containment failure of hazardous materials released into the marine environment. The Emergency Response Plan will contain detailed spill response procedures, including communication requirements with Emergency Management BC and the BC OGC's Emergency Officer. An assessment of contamination (i.e., soil sampling and/or water quality sampling) would be conducted as a standard part of spill response and clean up assessment. The volume of the release, type of product, location and environmental conditions at the time of the release will help determine the appropriate type of sampling and analysis to be carried out. Human Health Section 9.9.3 of the Application also discusses the residual effects of a vessel grounding or collision resulting in a hull breach and containment failure (on the human health VC) of hazardous materials released into the marine environment. The Emergency Response Plan will contain detailed procedures in the event of vessel grounding or collision, including training requirements. In the event of a hull breach and containment failure resulting in the release of hazardous materials to the marine environment, an assessment of contamination (i.e., water quality sampling) would be conducted as a standard part of spill response and clean up assessment. The volume of the release, type of product, location and environmental conditions at the time of the release will help determine the appropriate type of sampling and analysis to be carried out. The effects to marine country food quality are predicted to be reversible after an estimated one year period (or potentially less) based on a comparison of historical marine accidents which led to a release of oil - and the resulting seafood ban associated with these events. Refer to the National Oceanic and Atmospheric Administration (NOAA) report, "Managing Seafood Safety after an Oil Spill", 2002. Under the worst case accidents and malfunctions scenario, up to 2,500 cubic meters (660,000 gallons) of marine fuel could be spilled in a vessel grounding or vessel collision. Table 1-1 of the NOAA report lists marine spills of various types of oil (e.g., diesel, bunker oil, crude oil, home heating oil), the volume spilled and harvesting closures. Spills less than 1 million gallons resulted in a maximum harvesting ban duration of 155 days. A historical spill of 21 million gallons of light crude resulted in a maximum harvesting ban duration of 183 days. The only example where a harvesting ban lasted one year or more was for a release of 25 million gallons of light crude oil. Given the relative magnitude of spill, a reversibility characterization of 1 year is reasonable. Spills of LNG (methane) may harm marine life in the immediate area by freezing, but it would not change the quality of marine foods as methane is readily metabolized by organisms and is not toxic. Community Health Section 9.9.3 of the Application also discusses the residual effects of a vessel grounding or collision resulting in a hull breach and containment failure (on the community health VC) of hazardous materials released into the marine environment. Effects on the physical health of clean-up and remediation workers or LAA community members due to exposure to hazardous materials is considered under the Human Health VC with respect to accidents and malfunctions. In consideration of information provided by Northern Health, a vessel grounding or collision resulting in a hull breach and containment failure of hazardous materials could result in low to moderate (depending on an individual/communities exposure to the event) magnitude effect on mental health, social support networks and social environments. Effects would be continuous, medium-term (reversible in 1.5 to 8 years) and occur within the geographical extent of the LAA. The context of residual effects to community health is resilient (moderate) because community health is moderate and slightly vulnerable to social, economic and environmental change. With the implementation of measures to prevent vessel grounding or collision events, the likelihood of this accident or malfunction occurring is considered low. Similarly, with the implementation of appropriate response measures, the consequence of the unlikely event of a vessel grounding or collision occurring,is considered moderate. Based on these factors, the overall risk matrix ranking is low. and potential residual effects on community health are not significant. An eratum is being developed that includes the following revision to section 9.9.3 "A vessel grounding or collision resulting in a hull breach and containment failure of hazardous materials could result in low to moderate (depending on an individual/communities exposure to the event) magnitude effect on mental health, social support networks and social environments. Effects would be continuous, medium-term (reversible in 1.5 to 8 years) and occur within the geographical extent of the LAA. The context of residual effects to community health is resilient (moderate) because community health is moderate and slightly vulnerable to social, economic and environmental change." An errata document is being created that will capture these revisions (i.e., the inclusion of adverse effects on change in community health and wellness) and it will be filed with the BC EAO.
424.1	round 1	Northern Health	9.10	Accidents or Malfunctions	As per our previous comments, approximately how many injuries could there be related to cryogenic burns and/or the explosion of pressurized gas. This is important to know for the health service and infrastructure project effect. As in previous comments, if there is a potential for injury to workers or the public, there would be an interaction with the health infrastructure and services project effect. Similarly to our comments for the previous scenarios ,additional information, characterization and mitigation of impacts to health services needs to be included for this scenario. For Human Health, please see our comments on the explosion scenario related to smoke and particulate matter impacts. Table 9.10-1 needs to reflect impacts to health services in the event of injuries to workers or the public.	The Aurora LNG facility will be designed to meet all of the applicable Provincial and Federal Canadian safety and design standards (i.e., BC OGC LNG Facility Regulations and CSA 276-15). These standards require setback distances, security, etc. to address potential risks posed to members of the public. Risk to workers is addressed under occupational health and safety legislation and planning requirements. Detailed planning in terms of potential injuries and emergency response requirements will be addressed during detailed emergency response planning (see Section 14.16 of the Application). The reference to Community Health in Table 9.10-1 is inclusive of potential effects on health services.
425.1	round 1	Northern Health	9.11	Accidents or Malfunctions	Given the capacity and function of the health care system, when considering cumulative effects on health services, other non-project related interactions and/or project related interactions from projects outside of the RAA should also be considered. For instance, although unlikely, any of the identified scenarios could occur at the same time as other accidents and malfunctions (bus, ferry or plane crash, forest fire evacuation, flooding, Code orange at a different NH facility, pipeline spill or other industrial accident/malfunction in other areas of Northern Health, etc.). These could act cumulatively and impact the effectiveness the response. We ask that the different industrial operators in the area work collaboratively to support response to industry-related accidents and malfunctions. We are aware that joint response strategies have been developed in other areas and/or sectors.	Comment noted. Aurora LNG will respond to accidents or malfunctions by implementing the EMP and ERP in collaboration with applicable jurisdictions. Collaborative planning with other operators would be undertaken at the direction of regulatory authorities.
426.1	round 1	Northern Health	9.12	Accidents or Malfunctions	The current summary does not adequately capture the potential impacts to the health infrastructure and services project effect. Overall, we feel that additional information is required for all scenarios regarding the potential casualties (number and severity) that would seek treatment through the health care system, the abilities that would exist among on-site medical care and first responders to respond to incidents such as those described, response strategies that have been or will be developed to evacuate casualties from Digby Island to seek medical care (especially during construction and turnarounds when temporary workforce numbers are expected to be large) as well as the additional resources and proactive planning that would need to be established at the community level to be able to meet all of the accident and malfunction scenarios that were described. For all scenarios, we ask that a Condition be included in the final approval that would require the Certificate Holder to fund appropriate health risk characterization and health impact studies (as determined by EAO and Northern Health) so that appropriate risk communication, health advisories and mitigations can be implemented. These should be carried out by qualified and third party professionals with expertise in this area. Northern Health would not be in the position to carry out these studies in the event of an incident. We are aware that major mines are legally required to have a Mine Rescue teams on-site. These teams have extensive and specific training and expertise in first aid response and rescues specific to mine sites and scenarios. We ask whether a similar requirement will be put in place for the LNG industry.	A Health and Medical Services Plan will be developed during detailed design which will describe the onsite health care and wellness programs as well as services and policies to reduce effects on regional non-urgent care services. The LNG facility will include an onsite medical clinic (mitigation 6.3.15). Additional details on the medical clinic and worker health and safety will be included in the Health and Medical Services Plan (see Section 14.0).As per Section 14 of the Application, Aurora LNG will develop the plan in consultation with Northern Health.
427.1	round 1	FLNRO, Heritage Branch	section 7	Heritage	Clarification/Additions to Section 7 – Assessment of Potential Heritage Effects: · Introduction – Nexen's refers to the Land Act for paleo resources but the Heritage Conservation Act is also a statute that protects fossil resources as the act considers fossils as items having heritage value because of their scientific and educational worth.	Comment noted. As detailed in Section 7.2.2.1, although the Heritage Conservation Act (HCA) may protect fossils as objects that have heritage value, it does not provide automatic protection for these resources and the HCA itself makes no mention of fossils specifically. The means by which the HCA protects heritage resources in BC (automatically or otherwise) is specified in Section 7.2.2.1.
428.1	round 1	FLNRO, Heritage Branch	section 7	Heritage	Clarification/Additions to Section 7 – Assessment of Potential Heritage Effects: · The definition of "fossils" is found in the Land Act fossil definition regulation – Reg 214/2011 (as opposed to referencing the Land Tenure Branch website).because of their scientific and educational worth.	The corrected definition of "fossils" as found in the Land Act fossil definition regulation (reg 214/2011), as requested by Heritage Branch. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
429.1	round 1	FLNRO, Heritage Branch	section 7	Heritage	Clarification/Additions to Section 7 – Assessment of Potential Heritage Effects: · BC Paleontology – the statement that BC does not have policies or guidelines for paleo impact assessment or mitigation is incorrect; guidelines are available from the Heritage Branch. • Also important given that Nexen's assessment report, section 7.2.3.2 (p. 7-18) states that a potential quaternary fossil site on Digby Island has been reported but the exact location is unknown. Important for field operators to know what to pay attention to.	Section 7 will be revised with a statement that "The Heritage Branch has established guidelines for the management of palaeontological resources." An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO. The Archaeological and Heritage Resources Management Plan will include measures to manage any chance find fossils during project activities. The Archaeological and Heritage Resources Management Plan will meet applicable guidelines and standards regarding management of fossil sites.
430.1	round 1	FLNRO, Archaeology Branch	section 7	Heritage	I have completed the Archaeology Branch review of Aurora LNG's application for an environmental assessment certificate. I am satisfied with the document as it pertains to archaeological sites protected under the HCA. I concur with the general recommendations for avoidance and where avoidance cannot be achieved, then systematic data recovery and/or monitoring. I also understand an Archaeological Management Plan will be developed and will include consultation with the Archaeology Branch.	Comment noted. Aurora LNG will consult with the Archaeology Branch during development of the Archaeological and Heritage Resources Management Plan.

431.1	round 1	NAV CANADA	1.7	Proposed Project Overview	While initial discussions between NEXEN and NAV CANADA have occurred, additional information is required on flare stacks design, their locations and emissions that could impact the provision of air navigation services. Additionally, further coordination on possible electronic interference with navigational signals is required. Finally, flare plume rise and flare visible light impact on aviation requires further discussion to determine potential impact on air navigation service provision.	A Plume Rise Assessment Report was submitted to Transport Canada, NAV Canada, and EAO in February 2017. Aurora LNG recognizes that assessment of the flare stack (physical, thermal and visual) is required to satisfy the Land Use Application process administered by NAV Canada in consultation with Transport Canada. Aurora LNG has met with Transport Canada and NAV Canada on several occasions starting in May 2015, again in 2016, and most recently in April this year to discuss the Project flare design and potential effects on aviation. The potential effects of Project flaring on aviation are discussed further in the "Potential Effects on Aviation as a result of Accidents or Malfunctions"technical memo which will be filed with the BC EAO. Aurora LNG will continue to consult with these agencies through the permitting process.
432.1	round 1	PRPA	Appendix U	Vegetation and Wetland Resources	1) The Prince Rupert Port Authority is the federal land manager responsible for the implementation of the Federal Policy on Wetland Conservation for any impacts to wetlands under its custodial administration. Any intertidal or marine wetlands subject to the Policy and on lands (or waters) administered by the Prince Rupert Port Authority, will require wetland function compensation measures consistent with the policy. Any proposed wetland function compensation measure for impacts within the Port's area of administration will require the review and approval of the Prince Rupert Port Authority. Accordingly, these requirements should be referenced in the Wetland Compensation section of the application and any plans for wetland function compensation measures must be submitted to the Port authority for review and approval.	Comment noted. Although changes or additions to the Application cannot be made during the Application review period, the Prince Rupert Port Authority's responsibility as federal land manager with respect to wetland conservation is acknowledged. The detailed wetland compensation plan will include explicit reference to wetlands that are within the Prince Rupert Port Authority's area of administration and will indicate the Port's role in review and approval.
433.1	round 1	PRPA	4.5	Water Quality	2) Any modifications to lands and waters, or any structures or objects constructed, within the administrative boundaries of the Port will require the review and approval of the Prince Rupert Port Authority. This includes the marine terminal, any features proposed at the materials offloading area, as well as the placement of any storm-water or process water discharges into the marine environment.	Comment noted. Aurora LNG will continue to consult with PRPA regarding project activities within the administrative boundaries of the Port. Discharges to the marine environment will meet regulatory and permit requirements.
434.1	round 1	PRPA	Appendix V	Fish Habitat Offsetting Plan	3) Further to point (2) above, the construction or placement of any structures or features related to fish habitat compensation or off-setting measures placed within tidal and subtidal areas under the administration of the Port will require the review and approval of the Prince Rupert Port Authority.	Comment noted.
435.1	round 1	T. Buck Suzuki	4.2	Air Quality	The report IR submission from L.Roth entitled " Issues regarding Air Quality forecasting and Human Health which need to be addressed in the Aurora Application" will be captured in this tracking table as single line item and responded to as a techincal memo.	Please see the "Air Quality Model Assumptions, Datasets and a Comparison to Prince Rupert Airshed Study" technical memo which will be filed with the BC EAO. The "Air Quality Model Assumptions, Datasets and a Comparison to the Prince Rupert Airshed Study" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Air Quality Model Assumptions, Datasets and a Comparison to Prince Rupert Airshed Study."
436.1	round 1	Health Canada	4.4.2	Acoustic Environment	Construction noise that lasts for longer than 1 year is considered long-term construction noise and should be assessed as in the same manner as operational noise (Table 4.4-5) or justification for not doing so provided. For information on assessing the human health impacts of long-term construction noise refer to Health Canada (2016). Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.	In Health Canada (2016) noise guidance Section 6.3.1 "Long-Term Construction Noise Exposure (≥ 1 year)", it suggests that construction noise lasting longer than 1 year be assessed as operational noise. This approach allows for an evaluation of the change in %HA at each receptor. Construction noise effects were quantified by the change in percent highly annoyed (%HA) (EA Table 4.4-14 and Table 4.4.15), and were assessed in the same manner as operational noise (EA Table 4.4-16) at each receptor during the construction phase for both Year 1 and Year 5. The construction noise results were not compared to the BC OGC Permissible Sound Level (PSL) limit because the PSL is only applicable for operation noise
437.1	round 1	Health Canada	4.4.5	Acoustic Environment	The assessment states that LNG shipping will not substantially affect the acoustic environment (pg. 4.4-19). Clarify how tonal sounds associated with nighttime shipping activities (e.g. horns) have been considered with regards to impacts to sleep.	Please refer to the "Sleep Disturbance and Speech Interference" technical memo for an assessment of tonal sound associated with shipping activities. This technical memo will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
438.1	round 1	Health Canada	4	Acoustic Environment	Provide an assessment of helicopter noise during the construction and operations phase of the proposed project. Comparisons can be made to potential impacts on communication, annoyance and sleep disturbance. Where sleep can be expected to occur during daytime hours (e.g. daycares, nursing homes, hospitals), the WHO (1999, 2009) guidelines for preventing adverse impacts on sleep should be applied. World Health Organization (WHO). 1999. Guidelines for Community Noise. Berglund, B., Lindvall, T. & Schwela, D.H (Eds.). Available online at: http://www.who.int/docstore/peh/noise/guidelines2.html World Health Organization (WHO). 2009. Night Noise Guidelines for Europe. Hurtley, C. (Ed). Available online at: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2009/night-noise-guidelines-for-europe	Regular use of helicopters is not planned during the construction or operation phase of the project. The primary use for helicopters during construction and operation phase will be for medical and emergency services. A secondary use would include management visits which would use helicopters for aerial site tours. These site tours would be scheduled during daylight hours. Aircraft noise is federally regulated by Transport Canada. Transport Canada recommends that the Noise Exposure Forecast (NEF) value not exceed 30 in residential areas. NEF values above 25 are likely to produce some level of annoyance, so when feasible, noise reduction practices should be implemented. NEF is the index used by Transport Canada to indicate noise levels from aircraft operations. NEF values can be used to predict future conditions and indicate current or even past conditions. Aircraft noise effects will vary by type of plane, number of planes on arrivals, overflight and takeoff, as well as the speed of planes, flight path, and flight altitude. Project related flights will be expected primarily during the daytime period with the exception of medical emergency flights which could occur at any time. The assessment of aircraft noise is based on the Transport Canada Ninth Edition of TP1247E, Aviation Land Use in the Vicinity of Aerodromes (Transport Canada 2013/14). Operation of the Project related aircraft is expected to follow the guidelines recommended by Transport Canada. A quantitative noise effect assessment of helicopter use during the construction and operation phase is not included in the Application Information Requirements.
439.1	round 1	Health Canada	4.4.5	Acoustic Environment	All project-related noise, including noise related to vehicle traffic and waste management traffic, should be included in the noise assessment (pg. 4.4-23). The large influx of workers (5000 person camp during construction with an anticipated 400 to 700 workers during operations) may appreciably increase traffic noise in the region.	Please refer to the "Road Traffic Noise Assessment" technical memo for the assessment of road traffic noise. The technical memo will be filed with the BC EAO. The "Road Traffic Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017.
440.1	round 1	Health Canada	4.4.5	Acoustic Environment	Provide an assessment of commissioning and start-up activities in the quantitative noise assessment (pg. 4.4-23). This may involve a justification for why these activities were not deemed to result in substantial noise effects.	Commissioning and start-up activities will be short term. Noise emissions from most equipment during commissioning and start-up will be similar to the noise emission level during steady-state operation. The exception will be intermittent flaring events which will be short-term and of variable flow rate. There is no detailed information available to quantify a flaring noise effect during start-up. If technically and safely feasible, these intermittent flaring events will be managed to occur during the daytime period. The noise mitigation measures for construction activity will be applicable during the commissioning and start-up phase as well (Table 4.4-9 of the EA).
441.1	round 1	Health Canada	4.4.5	Acoustic Environment	The proponent incorrectly states that Health Canada does not require the consideration of future projects in the assessment of cumulative effects (pg. 4.4-19). Provide an assessment of the potential cumulative impacts of noise on the LAA if Prince Rupert LNG and Pacific Northwest LNG are approved. Refer to CEAA's website (www.ceaa.gc.ca) for guidance on assessing cumulative effects.	Please refer to the "Cumulative Noise Assessment" technical memo for a cumulative noise assessment. The technical memo will be filed with the BC EAO. The "Cumulative Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
442.1	round 1	Health Canada	4.4.3	Acoustic Environment	Provide the rationale for selecting specific monitoring sites, describing how these sites are representative of worst case locations in terms of the possible impacts associated with project related changes in noise levels (pg. 4.4-14).	M1 (Crippen Cove) and M2 (Dodge Cove) are the closest communities to the Project. Both locations are representative of worst case locations as they are predicted to have the highest noise effect from the Project due to their proximity. The M3 (Casey Cove) location provides information on the acoustic environment in direct view of the Fairview Terminal. M4 (Delusion Bay) and M5 (South Tip of Digby Island) are uninhabited locations along different coastal areas of Digby Island, and provide representative information on the acoustic environment along different coastal areas without land-based residential and commercial activities. In addition, these locations are expected to be quieter than the western coast area of Kaien island (i.e., receptors within or near Prince Rupert) with more human activities. A quieter environment will likely to have a higher noise impact from the Project.
443.1	round 1	Health Canada	4.4.5	Acoustic Environment	The noise assessment only included receptors classified as permanent or seasonal residential dwellings which included 7 out of the 21 receptors (pg. 4.4-35). If the 14 remaining receptors can be considered to be reasonably foreseeable permanent or seasonal residential dwellings, project-related noise impacts on these receptors should be evaluated.	There is no information to indicate development plans for permanent or seasonal residential dwellings at the 14 other locations. In following, the 14 other receptors are not considered to be reasonably foreseeable permanent or seasonal residential dwelling locations so were not assessed.
444.1	round 1	Health Canada	4.4.3	Acoustic Environment	Research has shown that there is a greater expectation for, and value placed on, "peace and quiet" in quiet rural areas, which may be equivalent to up to 10 dB in noise. Unless specified otherwise in an EA, this expectation is assumed by Health Canada to be equivalent to an adjustment of 10 dB (ISO 1996-1:2003). The noise assessment should clearly state if there is an expectation of peace and quiet at any of the noise receptors and make the appropriate +10 dB adjustment in the derivation of the rating level used in the calculation of the change in %HA.	In the Heath Canada (2016) noise guidance, Health Canada considers a "quiet rural area" to be a rural area with Ldn below 45 dBA. The existing sound levels at all noise receptors in the EA (Table 4.4-7) are above the Ldn level of 45 dBA, with the exception of receptor M16 (Mount Hays). At Mount Hays, the +10 dB adjustment has been included in the %HA determination (Acoustic Environment Technical Data Report – Appendix 1, Table 1-8).
445.1	round 1	Health Canada	4.4.3	Acoustic Environment	Sounds that are not generated by human activity (e.g. ocean, wind and animal noises) should not normally be included in determining a baseline sound level (Table 4.4-7). For example, the M5 receptor should have an Lden of 45 dBA. The proponent should correct other values (as appropriate), or clarify the impact of natural sound versus man made noise. See Health Canada (2016) and BC OGC (2009). British Columbia Oil and Gas Commission (BC OGC). 2009. British Columbia Noise Control Best Practices Guideline. March 2009. Fort St. John, BC. Section 2.3.4 Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario	In the BC OGC Noise Guideline, the ambient sound level is defined as the average sound environment without contribution from energy-related industry. Noise effect from the natural environment and other non-energy related activities are considered in the ambient sound level, with the exception of high wind speed (i.e., greater than 15 km/hr or period of rain precipitation). Health Canada (2016) noise guidance recommends that sounds that are not generated by human activity (e.g. ocean, wind and animal noises) should not be included in determining a baseline sound level. In the determination of baseline sound level at all monitoring locations for the Project, audio recordings were reviewed to identify noise sources such as natural sounds (e.g., high wind, rain interacting with natural surfaces) and anthropogenic noise from local activities for each monitoring period. Data that was not representative of day-to-day activity at the monitoring location or measured outside acceptable weather conditions was filtered from the dataset prior to the calculation of averages or other statistics. Precipitation and high wind speed exceeding 15 km/hr are not considered acceptable weather conditions. In the coastal environment, isolation of noise effect from tidal waves is difficult because the noise effect is continuous during both daytime and nighttime periods.
446.1	round 1	Health Canada	4.4.5	Acoustic Environment	The WHO (1999, 2009) thresholds for sleep disturbance and to ANSI (1995) thresholds for moderate perception of vibrations are missing from the "Potential Effects and Measurable Parameters for Acoustic Environment" and should be included and assessed (pg. 4.4-7). American National Standards Institute (ANSI). 1995. Criteria for Evaluating Room Noise (ANSI S12.2-1995 (R1999)). Standards Secretariat Acoustical Society of America. World Health Organization (WHO). 1999. Guidelines for Community Noise. Berglund, B., Lindvall, T. & Schwela, D.H (Eds.). Available online at: http://www.who.int/docstore/peh/noise/guidelines2.html World Health Organization (WHO). 2009. Night Noise Guidelines for Europe. Hurtley, C. (Ed). Available online at: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2009/night-noise-guidelines-for-europe	Please see the "Sleep Disturbance and Speech Interference" technical memo for a discussion on potential sleep disturbance. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Please seethe "Low Frequency Noise Assessment"technical memo for an discussion on potential low frequency noise. The "Low Frequency Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. An errata document and the technical memos will capture these corrections and provide additional information, and they will be filed with the BC EAO.
447.1	round 1	Health Canada	4.4.5	Acoustic Environment	Health Canada suggests that the US EPA's sonic boom criterion be used for blasting that lasts less than one year (i.e., peak overpressure in Pa less than [125 – log(N)] where N is number of events per day) (pg. 4.4-21). See Health Canada (2016) and US EPA (1974). Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario United States Environmental Protection Agency (US EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Report No. 550/9-74-004). Page 27	Blast events are expected to occur once per day (i.e. N = 1). Based on the equation (i.e., 125 – 10logN dB) recommended in the Health Canada noise guideline, the overpressure is not expected to exceed 125 dB. Aurora LNG will implement a blasting plan that will outline maximum explosive charge specifications and other measures that will result in air blast overpressure levels less than the threshold of 125 dB at the closest receptor.
448.1	round 1	Health Canada	4.4.5	Acoustic Environment	The statements "Drill piling will be considered where conditions permit for land-based construction." and "Vibro-hammer piling equipment will be considered for use where conditions permit for marine based piling operations." are vague (Table 4.4-9). Drill piling and Vibro-hammer piling would likely increase impulsive noise levels so it is unclear what mitigation is being suggested. Provide clarification to the meaning of these statements and the specific mitigation measures used to reduce impulsive noise levels.	Piling work will be required for foundation work during marine and land-based construction. Typical piling activities use impact type hammer equipment with sound power level in the order of 120 dBA. Vibratory pile hammers contain a system of counter-rotating weights, powered by hydraulic motors, and designed in such a way that horizontal vibrations cancel out, while vertical vibrations are transmitted into the pile. Vibratory hammer piling equipment is typically quieter than impact type hammer piling equipment. Drill or screw piling are a steel screw-in piling and ground anchoring system used for foundations. Screw piles are installed using various earth moving equipment fitted with rotary hydraulic attachments. In comparison to impact type hammer, drill piling and vibro-hammer piling are quieter options. The geo-technical conditions will determine the most suitable piling methods and, as outlined in mitigation measures 4.4.2 and 4.4.3, where conditions permit the quieter piling options will be used. As per mitigation measure 4.4.1, high noise effect activities such as pile driving will be undertaken during daytime hours.

449.1	round 1	Health Canada	4.4.5	Acoustic Environment	Construction noise impacts on sleep are likely at any receptor where the Lnight value already exceeds 40 Lnight and there is a perceptible increase in nighttime noise levels due to project activities. Propose additional noise mitigation measures to reduce project-related impacts on sleep for receptors where the Lnight value already exceeds 40 Lnight and there will be a perceptible increase in nighttime noise levels (pg. 4.4-37, 4.4-38, 4.4-39, 4.4-49, 4.4-50).	Please see the "Sleep Disturbance and Speech Interference" technical memo for additional information on potential project-related impacts on sleep for receptors. The technical memo will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
450.1	round 1	Health Canada	4.4.5	Acoustic Environment	The ANSI 65 dB rattle criterion can be exceeded in the 16 Hz Octave band when C-weighted levels are as low as 52.3 dBC (i.e., for an 11.3 Hz tone). Health Canada recommends a 70 dB criterion, which would correspond to 57.3 dBC (pg. 4.4-41, 4.4-42, 4.4-43). Propose additional mitigation measures to reduce low frequency noise below 57.3 dBC or justification why this is not needed. See IEC (2003) and ANSI (2005). American National Standards Institute (ANSI). 2005. Quantities and Procedures for Description and Measurement of Environmental Sound Part 4: Noise Assessment and Prediction of Long-Term Community Response. International Electrotechnical Commission (IEC) 2012 Electroacoustics – Sound level meters – Part 1: Specifications (IEC 61672-1) GenevaAnnex E.2	Please see the "Low Frequency Noise Assessment" technical memo for a discussion on potential low frequency noise. An errata document and the technical memo will capture these corrections and provide additional information, and they will be filed with the BC EAO. The "Low Frequency Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
451.1	round 1	Health Canada	4.4.5	Acoustic Environment	There is no indication of whether the follow-up plan includes a noise monitoring plan with a commitment to mitigate noise levels should monitoring reveal that predicted construction and/or operational noise levels are exceeded at any receptors (current and reasonably foreseeable) (pg. 4.4-19). Provide a noise monitoring plan with potential mitigation measures in the Noise Management Plan.	The Noise Management Plan will include a monitoring plan that includes the following elements: Noise monitoring at the closest receptor during construction and operation; Vibration monitoring at the closest receptor during construction; If these monitoring results indicate that noise levels exceed allowable limits, mitigation measures presented in the Application (Table 4.4-9, Items 4.4.1 to 4.4.11 and Table 4.4-25, Items 4.4-12 and 4.4-13) will be implemented; If additional noise mitigation measures are required during construction, Aurora LNG will consider the noise mitigation measures recommended in Appendix H of the Health Canada (2016) guideline. Aurora LNG will engage with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) and key stakeholders regarding the development of this plan.
452.1	round 1	Health Canada	4.4.5	Acoustic Environment	Mitigation measures for construction noise are missing (pg. 4.4-11). Refer to the list of commonly applied construction noise mitigation measures and considerations for noise reduction in Appendix H of Health Canada (2016).	The mitigation measures for construction noise are summarized in Table 4.4-9 of the Application.
453.1	round 1	Health Canada	8.2.2	Human Health	Aurora LNG is committed to incorporating information from the Lax Kw'alaams Band Aboriginal Interest and Use Study into a supplemental filing to the Application (pg. 8-6). Health Canada notes that this information may require the risks to human health to be reassessed.	A review of the Lax Kw'alaams Aboriginal Interest and Use Study (AIUS) did not identify food consumption rates that could be applied in the human health risk assessment (Appendix R) for the human health valued component. Although the AIUS identified aquatic resources used for food (i.e., various trout and salmon species), these species are either freshwater fish or they are pelagic (i.e., live in the open ocean) and do not live near the sediment. The proponent recognizes the traditional and cultural importance of these foods to Lax Kw'alaams. With regard to the assessment related to marine foods, these other species are not suitable indicators of the potential effects of dredging to marine foods.
454.1	round 1	Health Canada	Appendix A	Air Quality	Reduced sulphur compounds were excluded from the air quality assessment primarily based on literature for other LNG projects (Appendix A, pg. 5). Provide information on how Aurora LNG operations are comparable (including volume of operations and factors such as the distance between the operations and potentially impacted populations). Regarding comparison to Kitimat, although this location shares similar topography and meteorology with Prince Rupert, the existing LNG facility is small in scale compared to the proposed Aurora LNG facility, and the proponent has not made a case for why this comparison is appropriate.	The air quality dispersion model assumed that all reduced sulphur compounds are directed to the thermal oxidizer and converted to sulphur dioxide. The dispersion model results for sulphur dioxide account for the potential reduced sulphur compounds.
455.1	round 1	Health Canada	Appendix A	Air Quality	Provide a discussion of project-related emissions of VOCs in general, as well as pollutants contained specifically in diesel exhaust (missing), and their predicted health effects (Appendix A, pg. 5). The emissions provided for VOCs in the Application case (in tonnes per year) are not comparable to air quality objectives and guidelines, which require ground-level concentrations for comparison as an indicator of inhalation exposure level. Although there are no Canadian or BC objectives for total VOCs, there are health-based guidelines for individual VOCs. Source characterization should be used to identify what individual VOCs (e.g., acetaldehyde, acetone, acrolein, benzene, butadiene, butoxyethanol, chlorobenzene, chloroform, cyclohexane, methylene chloride, ethanol, ethylbenzene, ethylene dibromide, ethylene dichloride, formaldehyde, etc.) are expected to be released by pipeline operations. Diesel emissions consist of nitrogen oxides and carbon monoxide--which were modelled--but also include formaldehyde, acetaldehyde, benzene, polycyclic aromatic hydrocarbons and nitro-polycyclic aromatic hydrocarbons, which were not modelled (http://www.hc-sc.gc.ca/ewh-semt/air/out-ext/sources/fuels-carburants-eng.php).	Refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Potential VOC emissions released by pipeline operations are not within the scope of the Environmental Assessment for the Project.
456.1	round 1	Health Canada	8.2.3	Human Health	Given the small sample size and different sampling locations for clam and crab data, a rationale for why the 95% UCLM, as opposed to the maximum, is an appropriate statistic to characterize the COPC concentrations in edible tissue should be provided (pg. 8-31).	Aurora LNG acknowledges that the application of the maximum concentration would apply for samples sizes fewer than 15 and notes that the maximum concentration should be used instead of the 95% UCLM. Refer to the document titled, "Supplemental Information for Traditional Marine Foods" which will be filed with the BC EAO. This memo will include revised risk estimates (i.e., hazard quotients) when applying the maximum concentration of chemicals of concern from tissue samples of marine foods. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
457.1	round 1	Health Canada	8.2.5	Human Health	Provide rationale as to why the maximum calculated concentrations of COPCs in air were not included in the grid points selected for the human receptor locations (pg. 8-16).	The assessment of human health related to air quality applies air modelling results that are analyzed using the same statistical metric as those in the BC Ambient Air Quality Objectives. For example, the modelled concentrations of nitrogen dioxide are based on the annual 98th percentile of daily 1-hour maximum concentrations, over one year. The maximum calculated concentration of a COPC at any given hour is not comparable to the BC Ambient Air Quality Objectives. It is also a poor indicator of the potential health risk. For example, in the case of 1-hour nitrogen dioxide, the maximum concentration would represent a single hour (i.e., 0.01% of the year) within the 8,760 hours in a year (i.e. 365 days per year x 24 hours per day). As part of the committments made in the April 19, 2017 working group meeting, Aurora LNG has committed to providing map locations for 1-hour nitrogen dioxide concentrations. For this information, refer to the document titled, "Maximum Points of Impingement for 1-hour Nitrogen Dioxide Concentrations", which will be filed with the BC EAO.
458.1	round 1	Health Canada	Appendix R	Human Health	Health Canada recognises that NO2 and PM are non-threshold contaminants (health effects may be experienced at any level of exposure), and should be discussed as residual effects (Appendix R, pg. 22).	Appendix R- Human Health Technical Data Report, pg.22, provides a general description of the potential adverse effects from inhalation exposure to nitrogen dioxide and particulate matter. Although the proponent acknowledges that nitrogen dioxide and particulate matter are considered non-threshold contaminants by Health Canada, the description of the potential health effects from inhaling these substances remains valid at all levels of exposure. While regulatory authorities consider PM2.5 and nitrogen dioxide to be non-threshold toxicants, dose-response curves have not been developed for either of these compounds. In the absence of such dose-response relationships, the assessment of potential health effects associated with inhalation of PM2.5 and nitrogen dioxide has to be based on comparisons of the modeled exposures with the established human health-based ambient air quality objectives appropriate for use in the Province of British Columbia. Exposures (Concentration Ratios) that are below these human health-based ambient air quality objectives represent a negligible human health risk in exactly the same manner that incremental lifetime cancer risks below the 0.00001 risk acceptability benchmark represent negligible increases in lifetime cancer risk.
459.1	round 1	Health Canada	Appendix R	Human Health	Exposure to PCDD/F contaminated sediment disposed of on land should be included in the HHRA (pg. 8-38). It will be important to understand how the design of the containment facility and permit conditions will prevent and/or minimize human and country food exposures to potentially contaminated drainage water and dredged sediments. Transportation of material to the disposal facility should also be considered.	Aurora LNG is committed to managing sediments disposed on land in a manner that will reduce potential adverse effects to the extent reasonable. However, the proponent rejects Health Canada's statement that sediments in the proposed dredge area are contaminated with dioxins and furans (PCDD/F). PCDD/Fs are produced by both natural and man-made processes and atmospheric transfer and deposition reaches most environments. Sediments along the Pacific coast may contain traces of PCDD/Fs, but the levels found in the proposed dredge footprint do not indicate a level that would constitute contamination. Consider the following: 1. The maximum concentration of PCDD/F in the sediment was 2.86 picograms per gram of sediment, based on mammalian toxic equivalency (pg-TEQ/g). The Disposal at Sea guideline for PCDD/F is 9 pg-TEQ/g. Sediments meet the criteria for disposal at sea. However, sediments cannot be disposed at the proposed location of Brown Passage because the disposal site is classified as "dispersive" while the guideline applies to "non-dispersive" sites. 2. The BC Contaminated Sites Regulations for PCDD/Fs in sediment for marine and estuarine waters are: - Sensitive Contaminated Site - 130 pg-TEQ/g - Typical Contaminated Site - 260 pg-TEQ/g http://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/policies-and-standards/sed_criteria_tech_app.pdf 3. When sediments are disposed on land, they are managed as soils. The BC Contaminated Sites Regulations for PCDD/Fs in soil are: - Agriculutral/Parkland/Residential Land - 350 pg-TEQ/g - Commercial Land Use - 1,000 pg-TEQ/g - Industrial Land Use - 70,000 pg-TEQ/g http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/375_96_07 4. The BC Contaminated Sites Regulations - Schedule 7 for soil relocation to non-agricultural land for PCDD/Fs are: - 350 pg-TEQ/g http://www.bclaws.ca/civix/document/id/loo78/loo78/375_96_09 5. The Canadian Food Inspection Agency dioxin limit for all fish products is 20 parts per trillion (ppt), measured as TEQ. In comparison, the dioxin concentrations in sampled marine foods were: - Dungeness crab meat - 0.273 ppt - Dungeness crab hepatopancreas - 1.4 ppt - Clam - 0.811 ppt http://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/text-texte/fish_man_standardsmethods_appendix3_1406403090196_eng.pdf
460.1	round 1	Health Canada	8.2.5	Human Health	Without actual assessment it may be unfounded to state that "People harvesting and consuming marine foods winthin 1.0 km from the dredge footprint at Frederick Point and Casey Cover may experience minor improvements in the quality of their marine foods due to the removal of sediments that currently contain PCDD/Fs." (pg. 8-36).	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
461.1	round 1	Health Canada	8.2.2	Human Health	Concentration ratios (CRs), or hazard quotients (HQs) are not regulatory limits, but are thresholds meant to be used as a decision aid. When every possible source of exposure is included in the estimate, it makes sense to interpret a decision threshold <1 as meaning that the total exposure is less than the health-based guideline, as is the case with CRs in this Assessment. Health Canada's guidance for contaminated sites indicates using a ratio of 0.2 as a decision threshold when all sources are not included in the estimate, as is the case for HQs in this Assessment. If the baseline HQ or CR exceeds the decision threshold (i.e., CR > 1, HQ > 0.2), Health Canada does not support adding 0.2 to the baseline CR/HQ ratio to create a new decision threshold (pg. 8-16). Instead, it is a decision flag, indicating that a more detailed analysis of exposure may be required to confirm whether more accurately estimated exposure levels will be above or below associated guidelines.	Comment noted. The application of adding 0.2 to the baseline CR/HQ was made following comments from the Ministry of Health. The Ministry of Health has commented in working group meetings that the project's contribution to health risk should not exceed 20% (i.e., a CR or HQ of 0.2) of the applicable regulatory guideline.
462.1	round 1	Health Canada	8.2.9	Human Health	Follow-up and Monitoring (pg. 8-51). HC advises implementing continuous air quality monitoring, at locations relevant to human receptors, to verify project predictions and to allow for future adaptive management should there be any unanticipated exceedances of CACs (including VOCs). Similarly, HC advises monitoring PCDD/F, metals, PAHs etc. in sediment post-dredging, and if exceedances are noted, monitoring of marine country foods should be considered.	Comment noted.
463.1	round 1	Health Canada	Appendix A	Air Quality	All applicable NAAQS were not presented in Table 2 (Appendix A, pg. 7). Provide a rationale for including or excluding air quality objectives. Where Canadian federal standards are not available, information from other jurisdictions (e.g., US EPA) should be considered).	Table 2 (Page 7: Appendix A of the Application) presents a summary of the British Columbia and Canadian air quality objectives (AQO) and standards for the criteria air contaminants that were modelled (SO2, NO2, CO, PM10 and PM2.5). The list of AQO presented in the Table does include all BC AQO and NAAQO values that were available at the time of the assessment. The only exceptions are cases where the BC AQO was more stringent (i.e., lower than) the NAAQO; in that case, only the BC AQO is included in the table. The AQO presented in Table 2 provide a comprehensive set of criteria for the purpose of evaluating effects on air quality. It is not necessary to consider air quality standards from other jurisdictions such as the U.S.EPA when standards set by the Province of British Columbia and government of Canada already exist.

464.1	round 1	Health Canada	Appendix R	Human Health	New CAAQS were announced in October 2016, since it will take time to build the project and it is expected to be in operation for at least 25 years, a discussion should be included in the assessment as to how the 2025 CAAQS would effect the HHRA Assessment (e.g., TRVs).	The new Canadian Ambient Air Quality Standards (CAAQS) apply to new air management decisions beginning January 1st, 2017. The Environmental Assessment for the Project was submitted before this date and the assessment applied the objectives that were applicable at that time. However, a comparison of the new CAAQS relative to the modelled concentrations in the Cumulative Effects Assessment Case (CEA Case) indicates that the health risk would still be less than the significance threshold at the human receptor locations on Digby Island, Prince Rupert, Port Edward and Metlakatla Village. For example, the new CAAQS for 1-hour SO2 is 183 ug/m3. The BC ambient air quality objective for 1-hour SO2 in the Application was 200 ug/m3, which was subsequently revised to the interim BC ambient air quality objective of 196 ug/m3 in December 2016. In comparison, the Human Health Technical Data Report (Appendix R, Table 5) indicates that the range of 99th percentile 1-hour SO2 concentration among the human receptor locations (for the CEA Case) would be 18.0 ug/m3 (at Georgetown Mills), 57.4 ug/m3 (at Dodge Cove), 38.9 ug/m3 (at Metlakatla Village), 44.7 ug/m3 (at Port Edward), 40.0 ug/m3 (at Prince Rupert), and 73.4 ug/m3 (at the worker camp within the PDA). The modelled concentrations are below the BC ambient air quality objective and the new CAAQS. This would result in the same conclusion regarding health risk (i.e., no significant changes in human health from air quality). When the new CAAQS is applied for annual SO2 concentrations, the same conclusion is found.
465.1	round 1	Health Canada	Appendix R	Human Health	Laboratory analytical reports for marine food (Appendix R, pg. 7) list data for samples of clam meat but the crab sample data is not presented. The report indicates 10 crabs were collected and data should be provided for legs and hepatopancreata.	Comment noted. An laboratory data has been included in the technical memo titled, "Supplemental Information for Traditional Marine Foods" in Attachment 3, which has been filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
466.1	round 1	Health Canada	Appendix R	Human Health	Daily consumption rates used in the Assessment are much less conservative (toddler 0.002477 kg/d, adult 0.00527 kg/d) than the Health Canada consumption rates (toddler 0.085 kg/d, adult 0.279 kg/d). The more conservative Health Canada consumption rates should be used in the HHRA. Provide a detailed rationale as to why the selected consumption rates are representative of human receptors in the area, this may include confirmation of the proposed rates from local indigenous groups.	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
467.1	round 1	Health Canada	Appendix R	Human Health	Provide a reflection of COPC intake from all food sources. For example, results for PCDD/F from crab meat, crab hepatopancreas and clam meat should be summed for both toddlers and adults (Appendix R, pg. 41). It is noted that the equation in Appendix R, Section 6.2.1 is a dose or exposure estimate for the ingestion of marine harvested food not an estimated daily intake. An EDI by definition is an estimate of exposure from all known or suspected sources via a multimedia exposure, whereas this equation only looks at one exposure pathway (i.e., consumption of marine harvested foods). Canadian Council of Ministers for the Environment (CCME). 2006. A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines.	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
468.1	round 1	Health Canada	Appendix R	Human Health	Appendix R presents an incomplete/unfinished phrase in the Executive Summary (penultimate paragraph: "Although concerns were expressed that Project activities could adversely affect drinking water supplies, a detailed review determined that these pathways were inoperable because"). Please complete the phrase.	Aurora LNG acknowledges this error and will capture the following information in an eratum to complete this paragraph "Although concerns were expressed that Project activities could adversely affect drinking water supplies, a detailed review determined that these pathways were inoperable because the types or magnitude of predicted changes to drinking water quality are negligible. Changes in water pH at the Dodge Cove drinking water reservoir were predicted to be lowered by 0.26 pH units. The Canadian drinking water guidelines for pH are operational guidelines applicable to treated water in order to prevent scale deposits (at high pH) and pipe corrosion (at low pH). Water pH has no direct influence on health. Nitrate concentration in the Dodge Cove drinking water reservoir was predicted to be 0.7 mg/L, which is below the Canadian drinking water guideline of 45 mg/L. There would be no significant changes to the chemical composition of water that would affect human health. With regards to eutrophication from nitrogen deposition, nitrogen is one of many factors that are required for eutrophication to occur. Other factors include high levels of phosphate and dissolved oxygen. In freshwater systems such as those on Digby Island and the Dodge Cove drinking water reservoir, phosphate is the limiting nutrient that prevents eutrophication from occurring, while nitrogen is comparatively abundant. Water quality testing during baseline studies indicate that the Dodge Cove drinking water reservoir is low in phosphate concentration and the Project does not contribute to phosphates in the environment.The potential for eutrophication would be limited by the availability of phosphates in the water. For drinking water sources that are more distant from the Project (e.g., municipal waters of Prince Rupert, Port Edward, and surface waters used by residents of Crippen Cove, and Metlakatla Village), the potential changes in water quality would be of a lower magnitude compared to the Dodge Cove drinking water reservoir. Therefore, the types and magnitude of changes to drinking water quality are inoperable as they relate to human health." An errata document is being created that will capture the information above and it will be filed with the BC EAO.
469.1	round 1	Lax Kw'alaams Band	1.3.1 Land Use	Proposed Project Overview	According to the AIR (p. 1-5), section 1.3 is requried to "provide maps showing location of relevant land uses in relation to the proposed Project." The maps in this section do not show management areas identified by Indigenous groups in their land use plans. While indigenous land use plans are summarized, their overlap with the PDA is not visually presented. In previous screening comments, LKFN had already noted that the Application currently is missing a map representing LKFN land the Project area. This gap needs to be addressed.	As identified by the commentor, Indigenous land use plans are summarized in Section 1.3 of the Application. However, these plans are not visually presented on maps due to data limitations. With respect to the Interim Land and Marine Resource Plan of the Allied Tsimshian Tribes of Lax Kw'alaams (Lax Kw'alaams 2004; which is referenced in Section 1.3), at the time of Application writing Aurora LNG did not have access to digital geospatial data and the digitization of the figures provided in Lax Kw'alaams 2004 was not attempted as the margin of error in reproducing these figures was deemed too great.
470.1	round 1	Lax Kw'alaams Band	1.2.5 Project Components 1.7 Alternative Means of Undertaking the Proposed Project	Proposed Project Overview	As raised in Lax Kw'alaams November 29, 2016 screening comments (#4,6,7,8,10,12,13,22, etc.), January 23-24, 2017 meeting with Nexen, and the February 6-7, 2017 Working Group meeting, Lax Kw'alaams is deeply concerned with a very large number of gaps in project components, activities, and their alternatives that remain in the Application. These gaps must be filled as a priority so that any resulting site-specific effects may assessed with direct input from community members and leadership. The following project design options that have yet to be defined must be presented to Lax Kw'alaams, along with the general suite of factors that are being weighed in the design process (e.g. engineering feasibility, cost, intersection with fish habitat or archaeological values, current use, marine navigation, etc.) in order of priority: • Feasible disposal at sea location options (more details provided below); • Jetty design and location options; • Final marine offloading facility (MOF) design and location options; • Floating camp, construction and operations camp design and location options; • Transmission line locations, associated facilities, and alternative feasible power generation options; • Access road routing and options; • Pipeline landfall and delivery station design and options (see comment below); • Mass balance information and the range of potential scenarios; and, • Flare height options being considered. COMMENT CONTINUED BELOW...	The Alternative Means of undertaking the proposed project can be found in Section 1.7 of the application and was conducted and scoped in accordance with Section 1.6 of the AIR. It should be noted that the site layout and equipment list will be further refined as the Project progresses through front end engineering design (FEED) and in consideration of potential areas of environmental and archaeological concern. However, the extent of the on-land development is expected to remain within the currently defined PDA unless the EA review process identifies necessary changes. During the FEED process, there may be opportunities to reduce the areas of disturbance within the PDA to either avoid sites of interest or reduce extent of land clearing. For the current disposal at sea location options, please see section 1.7.5 of the Application. The currently proposed dredgate disposal options are Brown Passage and/or on land disposal. The Jetty design and location evaluation can be found in section 1.7.4 of the Application. See Section 1.2.5.3 of the Application for the marine offloading facility options being considered. The alternatives to the LNG facility orientations can be found in Section 1.7.3 of the Application. This includes the location of the flare stack, work camp, and LNG trains. Please see Section 1.7.3 for a discussion of the construction camp and also see the separate "Floating Camp Review" technical memo which will be filed with the BC EAO. Alternatives to the facility power supply for the project can be found in Section 1.7.1 of the Application. As noted in the Application and subsequent working group meetings, discussions with BC Hydro are ongoing to determine if grid power for some portion of the facility power is technically and economically feasible. Alternatives to the facility access road route can be found in Section 1.7.6. As discussed in working group meetings, the actual access road corridor is expected to be a small portion of the current PDA study area. Flare options are reviewed within Section 1.7.7 of the Application. Pipeline landfall and mass balance information falls outside the scope of the Alternative Means of Undertaking the Proposed Project. Aurora LNG looks forward to continued discussions with Lax Kw'alaams on the Project
471.1	round 1	Lax Kw'alaams Band	1.2.5 Project Components 1.7 Alternative Means of Undertaking the Proposed Project	Proposed Project Overview	While Section 1.7 of the Application provides some very simplistic analysis of alternatives, Section 1.6 of the Application Information Requirements (AIR) asks that the Application include details on the alternatives, an evaluation using (at minimum) feedback from Aboriginal groups and reducing adverse effects on environmental and heritage resources, and any environmental effects of each alternative "with specific reference to section 5 of CEAA 2012" (p.1-11). Despite this requirement and Lax Kw'alaams' request for this information as described above, Lax Kw'alaams was not presented with any details on options for the above components to provide input on. Critically, Lax Kw'alaams requires this priority information to focus our data collection and analysis efforts to identify site-specific Lax Kw'alaams-specific values in relation to Nexen project design options so we may provide information to Nexen and inform: (a) Nexen's project design work to ensure Nexen will select less impactful design options; (b) Effects analysis for key, site-specific valued components that may overlap with one or more design options, including assessment required for finalization of the Supplemental Filing due on Day 90 of the EAO process; and, (c) Relevant mitigation measures for one or more of the design options, designed after effects in (b), above, are identified and verified in a community workshop setting.	Alternatives to the Project are provided in detail in Section 1.7 (Proposed Project Overview) of the Application. The level of detail provided within this section is consistent with similar applications and with the Application Information Requirements (AIR) and Valued Components Selection Document, Section 1.6. As per the AIR, one of the review criteria included the evaluation of the alternative means of undertaking the Project with respect to the reduction of adverse effects on environmental and heritage resources. On December 2, 2015, Aurora LNG held the first technical workshop with Lax Kw'alaams Band and other Aboriginal Groups. The purpose of that workshop was to identify and scope key issues of concern to Aboriginal Groups. At that workshop, Aurora LNG presented information on several different topics, including the facility power requirements, cooling options, labour camp options, shipping routes and alternate routes. On March 16-17 2016, Aurora LNG held the second technical workshop, with Lax Kw'alaams Band and other Aboriginal Groups. The workshop began with an aerial tour of the proposed site location and surrounding region, and was followed by a review of the currently proposed site layout and a discussion of the outstanding design questions. The workshop included presentations from Aurora LNG on a variety of Project components, including: power generation, flare options, sediment disposal options, worker camps, storm-water run-off, water management options for plant and power generation, and marine and freshwater offsetting options. On January 23-24 2017, Aurora LNG held a two-day workshop (Workshop #4) with Lax Kw'alaams Band to review and discuss the results of the Part B VC assessments in the Application and solicit input on mitigation measures from Lax Kw'alaams Band. At that workshop, Aurora LNG also presented up-to-date information about Project planning and design. Lax Kw'alaams Band contributed to a discussion about various elements of the design of the Project. On March 21-22 2017, Aurora LNG held a workshop (#5) with Lax Kw'alaams Band to review and discuss the results of the CEAA 5(1)(c) and Part C sections of the Application. A key objective of that meeting was to solicit feedback on mitigation measures related to those sections of the Application. Aurora LNG is currently reviewing specific feedback on proposed mitigation measures received from Aboriginal Groups during Technical Workshops #4 and #5 and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90. Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band focusing on the CEAA Section 5(1)(c) assessment and Part C of the Application. The purpose of the Supplemental Report is to collaboratively determine if changes are required to the conclusions of the Application resulting from new information provided by Lax Kw'alaams Band in its AIUS and SEIS submitted to Aurora LNG during the Application-review phase of the environmental assessment. The Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. Aurora LNG is committed to ongoing consultation with the Lax Kw'alaams Band and to discussion of mitigation measures and alternatives during the preparation of the Lax Kw'alaams Supplemental Report.
472.1	round 1	Lax Kw'alaams Band	1.2.5 Project Components 1.7 Alternative Means of Undertaking the Proposed Project	Proposed Project Overview	The Application Information Requirements (AIR) ask Nexen to present assessment of alternative locations for disposal at sea. Nexen is aware that Brown's Passage has not been used for any substantial disposal event since the late 1980s and is an important area for Lax Kw'alaams and others. Despite this, the Application assesses Brown's Passage as the Application case. Lax Kw'alaams disagrees with the selection of Brown's Passage and has asked Nexen to identify potential alternative sites to identify and present to Lax Kw'alaams for re-assessment, using a set of criteria agreed upon with Lax Kw'alaams. On February 7, 2017 at the EAO Working Group Meeting #1, Environment Canada and Climate Change (ECCC) stated that Nexen needed to include an alternatives analysis within the EA process, highlighting the fact that cumulative effects are not addressed in the post-EA permitting process required under the Canadian Environmental Protection Act. This comment was echoed by the Department of Fisheries and Oceans (DFO). Regulators had hoped that Nexen would have met with First Nations to identify and discuss alternative options prior to filing the Application. Nexen must work directly with Lax Kw'alaams, with federal regulators (including ECCC, DFO, and CEAA), to identify alternative disposal at sea locations and conduct an impact analysis on each of these sites, assessing for environmental, heritage, and traditional use effects. Lax Kw'alaams asks that the results of this work be provided to the Working Group by Day 70 so there is sufficient time for Lax Kw'alaams to consider the options in updating the Supplemental Filing due to the EAO by Day 90.	The Application Information Requirements (AIR) document for the Aurora LNG Project committed Aurora LNG to assessing potential effects associated with dredging and disposal at sea activities (see Table 3-7 of the AIR). A requirement to assess alternative sites for disposal at sea was not included in the final AIR. Aurora LNG acknowledges comments made by Aboriginal Groups, including Lax Kw'alaams, regarding the selection of Brown Passage as a disposal at sea location for the Project. Aurora LNG also acknowledges comments made during the Working Group meeting on February 7, 2017 by ECCC and DFO on the topic of disposal at sea and disposal site alternatives. In following, a workshop was scheduled by the BC EAO for Friday April 28, 2017 to discuss potential alternative disposal at sea sites for the Aurora LNG project. Various regulators and Aboriginal Groups including Lax Kw'alaams attended this workshop. The technical memo "Analysis of Alternative Locations for Disposal at Sea", which addresses the issues raised in the workshop and outlines possible alternative disposal at sea sites, will be filed with the BC EAO.
473.1	round 1	Lax Kw'alaams Band	1.2.5 Project Components	Proposed Project Overview	Information regarding the location of the natural gas pipeline that will feed the LNG facility, as well as its intersects with both the PDA and Lax Kw'alaams marine- and land-based values, is entirely missing from the Application. This information is critical to understanding both project and cumulative effects lon this important biophysical and harvesting area for Lax Kw'alaams. For example, it was critical during the Pacific Northwest LNG EA that the location, nature and effects contribution of the Prince Rupert Gas Transmission Pipeline Project was well established and integrated into examinations of effects of that proposed Project. Please provide a description of where the pipeline is expected to intersect with the PDA and Lax Kw'alaams' values, or a range of potential options, as well as potential failure modes and assessment of accidents and malfunctions.	In accordance with the Section 11 Order (as amended), the scope of the Project for the purpose of the environmental assessment does not include transportation of natural gas to the LNG facility, which is anticipated to be provided by a third party owned pipeline. The third-party pipeline provider is yet to be determined.
474.1	round 1	Lax Kw'alaams Band	1.2.2 Project Location	Proposed Project Overview	Figure 1-2: Marine shallow water and deep water outfalls are included in the legend but don't appear on the map itself. Please indicate location of these marine outfalls.	The marine shallow water and deep water outfalls appear on Figure 1-2; the shallow water outfall is shown west of Frederick Point, and the deep water outfall is shown east of Charles Point.
475.1	round 1	Lax Kw'alaams Band	1.2.2 Project Location	Proposed Project Overview	Figure 1-2: Please provide conceptual layout of project components at yearly intervals through the construction phase of the project showing project development and areas of progressive reclamation, in plan and profile view (i.e., permanent and temporary project components and progressive reclamation figure(s) for years 2020-2026). Please consider use of larger scale figures.	As outlined in Section 1.2.4 of the Application, Project construction is anticipated to occur in phases, the timing of which will depend on a variety of factors including, but not limited to, LNG market conditions, Project conditions, and labour market. Given the uncertainty in the phasing of construction, the details required to support development of the requested figure are not available at this time. The application has been conservative in considering potential effects of the full build-out scenario with development of the extent of the Project Development Area (PDA).

476.1	round 1	Lax Kw'alaams Band	1.2.8 Decomissioning Activities	Proposed Project Overview	As per Screening comment #8 in Table 1b, the Proponent states that MOF and marine terminals will either remain in place or be decommissioned and final decision will take place at the time of plant decommissioning with PRPA. It is crucial that this information be provided for understanding effects on marine environment and is done in direct consultation with Lax Kw'alaams. Such activities have a direct effect on Lax Kw'alaams rights and interests. To address this concern, please update the Decommissioning and Abandonment Plan so it provides sufficient details on the most likely scenario that will take place and the likely factors Nexen will take into consideration when at this stage in the project. Ensure that the plan include specific steps and criteria that Nexen expects to be used (subject to change to accommodate for future regulatory changes), including: - Specific plans for involving Lax Kw'alaams in all steps of the decommissioning and abandonment process, including plans for reclamation and restoration of the marine environment.	The details related to decommissioning are not available at this time. As outlined in section 1.2.8 of the Application, decommissioning requirements are addressed at a preliminary level. At the end of the Project's operational life, a decommissioning and abandonment plan will be developed to meet the regulatory requirements in effect at that time. This plan will be developed in consultation with potentially affected Aboriginal Groups and the relevant regulatory agencies.
477.1	round 1	Lax Kw'alaams Band	1.2.9.1 Site Selection 1.2.9.3 Feedback from Government Agencies, Aboriginal Groups, Stakeholders and the General Public	Proposed Project Overview	Aurora LNG describes a number of features that were avoided in the siting of the project. For example Sections 1.2.9.1 and 1.2.9.3 states that heritage sites, including ancient village sites, have been avoided. Please provide site drawings that depict siting of project components in relation to avoided features, including buffers and mitigation notes. Section 1.5.1.4 also indicates that a number of heritage sites have been identified and avoided - please ensure all protected and unprotected heritage features are included on the requested drawings. Please also list the total number avoided and total number not avoided to ensure we can evaluate the effectiveness of the mitigation measure.	Aurora LNG has incorporated a buffer that avoids some coastal and riparian areas within the PDA (Figures 7-1, 7-2 of the Application). While this avoids a large number of significant archaeological and heritage resources in the PDA (i.e. buffer and site boundaries overlap spatially) it is recognized that once final Project design is complete, site-specific mitigation measures will need to be established so that measures designed to allow for site avoidance will be effective for both direct impact as well as indirect impacts such as potential for erosion. Site-specific mitigation plans are not provided nor been evaluated as detailed Project engineering continues to advance. However, as mitigation measures will be determined in consultation with appropriate regulatory agencies and potentially affected Aboriginal Groups, and inspection is planned during construction, the success of the approved mitigation measures is predicted to be high.
478.1	round 1	Lax Kw'alaams Band	1.4.4.1 Construction (Employment)	Proposed Project Overview	Section 1.4.4.1 states that only 5% of the direct construction workforce will come from the local area. *Please clarify why this expectation is so low and what the Proponent is doing to prepare the Lax Kw'alaams workforce so they can take fuller advantage of the Project, including timelines and level of commitment, and programs supporting to make sure Coast Tsimshian are job ready.* Section 1.4.4.2 does not provide an estimate of operational workforce composition from the local area. P*lease provide similar discussion to address operational workforce.*	The estimate of 5% of the direct construction workforce coming from the local area is based on the relatively small size of the workforce within local communities in comparison to the Project requirements (peak construction workforce of 5,000 persons). Please see Section 5.2.5.1 for further discussion and analysis of Project effects on labour availability. Mitigation 5.2.5 indicates that Aurora LNG will "Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation." It is too early for Aurora LNG to estimate the composition of the operations workforce from the local area. This will depend on the extent to which individuals from local communities are qualified for and interested to take on Project operational roles. As indicated in Mitigation 5.2.5, Aurora LNG will work with Aboriginal Groups and local communities to increase opportunities for community members to obtain the necessary training for potential Project employment.
479.1	round 1	Lax Kw'alaams Band	3.7.1 Project and Physical Activities Inclusion List	Assessment Methods	Figure 3-1 does not include marine activities and traffic. Please provide an additional figure that depicts the location of marine activities, including marine transportation routes and approximate volumes, ship types.	Figure 6.5-13 (Section 6.5: Marine Use and Navigable Waters) depicts marine transportation routes, including cruise ship, ferry and recreational boating routes. Section 6.5.3 of the Application provides information on existing conditions related to marine activities, including approximate ship numbers and types.
480.1	round 1	Lax Kw'alaams Band		Air Quality	Building upon Screening comment #31 and comments raised in January 23-24 meetings with Nexen where Lax Kw'alaams and Metlakatla raised concerns regarding gap in considering odour from marine vessels in air quality assessment. Specifically, the five-year construction window is likely to result in increased adverse odours especially around Kaein Island and MOF. This is a long-term, five year period that will pose both project-specific and cumulative impacts. It is clear that this effect was not considered in the model that focused exclusively on the facility during operations, nor what the magnitude of effect on marine users will be as a result of this five-year construction period. Please add marine user receptor(s) to air quality model and summarise likely effects on these receptors in relation to perceptible changes in odour. This information will be needed to feed into the Supplemental Filing to be co-drafted with Nexen. Please provide addiitonal information to inform the Supplemental Filing well in advance of Day 90.	Odour is not associated with marine vessels used during construction or operations, except for some very minor smells associated with fugitive emissions of marine fuel oil (machinery and tank vents). Previous studies that have modelled marine vessel emissions (i.e. Pacific NorthWest LNG, LNG Canada) have shown that the strongest emission sources on the vessels (stack emissions) have very limited effects even as close as 1 km. Any odours would be indistinguishable except in, on, or immediately adjacent to the vessel.
481.1	round 1	Lax Kw'alaams Band	4.3.2.2 Influence of Consultation on the Assessment	Greenhouse Gases	As per Screening Comment #31, Lax Kw'alaams is concerned that the fulsome GHG emissions assessment remains missing. Aurora states that "upstream emissions as methods of quantification are still being investigated" (4.3-4, Table 4.3-3). Lax Kw'alaams looks forward to reviewing this information, but remains concerned that the Application was accepted for review, despite this an the other serious deficiencies that we have identified in screening and application review phase comments. As stated in our cover letter, Lax Kw'alaams disagrees with the EAO's decision to accept the Application for review.	Following receipt of the letter from ECCC to the EAO (dated December 1, 2016) regarding the requirement for a Project Upstream Greenhouse Gas Assessment Aurora LNG and the EAO agreed on the delivery date of Feb 22, 2017 for the assessment report. The Project Upstream Greenhouse Gas Assessment has been completed and delivered to the EAO.
482.1	round 1	Lax Kw'alaams Band	4.4.2.2 Influence of Consultation on the Assessment	Acoustic Environment	Information in Lax Kw'alaams AIUS should inform a new receptor location to update the baseline sound model. Particular interest is in including a receptor at a location where a small vessel operator will be located between Prince Rupert and the proposed facility location.	The Application focused on receptors that are permanent and seasonal residential dwellings as defined in the BC OGC noise guideline. Other additional receptor classification prescribed by the Health Canada (2016) noise guidance is as follows: Commercial premises Daytime centers Entertainment establishments Hospitals Places of worship and cemeteries Active and passive recreation area Schools Seniors' residences Workers' living quarters A small vessel operator with a mobile location somewhere between the proposed facility and Prince Rupert is not included as a receptor. The receptor R2 (Dodge Cove) is representative as a receptor location closest to the proposed facility. Receptors R4 (Fairview Terminal) or R10 (Prince Rupert Residence) are representative as receptor locations at Prince Rupert.
483.1	round 1	Lax Kw'alaams Band	4.4.3 Existing Conditions	Acoustic Environment	Two pieces of baseline information are missing from the assessment that must be added: a) Noise of construction vessel traffic and operational shipping and vessel activities not considered, this is a concern for marine users who will be transiting and using area near berthing and MOF areas. Lax Kw'alaams is particularly concerned about effects related to potential discouragement of marine users and harvesters who may participate less in these activities through avoidance or total decrease in participation. Given the important strategic location of Digby Island to Lax Kw'alaams members for marine navigation and harvesting, this may lead to a project-specific impact on decrease of total traditional use activities. A noise receptor should be added that considers impacts on marine vessel operators, especially those that currently spend time on the water to fish and harvest. b) Vibration not measured at all in the baseline, so Lax Kw'alaams will be unable to attribute changes in vibtation levels to project effects. Please add vibration levels to the baseline.	a) Regarding the discussion on including small marine vessel operators as a noise receptor, the Application focused on receptors that are permanent and seasonal residential dwellings as defined in the BC OGC noise guideline. Other additional receptor classification prescribed by the Health Canada (2016) noise guidance is as follows: Commercial premises Daytime centers Entertainment establishments Hospitals Places of worship and cemeteries Active and passive recreation area Schools Seniors' residences Workers' living quarters A small vessel operator with a mobile location somewhere between the proposed facility and Prince Rupert is not included as a receptor. The receptor R2 (Dodge Cove) is representative as a receptor location closest to the proposed facility. Receptors R4 (Fairview Terminal) or R10 (Prince Rupert Residence) are representative as receptor locations at Prince Rupert. With regard to shipping noise along the main shipping route, the Aurora LNG Project shipping route distance to the nearest sensitive receptor (i.e., receptor R06, - Barrett Rock) is 670 m. Based on the predicted shipping noise effect from a similar LNG facility application (PNW LNG), the predicted nighttime shipping sound level at R06 would be less than 28.5 dBA. The nighttime sound level of 28.5 dBA is well below the nighttime existing sound level of 40 dBA at Barrett Rock presented in Table 4.4-7 of the Application. Further assessment of noise effects along the shipping route is therefore not required. b) Vibration thresholds in guidelines are applicable to the event only without the consideration of an existing level. The vibration assessment is therefore based on comparing the Project event (e.g., blasting) effect to a guideline or threshold. The masking effect from a background vibration level or cumulative vibration level from another event is typically not included. Since most vibration events are considered transient and intermittent, undertaking a vibration monitoring study for existing conditions would be unlikely to provide meaningful data for an assessment as any measured vibration baseline would be expected to differ from conditions at the time of the Aurora LNG construction.
484.1	round 1	Lax Kw'alaams Band	4.6.2.4: Selection of Potential Effects and Measureable Parameters	Vegetation and Wetland Resources	Table 4.6-3 lists ecological communities of interests as including: red- and blue-listed communities, wetlands, and old growth forests. In Screening comments, Lax Kw'alaams requested an inclusion of culturally important plant communities in this list, based on areas that have a high probability of use for collecting culturally important plants. Without this information, Lax Kw'alaams will not be able to fully assess the impact of the proposed Project on members' access to culturally important plants. This information is critical for this section as the conclusions form the basis of Sections 11.3 and 12 (Part C) of the Application. In advance of defining EA Certificate measures, Aurora must work with Lax Kw'alaams to identify important ecological communities for gathering plants, focusing on the communities that are most prevalent within the PDA and LAA. These may include deciduous forests, rich variants of mature forests, and possibly others. This information should inform a re-assessment of cumulative effects on these ecological communities, to determine whether further mitigations are required or offsets are possible to ensure there are high quality, accessible, preferred ecological communities where Lax Kw'alaams members will likely harvest culturally important plants. (Note: mitigations that Lax Kw'alaams members may simply go elsewhere in the territory is rejected and remains wholly unjustified.)	The assessment of change in abundance of plant species of interest, including traditional use plant species, has been conducted in accordance with the Application Information Requirements (AIR) for the Project. The scope of this assessment has focused on predicted changes to the abundance of traditional plant species rather than changes to the area of ecological communities capable of supporting the identified traditional plant species. For a list of traditional use plant species in the RAA see Appendix I, Table 10. Aurora LNG believes that the assessment set out in the Application is fair and reasonable, and as a result, the re-assessment, as suggested, is considered neither warranted nor required Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band focusing on the CEAA Section 5(1)(c) assessment and Part C. The purpose of this Supplemental Report is to collaboratively determine any changes to the conclusions of those sections of the Application resulting from new information provided by Lax Kw'alaams Band in its AIUS and SEIA on February 2 2017. The Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period.
485.1	round 1	Lax Kw'alaams Band	4.6.2.6 Residual Effects Description Criteria 4.6.2.8 Significance Thresholds for Residual Effects	Vegetation and Wetland Resources	Lax Kw'alaams has requested in screening comments and in meetings on January 23-24, 2017 that Nexen work with Lax Kw'alaams to redefine culturally-relevant thresholds for impacts on all ecological VCs in Part B. Part B conclusions are used as a basis throughout Sections 11.3 and Part C. Specific to this section of the Application, residual effects on plant species of interest are currently considered significant "if the viability of these plant species is impaired within the RAA." (Table 4.6-6, p. 4.6-16). Lax Kw'alaams requests that the proponent move beyond viability to consider accessibility to comparable quantity and quality of culturally important plants. The impact of removing an entire culturally available area from Lax Kw'alaams has not been assessed anywhere in the Application. Therefore, the EA methods must consider both ecological viability and cultural use.	The scope of the Vegetation and Wetlands VC in Part B of the Application is consistent with the AIR. The use of plants for cultural purposes is addressed in the CEAA Section 5(1)(c) assessment (section 11.3.7.3 (page 11-93 onwards)) and Part C (section 12.5.4.7 (page 12-89)). Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band focusing on the CEAA Section 5(1)(c) assessment and Part C. The purpose of this Supplemental Report is to collaboratively determine any changes to the conclusions of those sections of the Application resulting from new information provided by Lax Kw'alaams Band in its AIUS and SEIA on February 2 2017. The Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period

486.1	round 1	Lax Kw'alaams Band	4.6.3 Existing Conditions for Vegetation and Wetland Resources	Vegetation and Wetland Resources	As per Screening Comment #45, impacts from NO2 and SO2 concentrations and soil acidification / eutrophication are a concern for Lax Kw'alaams in relation to effects on quality and quantity of vegetation and wetlands resources essential for protection of Lax Kw'alaams rights and interests. The Prince Rupert Airshed Study is readily available information that would provide additional certainty on this effect has not been included. The Application notes on p. 4.6-18 that "The Prince Rupert Airshed Study was not publicly-available for review by the time of writing". The Study was available five months prior to Application Review. Lax Kw'alaams disagreed with the EAO decision to accept the Application for review and remains concerned about this gap and other serious gaps identified in these comments. *Lax Kw'alaams requests that the results of the PRAS be fully considered in the vegetation and wetlands resources section to ensure these priority resources are protected and to be used to understand potential effects on Section 5(1)(c) factors and Part C rights and interests.*	The final Prince Rupert Airshed Study was not released until September 2016 which did not allow sufficient time to incorporate its findings into the Application. Aurora LNG worked with the BC Ministry of Environment to develop the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project, which was finalized in July 2016. Where directed by the BC Ministry of Environment, the Acidification/Eutrophication Effects Assessment Workplan for the Aurora LNG Project was informed by the preliminary results of the draft Prince Rupert Airshed Study. Aurora LNG therefore believes that the assessment set out in the Application is fair and reasonable.
487.1	round 1	Lax Kw'alaams Band	4.6.3.1 Methods (Vegetation and Wetland Resources)	Vegetation and Wetland Resources	The extent of baseline data collection regarding occurrences of rare plants is not sufficient. Cited sources (e.g., Penny and Klinkenberg, 2013) recommend surveys *throughout the growing season* to ensure all rare plants are identified. P. 4.6-18 of the application states that surveys occurred in June and late August / early September 2014 and June 2015. Lax Kw'alaams requests further data collection within the PDA, specifically within the months that have not yet been surveyed (i.e., April, May, July), to ensure that all rare plants have been captured and the potential impact from the proposed Project on this VC can be adequately assessed. (Also see related comment below for why enhancing certainty in this assessment is so important.)	Penny and Klinkenberg (2013) state that rare plant surveys should provide "seasonal coverage" in order to "target the flowering periods" of rare plant species. They also recommend surveying in more than one year. The methods used in the baseline study for this project follow Penny and Klinkenberg (2013) by capturing the flowering periods of rare plants in both spring (June 2014 and 2015) and late summer (August/early September 2014), and in multiple years (2014 & 2015). Aurora LNG believes that the assessment set out in the Application is fair and reasonable. As a result, further data collection within the PDA, as suggested, is neither warranted nor required.
488.1	round 1	Lax Kw'alaams Band	4.6.3.2: Overview (Existing Conditions for Vegetation and Wetland Resources) 4.6.4: Project Interactions with Vegetation and Wetland Resources 4.6.5: Assessment of Residual Effects on Vegetation and Wetland Resources	Vegetation and Wetland Resources	A large area of red-listed ecosystems occur within the LAA (50.2 ha in VALAA; 29.1 ha in LAA; 0.8 ha of the PDA; total in RAA is 160.4). While only a small portion of the PDA is made up of red-listed ecosytsems (two ecosytems in total, encompassing 0.8 ha of the PDA; p. iv of Appendix I), the potential for impacts to red-listed ecosystems is high, particularly from acidification / eutrophication. Similarly, blue-listed ecological communities make up 24% of the VALAA (8,255 ha in the VALAA; 168 ha in the LAA; 22 ha in the PDA) and there is high potential for impacts to these ecosystems from acification/eutrophication. It is currently unclear how many of the red and blue-listed ecosystems in the LAA and VALAA have also be identified as sensitive to eutrophication / acidification*LKFN requests a separate analysis of this potential impact, to determine whether further mitigations are required. The assessment should take into account the latest available assessment through the The Prince Rupert Airshed Study, to ensure that cumulative effects are properly considered.* Furthermore, impacts to plant quality from soil eutrophication and acid deposition are not currently considered within section 4.6. *LKFN requests that the proponent, in its assessment of effects on vegetation and wetlands, consider this impact pathway in order to be able to properly inform its assessment of impacts to culturally important plant species.*	For the purposes of this Assessment, all vegetated ecosystems were considered sensitive to soil eutrophication and soil acidification (see Section 3.1.4 of Appendix I), including all red- and blue-listed ecological communities. See Tables 8 and 9 in Appendix I for the total area of each ecological community within the modelled areas of exceedance for soil acidification and soil eutrophication, respectively. Communities that are blue-listed in their mature structural stage are denoted with a footnote in each table. The Wf51 Sitka sedge – peat moss fen in Table 9 is the only red-listed community present within the soil eutrophication exceedance area; no red-listed communities are present within the soil acidification exceedance area. The assessment of change in abundance of plant species of interest, including traditional use plant species, focused on the changes to the abundance of traditional plant species rather than on changes to the quality of traditional use plants. The assessment of change in the abundance or condition of ecological communities of interest due to soil acidification or eutrophication does not consider potential effects to individual species, but rather to ecological communities, because individual species' responses to change in soil acidification or eutrophication are highly variable. The assessment of changes in the abundance or condition of ecological communities of interest due to soil acidification or eutrophication was conducted in accordance with the final (July 2016) Acidification/Eutrophication Effects Assessment Workplan, which Nexen developed with the BC Ministry of Environment for the Aurora LNG Project. Therefore, Aurora LNG believes that the assessment set out in the Application is fair and reasonable. As a result, the re-assessment, as suggested, is neither warranted nor required.
489.1	round 1	Lax Kw'alaams Band	4.6.5.2 Assessment of Change in Abundance of Plant Species of Interest	Vegetation and Wetland Resources	LKFN does not agree with the proponent's conclusion that impacts to culturally important plant species will be low in magnitude. LKFN's ability to collect plants in this area will be impacted in an important and measurable way by the project. No consideration of access is provided. As noted in above comments, Lax Kw'alaams has little confidence in many parts of the assessment on culturally impotant plants. See above information requests. Lax Kw'alaams believes that if above information requests are filled, this conclusion will change.	The effects of the Project on culturally important plant species are addressed in section 11.3.7.3 (page 11-93 onwards) and section 12.5.4.2 (page 12-89) of the Application. Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band focusing on the CEAA Section 5(1)(c) assessment and Part C. The purpose of this Supplemental Report is to collaboratively determine any changes to the conclusions of those sections of the Application resulting from the new information provided by Lax Kw'alaams Band in its AIUS and SEIA on February 2 2017. The Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period.
490.1	round 1	Lax Kw'alaams Band	4.6.7 Determination of Significance (Vegetation and Wetland Resources)	Vegetation and Wetland Resources	1. Impacts to traditional use species is flawed. Assessment traditional use species must include an assessment of plant quality (see above comment) and plant availability within areas that remain accessible for cultural use, not within the RAA as a whole. As formulated, the assessment underestimates the significance of removing culturally important plants from this location. The assumption that the entire RAA is culturally available for plant collection is a false assumption with no evidence to support it. 2. The Proponent's definition of reversibility is not appropriate. Even following restoration of the site, it will likely be many generations (and it may never occur) before people consider this area to be fully available for cultural use. From a cultural use perspective, impacts to the island as a result of the proposed LNG Project must be considered permanent.The Proponent is requested to revise its characterization of impacts to traditional use plant species. 3. Compensation plan does not include wetland area lost for plan itself. Section 4.6.5.4, p. 4.6-57 describes the wetland compensation designed to "acheive no net loss of ecologically important wetland functions at a 2:1 ratio of compensatory wetland to lost wetland area". Information on wetland area lost to develop compensation area must be provided in the Project application (not just in the compensation plan in Appendix U) to determine whether compensation adequately accounts for the full loss of wetland function within the PDA, LAA and vaLAA. 4. Cumulative effects do not consider the impacts of invasives on ecological communities, plants, and wetlands (p. 4.6-62: "No Project contribution of invasive plant species are expected because no invasive plants were identified"). The proponent must revise this section to include a consideration of the cumulative effects of wetlands.This information is need to determine whether there is a significance effect on wetlands and ecological communities adjacent to the area that will be developed.	1. Section 11.3.7.3 of the Application presents the assessment of Quantitative and Qualitative Changes in Currently Harvested Species and Current Traditional Use Locations where Use will be affected for vegetation gathering. Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band focusing on the CEAA Section 5(1)(c) assessment and Part C. The purpose of this Supplemental Report is to collaboratively determine any changes to the conclusions of those sections of the Application resulting from the new information provided by Lax Kw'alaams Band in its AIUS and SEIA on February 2 2017. The Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. 2. Table 4.6-5 of the Application provides definitions for each effects characterization. Reversibility refers to the ecological capability for an effect to be reversed following operations and reclamation; there are two measures: reversible and irreversible. Duration refers to The period of time required until the measurable parameter or the VC returns to its existing condition, or the effect can no longer be measured or otherwise perceived; there are four measures, one of which is permanent. The concepts of reversibility and duration are not the same. So, with respect to traditional use plant species, it is reasonable to anticipate that they could be reestablished on the site following operations and reclamation and of long term duration (extending beyond the life of the Project); however, it has been noted that Lax Kw'alaams may choose not to use the site for traditional use (vegetation gathering) following the use of this land for an LNG Project. 3. No wetland area will be lost in the process of compensating for the loss of wetlands and their attendant functions associated with the Project. 4. The cumulative effects of invasive plant species are assessed in Section 4.6.6.3 of the Application. No cumulative effects, due to the introduction or spread of invasive plant species, are anticipated because of the following reasons: a) no invasive species were recorded in the study areas during field surveys; b) none of the reasonably foreseeable future projects overlap spatially with the LAA; and c) with the implementation of the proposed Invasive Plant Management Plan (IPMP), no residual effects on plant species of interest due to the introduction or spread of invasive plant species originating from on-site sources are anticipated. With the implementation of the IPMP, the potential introduction or spread of invasive plant species from off-site sources will also be mitigated to acceptable levels. This overall conclusion and supporting rationale applies to each of the potential 'receiving' ecosystems such as wetlands or ecological communities, although the Application addresses potential effects of invasive plant species within the effect titled, "Change in abundance of plant species of interest," rather than in the context of "changes in the abundance or condition of ecological communities" or "changes in wetland functions".
491.1	round 1	Lax Kw'alaams Band	4.7.3.1 Methods (Wildlife Resources (Terrestrial))	Wildlife Resources (Terrestrial)	Focal species selections still does not include species of cultural importance for Lax Kw'alaams. Selected focal species are derived from a species-at-risk perspective, without consideration of keystone cultural species that have the potential to interract with the Project. Habitat modelling focused on four species that are not considered cultural keystone species (p. 4.7-19). Without assessment of focal cultural keystone species it will not be possible to assess the impacts of the Project on LK's rights and interests related to terrestrial wildlife. Specifically, habitat suitability models for Digby Island were created for marbled murrelet, western screech owl, little brown myotis, and western toad. While LKFN recognizes the importance of maintaining habitat for these four species, it is further important to recognize that the habitat requirements of these species do not adequately address the habitat needs of all culturally important wildlife, particularly furbearers (marten, beaver as examples), black-tailed deer, and nesting sites for shore birds and bald eagles. Lax Kw'alaams requests information on how modelling habitat suitability for the four selected species addresses: 1) coarse woody debris requirements for weasels; 2) the availability of browse/shrubs for black-tailed deer; 3) nesting requirements of important marine birds, including many species of ducks and geese; 4) nesting requirements of bald eagles, an upland cavity nester.	Aurora LNG considered cultural or traditional value during species selection for wildlife habitat suitability models (see Sections 4.7.3 of the Application and 4.2.1 of Appendix J), recognizing that species of importance vary among Aboriginal Groups. Aurora LNG acknowledges that not all species of cultural importance could be selected for species-specific habitat suitability models. However, the wildlife habitat community models characterize existing conditions for the full suite of habitats present within the PDA and LAA and, by extension, the wider suite of wildlife species assemblages occupying them (including furbearers, black-tailed deer, shorebirds, waterfowl, geese, and bald eagle). More specifically, wildlife habitat community models provide a means for assessing (1) coarse woody debris in mature or old coniferous forest; (2) browse species for black-tailed deer in herb/shrub/sapling, or young mixed, coniferous, or deciduous forest; (3) nesting habitat for shore birds and waterfowl in estuarine, beach, and aquatic, bog, or swamp; (4) nesting habitat for bald eagle in mature or old coniferous forest; and, (5) upland cavity nesters in mature or old growth coniferous forest. Methods and findings of the wildlife habitat community models, including a description of species that occupy each community, are provided in Section 4.1 of Appendix J.
492.1	round 1	Lax Kw'alaams Band	4.7.2.8 Significance Thresholds for Residual Effects	Wildlife Resources (Terrestrial)	As outlined in comments on plants above, Part B ecological thresholds do not account for acceptable levels of change for impacts to cultural use of a species. These must be accounted for in Part B because conclusions in Part B are used as the foundations for the assessments in Section 11.3 and Part C. To address this issue, Lax Kw'alaams requires Nexen to revise EA methods to accoun for not simply conservation status of wildlife, but the ability to maintain ongoing (and ideally future) use of the resource, i.e., moving beyond population viability to include a harvestable surplus. This comment applies to the significance thresholds for changes in habitat, changed in mortality risk, and changes in behaviour. *LKFN requests that culturally important species be assessed using a culturally relevant threshold of significance, determined in collaboration with Lax Kw'alaams.*	The methods utilized to characterize residual effects in Section 4.7 (Wildlife Resources (Terrestrial)), including those related to the significance threshold, were established in accordance with the Application Information Requirements (AIR). Appropriate information presented in Part B is carried forward to Section 11 and Part C to support conclusions therein. Significance thresholds for Section 4.7 present the limits of an acceptable change in a measurable parameter or state of regional wildlife populations and are based on applicable legislation, regulatory guidance documents, or other management standards (including cultural use). Section 4.7.2.3 (Traditional Knowledge and Traditional Use Incorporation) of the Application and Section 3.1.1 (Traditional Ecological Knowledge) of the associated Appendix J (Wildlife Resources (Terrestrial) TDR) indicate that available Traditional Knowledge /Traditional Use information (i.e. the information compiled in Appendix S.2) was reviewed, considered and, where appropriate, incorporated into Section 4.7 of the Application. Where thresholds are not set by legislation, policy, and regulatory guidance documents, a threshold has been developed based on scientific literature and professional judgement, and with the incorporation of available traditional ecological knowledge. Significance thresholds vary between species or species groups and potential effects. As described in Section 4.7.2.8 of the Application, a residual effect is considered significant if it affects the viability of local or regional terrestrial wildlife populations. The viability of species can be affected by several factors, including reproduction, mortality, immigration, emigration, and habitat availability, where viability was defined in the Application as the long-term maintenance in abundance, diversity, or distribution of wildlife through natural recruitment. Viability is inclusive of maintaining sustainable wildlife populations from both a conservation status and cultural use perspective. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, the re-assessment, as suggested, is neither warranted nor required.
493.1	round 1	Lax Kw'alaams Band	Appendix J - Wildlife Resources (Terrestrial): 4.7.6.4 Cumulative Effects Assessment for Change in Mortality Risk.	Wildlife Resources (Terrestrial)	*LKFN requests a separate assessment of potential impacts to marbled murrelet from the proposed Project and from cumulative effects in the RAA.* Marbled murrelets will be impacted both through terrestrial habitat loss (loss of nesting habitat on Digby Island; Appendix J, Wildlife Resources TDR; this includes loss of critical habitat, based on the 2014 Recovery Strategy) and marine habitat loss. They will also be impacted by flaring and other operational disturbances associated with producing LNG, shipping traffic and associated underwater noise. The multiple sources of negative effects on marbled murrelet, a threatened species, mean that a more comprehensive assessement of the impacts to this species from the proposed development is required to assess whether a significant impact will occur, and further mitigations are required. Additional baseline surveys may be required to locate marbled murrelet nests occurring within the PDA and ensure that they are protected from disturbance. Furthermore, disturbance associated with this project is likely to increase the prevalence of stellars jays within the LAA, a species that is known to interact negatively with marbled murrelets. The cumulative effects assessment is particularly important in light of the full extent of critical habitat that may be lost in the RAA, and the fact that there is a high likelihood of residual cumulative effects for change in habitat for wildlife resources within the RAA (p. 4.7-90).	Aurora LNG assessed effects to marbled murrelet based on the potential mechanisms for interaction with Project activities and infrastructure in both the terrestrial and marine environments, in Sections 4.7 and 4.11, respectively. The assessment for the species considers change in the availability of terrestrial and marine habitat, change in mortality risk through increased predation and light-based infrastructure (including flaring), and changes in behaviour from sensory disturbance (e.g., noise, vessel traffic). To support the assessment and characterization of residual effects to marbled murrelet, wildlife habitat assessments were completed to support the development of a detailed habitat suitability model to quantify and qualify nesting habitat suitability within the LAA. The habitat assessments were supplemented with audio-visual surveys and detailed habitat assessments to refine the prediction of potential effects on marbled murrelet habitat. Survey data was collected to determine evidence of breeding or occupied detections (i.e., marbled murrelets seen or heard landing, perching, or flying through or out of the forest canopy) and to further evaluate habitat attributes within preferred or identified critical habitat polygons (see Section 5.7.2 of Appendix J for details). No marbled murrelets were detected during audio-visual surveys and no 'high-likelihood' nesting habitat was identified during the detailed habitat assessments. Shore and vessel based surveys were completed within the LAA to characterize seasonal presence and use of marine habitats. See Appendix J and Appendix Q for additional information. Table 4.7-17 and Table 4.11-13 outline Project effects and associated mitigation measures applicable to marbled murrelet. Aurora LNG's proposed mitigation measures for marbled murrelet have incorporated federal and provincial regulations and guidelines as well as measures that have been recommended or proven effective on similar projects within the RAA with associated marine terminals. To further address effects of change in habitat, mortality risk, and movement, Aurora LNG has committed to developing a Marbled Murrelet Management Plan that will outline additional avoidance, reduction, mitigation, and monitoring measures.
494.1	round 1	Lax Kw'alaams Band	4.7.5.1 Analytical Methods	Wildlife Resources (Terrestrial)	This section suggests that "Change in movement is assessed qualitatively based on the potential for changes in use of known movement corridors (e.g., local migratory routes or staging areas) or preferred habitats." (p. 4.7-36). LKFN has reviewed the baseline data collected on terrestrial wildlife in Appendix J, and views it as being insufficient for detecting established movement corridors for many species, particularly terrestrial mammals and amphibians. The lack of data on this aspect of habitat use precludes a reliable assessment of Project impacts on terrestrial wildlife, including the identification of mitigation measures that could prove effective for reducing this particular impact. For this reason, the assessment should be considered preliminary and treated with a high degree of uncertainty. LKFN requests: - Additional baseline surveys be conducted to address existing gaps; - Monitoring and follow-up measures should be considered particularly for migration routes for western toad (see below).	Baseline studies to support the identification and characterization of use of wildlife movement corridors includes, but is not limited to, wildlife transects and remote camera surveys (see Sections 5.1 and 5.2 of Appendix J). Transects included sampling across different habitat types and located a large number of movement corridors (46% of all detections, identified across 17 transects; Section 5.1.3 of Appendix J). Remote cameras were installed along existing movement corridors to further characterize use. Camera results are summarized in Section 5.2.3 of Appendix J and identified local migratory movements of grey wolf and black-tailed deer within the LAA. Results of field studies are considered sufficient to characterize potential effects to change in movement and to apply appropriate mitigation measures to reduce those effects. A Wildlife Management Plan will be developed to address identification of movement corridors for mammals and amphibians that require mitigation. For example, mitigation 4.7.12 indicates that drift fencing will be installed along sections of roadway if increased amphibian activity is identified during migratory periods.

495.1	round 1	Lax Kw'alaams Band	4.7.5.1 Analytical Methods 4.2.5.2 Assessment of Change in Habitat 4.7.5.3 Assessment of Change in Mortality Risk	Wildlife Resources (Terrestrial)	1. These sections list proposed mitigations in tables (e.g., Table 4.7-14). Many of the mitigations rely on the development of more detailed management plans (e.g., the Wetland Management Plan, the Bat Management Plan, the Marbled Murrelet Management Plan, the Wildlife Management Plan). *LKFN requests that the proponent provide detailed conceptual-level management plans to LKFN to review for efficacy prior to the date of final submissions to the Ministers for this EA.* 2. *Further information on mitigation and related follow-up measureso must be included in subsequent discussions between LKFN and the proponent prior to the date of final submissions to the Ministers for this EA.*	A summary of the proposed Environmental and Operational Management Plans was provided in Part E of the Application, in accordance with the Application Information Requirements. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of Environmental and Operational Management Plans. Aurora LNG would welcome any specific feedback regarding the proposed mitigation measures (including any suggested revisions to the currently proposed mitigation measures) from Lax Kw'alaams Band.Aurora LNG is currently reviewing specific feedback on proposed mitigation measures received from Aboriginal Groups during Technical Workshops #4 and #5 and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
496.1	round 1	Lax Kw'alaams Band	4.8	Freshwater Fish and Fish Habitat	Table 4.8-6 describes the significance threshold for impacts to fish abundance as a reduction in a fish population in the LAA. Six of the seven stream reaches in the LAA in which Dolly Varden were captured are in or upstream of waterbodies proposed to be destroyed during Project construction. It seems unlikely that removing the majority of Dolly Varden habitat within the LAA would not result in a decrease in the population of Dolly Varden in the LAA. More justification for the finding of no significant impact is required.	Reaches within the LAA where Dolly Varden were captured/observed or are known to be present include: E1, E1.1L, G1, J1, J2.1, J3, J3.1, J4, J5, S4, S4.1, TT1, W1L, and Y1L. Reaches J1, J2.1, J3, J3.1, J4, J5, S4, S4.1, TT1, W1L, and Y1L are all to be retained with appropriate riparian reserve zones established. TT1 has a proposed road crossing in its upper section and the crossing will be constructed in a manner which maintains fish passage during all seasons (culvert or bridge). Of the watercourse reaches to be lost, E1 is a short watercourse which flows into the ocean near Frederick Point and has 1,583 m2 of instream area; E1.1L is a tributary to E1 and has 229 m2 of instream area; and G1 is a short watercourse that flows into Delusion Bay and has 1,014 m2 of instream area. The Project is expected to result in the loss of 2,826 m2 of the 25,782 m2 of potential Dolly Varden habitat available in the PDA (a loss of 11% of the total Dolly Varden habitat in the PDA). Areas outside of the PDA will not be altered or removed. This does not account for offsetting to be designed and implemented in the LAA to counterbalance the loss of productivity from the lost watercourse reaches.
497.1	round 1	Lax Kw'alaams Band	4.9	Marine Fish and Fish Habitat	The assessment groups all marine fish species together and assesses them without considering individual species habitat requirements, population status, and conservation needs. From conversations with Aurora technical specialists, Lax Kw'alaams understands that internal preparations for the Application involved identifying species-specific interactions and Project impacts. Lax Kw'alaams requests that a supplemental report be filed that provides these species-level impact analyses, including a discussion of current habitat utilization and abundance. Expressing impacts by species would allow all parties to reach consensus on a conceptual understanding of the habitat, its use by fish species, and potential effects from the Project. This would provide a basis for key species-project interactions of concern to be identified to support mitigation or offsetting.	The marine fish and fish habitat assessment does not take a species-specific approach; however, focus is placed on species that are part of, or support, commercial, recreational, and Aboriginal (CRA) fisheries, as well as species of management concern. Extensive baseline data were collected through numerous field surveys to characterize existing marine habitats, and the fish and invertebrate species that use those habitats (results presented in the Marine Fish and Fish Habitat Technical Data Report). This data, combined with information from scientific and technical literature, were used to identify and assess potential Project effects. Therefore, while the conclusions of the assessment apply to the marine fish and invertebrate community as a whole, they implicitly consider the nature of effects to species likely to be affected by the Project. Likewise, mitigation measures and conceptual offsetting options were developed in consideration of those species likely to be affected by the Project, as determined through field surveys and literature review.
498.1	round 1	Lax Kw'alaams Band	4.9.2.4	Marine Fish and Fish Habitat	Building upon Screening Comment ID#105 - With reference to fish habitat offsetting Stantec (Aurora LNG's) answer is still unsatisfactory to Lax Kw'alaams because Aurora LNG still insists on referring to the current version of the Fisheries Act which does not ultimately protect fish habitats and ultimately the fish that use them.	Aurora LNG acknowledges the comment. The Fisheries Act and associated policy documents protect marine fish habitat throughSection 35(2) of the Fisheries Act which prohibits serious harm to fish that are part of, or support, a commercial, recreational or Aboriginal (CRA) fishery. DFO (2013) defines serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; or c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Aurora LNG is committed to offsetting any residual serious harm to fish that results from the Project. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
499.1	round 1	Lax Kw'alaams Band	4.9.2.4	Marine Fish and Fish Habitat	Building upon Screening Comment ID#106 - if Brown's Passage is indeed the preferred Disposal at Sea (DAS) site then the background DAS site selection process needs to be clarified and explained conclusively to Lax Kw'alaams and Metlakatla about why Brown's Passage is the only DAS choice.	The EAO hosted a meeting on April 28, 2017 with Aurora LNG and members of the Working Group to discuss DAS and potential alternative sites. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
500.1	round 1	Lax Kw'alaams Band	4.9.2.4	Marine Fish and Fish Habitat	Using permanent habitat alteration and destruction as defined by the Fisheries Act as the sole measurable parameter of change in habitat underestimates the amount of changes to habitat expected to occur and misleadingly creates the appearance of minimal impacts from the Project. Aurora LNG has interpreted the Fisheries Act to exclude changes to unvegetated areas with soft sediment from the definition of "permanent alteration or destruction" to habitat. However, as indicated by DFO during the February 6-7 Working Group meeting, these areas are important both for overall ecosystem health and as critical habitat for species such as juvenile salmon, clam, cockles, shrimp, and other species that depend on them. As there is no plan to offset damage to these areas through habitat offsetting, they remain a significant, unmitigated change that must be addressed in the assessment.	Aurora LNG acknowledges the role of soft sediment habitats in supporting a range of infaunal invertebrates (such as clams and cockles) and benthic species (such as Dungeness crab), as well as its role in supporting eelgrass. The potential loss or permanent alteration of soft sediment habitat and eelgrass is included in the marine fish and fish habitat effects assessment under the 'change in habitat' effect (Section 4.9.5.2). However, Aurora LNG is of the opinion that the permanent alteration or destruction of soft sediment habitat will not constitute serious harm to fish (i.e., reduce the ability of a commercial, recreational, or Aboriginal [CRA] fishery species to complete one or more life process) and, hence, will not require offsetting. Soft sediment habitats are relatively common and widely available in the Project area, and, compared to hard substrates, they do not typically support rich vegetative assemblages (e.g., Peterson 2005); with the exception of eelgrass, for which losses will be offset. As such, soft sediment habitats are usually associated with low vegetation cover, low habitat complexity, and low species richness (e.g., Guidetti 2000; Giakoumi and Kokkoris 2013). Soft substrate communities are also relatively quick to recover from disturbance, requiring approximately one to five years to reach a climax state (Newell et al. 1998). Further discussion is provided in the Conceptual Fish Habitat Offsetting Plan, Appendix V. Aurora LNG acknowledges that this plan is conceptual and will be refined following feedback and consultation with DFO and Aboriginal Groups. References: Giakoumi, S. and G.D. Kokkoris. 2013. Effects of habitat and substrate complexity on shallow sublittoral fish assemblages in the Cyclades Archipelago, North-eastern Mediterranean Sea. Mediterranean Marine Science, 14, Feb. 2013. Guidetti, P. 2000. Differences among fish assemblages associated with nearshore Posidonia oceanica beds, rocky-algal reefs and unvegetated sand habitats in the Adriatic Sea. Estuarine, Coastal & Shelf Science, 50 (4), 515-529. Newell, R. C., L. J. Seiderer and D. R. Hitchcock. 1998. The Impact of Dredging Works in Coastal Waters: A Review of the Sensitivity to Disturbance and Subsequent Recovery of Biological Resources on the Sea Bed. Oceanography and Marine Biology: an Annual Review 36: 127-178. Peterson, C. 2005. Nearshore Benthic Communities. In: The Gulf of Alaska – Biology and Oceanography. Munday, P.R. (Ed). University of Alaska, Fairbanks.
501.1	round 1	Lax Kw'alaams Band	4.9.2.4	Marine Fish and Fish Habitat	Building upon Screening Comment ID #119 - the Proponent states that the objectives and measures of success for the fisheries offsetting would be determined post-EA process, during permitting. It is unclear how either the Proponent or DFO can state their confidence in the likelihood of success for fisheries offsetting without having determined will be considered "success" or the goal of the offsetting measures beyond meeting legal requirements. Lax Kw'alaams is not solely concerned with meeting legal requirements and has not deferred judgement to DFO. Aboriginal rights to resources are not mentioned under nor protected by the Fisheries Act, and the implications to Lax Kw'alaams rights and title should not be assessed by DFO, nor are permits under the Fisheries Act necessarily sufficient to protect Aboriginal rights. Without knowing the means, goals, objectives, or likelihood of success of proposed mitigation for impacts to marine resources that are part of Lax Kw'alaams' rights to harvest, the impacts to Lax Kw'alaams rights and title cannot be determined.	The assessment of potential effects on Lax Kw'alaams Band's Aboriginal Interests, including rights and title, is included in Part C, Section 12.5.4. Aurora LNG acknowledges Lax Kw'alaams' Band's comment while respectfully suggesting that this comment be referred to Fisheries and Oceans Canada.
502.1	round 1	Lax Kw'alaams Band	4.9.2.6	Marine Fish and Fish Habitat	The characterization of residual effects to marine fish and fish habitat require effects be described relative to the long-term persistence of fish populations. However, the assessment does not define the populations of any of the potentially-impacted species, and as a result the residual effects cannot be meaningfully assessed. Please provide definitions of the relevant population of each fish species included in the assessment, how its viability was assessed for both its current status and its Project-case status, and what theoretical threshold of impact would be required to impact its long term persistence	The comment is referring to the definition of magnitude as a residual effects characterization. For each potential effect, the mechanisms of effect are described such that the species likely to be affected are explicitly noted. For example, for the potential effect of change in fish habitat, the loss of eelgrass is specifically focussed on the ecological roles eelgrass provides to the species known to use this habitat, such as providing "an important staging point that links marine and freshwater systems, which is particularly valuable for anadromous species, such as Pacific salmon". Similarly, the effect of introducing piles into the marine environment is tied to the capacity to provide new attachment surface to encrusting and epibenthic organisms, such as mussels and barnacles. Other examples can be found through the marine fish and fish habitat assessment. Magnitude characterisation (and hence, population-level inferences) was determined based on existing information relating to (a) environmental and regulatory guidelines, and (b) the ecology of those species likely to be affected. Specifically, for (b), we focussed on issues such as their use and dependency on the area being affected, the life stage affected, availability of similar habitat elsewhere, and the potential for that effect to interrupt a life process on a scale that could cause harm at the population level. This inference considers the biology and ecology of the taxa affected, such as (but not limited to) life-history, reproductive rate, feeding ecology, larval ecology (pelagic dispersal and resulting connectivity), and migratory behaviour. It also considers known information on environmental perturbations that those species are exposed to, and their resilience to those perturbations given their biology and ecology. A "theoretical threshold of impact ... required to impact ... long[-]term persistence" would depend completely on the mechanism, location, species, and life stage affected. Broadly speaking, such an impact would involve a perturbation beyond that experienced naturally, and beyond the resilience of the species in question, that could interrupt one of its life process to a degree that could cause declines in population size potentially leading to local extirpation.
503.1	round 1	Lax Kw'alaams Band	4.9.4	Marine Fish and Fish Habitat	Building upon Screening Comment ID#s 111 and 114 - the Crab Sampling is still inadequate to meaningfully characterize impacts to Crab populations in the project area. Stantec (Aurora LNG) are still not providing the veracity of their scientific evidence as to why their approach is scientifically defensible. Additionally Stantec's 'professional experience' is often cited by Stantec as the rationale for why their conclusions are justified, with no specifics as to what this 'professional experience' actually is or how said experience directly relates to the validity of the conclusions and predictions being made.	As stated in the response to Screening Comment ID# 111, information on crab life history, habitat preferences, and presence in the Project area was collected from scientific literature and site-specific field studies. These field studies included opportunistic crab trapping in August 2014, March 2015, August 2015, and May 2016, and subtidal remotely operated vehicle (ROV) surveys in July 2014, September 2014, and November 2015. For detailed results of these field studies, please refer to the Marine Fish and Fish Habitat TDR (Appendix L). While crab trapping was opportunistic, the ROV surveys yielded quantitative data on the abundance of various crab species (e.g., Dungeness, red rock, tanner) in Casey Cove, East Digby Island, and South Digby Island. These data are presented in Appendix 2 of the Marine Fish and Fish Habitat TDR.
504.1	round 1	Lax Kw'alaams Band	4.9.5	Marine Fish and Fish Habitat	Building upon Screening Comment ID#s 115 and 118 - Fish Habitat Offsetting and definitions of Fish Habitat Productivity - Stantec's reply in this case is that the only standard they/Aurora LNG have to meet in this case is that of the Fisheries Act as currently practiced and enforced by DFO which is unaccepatble to Lax Kw'alaams. This is unacceptable to Lax Kw'alaams because the Fisheries Act as currently practiced and enforced by DFO does not protect fish habitats and consequently the fish that rely on these habitats.	Aurora LNG acknowledges the comment. The Fisheries Act and associated policy documents protect marine fish habitat through Section 35(2) of the Fisheries Act, which prohibits serious harm to fish that are part of, or support, a commercial, recreational or Aboriginal (CRA) fishery. DFO (2013) defines serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; or c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Aurora LNG is committed to offsetting any residual serious harm to fish that results from the Project. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
505.1	round 1	Lax Kw'alaams Band	4.9.5	Marine Fish and Fish Habitat	Building upon Screening Comment ID#119 - Fisheries Habitat Offsetting and the Fisheries Act - Both how DFO practices Habitat Offsetting and the Fisheries Act do not ultimately protect fish habitat functions and hence fish - therefore the current Fisheries Habitat Offsetting plans as proposed by Stantec/Aurora LNG are unacceptable to Lax Kw'alaams.	Aurora LNG acknowledges the comment. The Fisheries Act and associated policy documents protects marine fish habitat through Section 35(2) of the Fisheries Act which prohibits serious harm to fish that are part of, or support, a commercial, recreational or Aboriginal (CRA) fishery. DFO (2013) defines serious harm serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; or c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Aurora LNG is committed to offsetting any residual serious harm to fish that results from the Project. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
506.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	The assessment of the potential impacts to eelgrass and other marine vegetation from suspended sediments has not been adequately conducted. The Application states that "productivity and mortality of eelgrass shoots decline when at least 25% of the photosynthetic surface is rapidly buried" and that since this is not the case with the predicted sediment deposition patterns, there will be no effect to eelgrass habitats. However, the Application does not describe the predicted deposition relative to eelgrass shoot length, nor does it acknowledge that available light levels are one of the most important factors that control eelgrass abundance, health and growth, with light attenuation of the water usually controlling the maximum depth at which eelgrass is found. TSS mobilized by Project infrastructure and activities is expected to enter the water column, increasing light attenuation. The decrease in light levels and the potential impact of that decrease on subtidal eelgrass beds should be included in the assessment.	Eelgrass survey results are reported in Appendix L, Section 5.4. This section includes summary data on canopy/shoot height for each area surveyed. For example, in Casey Cove, mean canopy height based on foot delineation data was 51 cm (SD=23) (Appendix L, Page 64). The 25% burial statistic is based on information reported by DFO. In Casey Cove, assuming a mean shoot length of 51 cm, 25% (rapid) burial would equate to 12.75 cm. Model predictions indicate that sediment deposition beyond the dredge boundaries is expected to be lower than 1 cm and, therefore, well below the depth for a 25% coverage. At Frederick Point, mean eelgrass canopy height was 25 cm (SD = 20) (Appendix L, Page 66), and at South Digby Island it was 46 cm (SD = 41) (Appendix L, Page 67). In this area, cumulative sediment deposition following dredging is expected to be less than 1 cm within 500 m (northern berth) or 200 m (southern berth) of the LNG Jetty dredge areas, which is well below the depth for 25% coverage. Consequently, there is very low likelihood that eelgrass will experience the 25% coverage postulated to affect growth and mortality. It is also unlikely that eelgrass will be adversely affected as a result of TSS-driven reductions in light penetration -- and, hence, reduced photosynthesis -- for three reasons. First, TSS plumes will occur only during dredging activity (falling to background levels almost immediately once dredging stops), which is restricted to the DFO least risk timing window of November 30 to February 15th. During these winter months, eelgrass production is at its annual minimum due to reduced light availability and temperature, and productivity and biomass drop by approximately 75-80% (Nelson and Waaland, 1997). Second, concentrations of TSS plumes outside the immediate dredge area are expected to be less than 25 mg/L and will move continuously with the tide, resulting in intermittent exposure of eelgrass to reduced light penetration in the water column. Third, water quality monitoring will be implemented to meet water quality guidelines at specific distances from the dredging activity, allowing for adjustments to be made to limit the spatial extent of TSS plumes. Consequently, the temporary, localized increases in TSS concentrations during dredging are not expected to adversely effect eelgrass beds in the area. Reference: Nelson, T.A. and J.R. Waaland. 1997. Seasonality of eelgrass, epiphyte, and grazer biomass and productivity in subtidal eelgrass meadows subjected to moderate tidal amplitude. Aquatic Biology 56: 51-74.

507.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	More information is required regarding the mitigation measures chosen and their impact on the Project effects. The description of the mitigation measures should include an alternatives assessment describing alternate mitigation measures and why they were not chosen, a description of what "success" of a mitigation measure is defined as, and citations for the efficacy, risk, and uncertainties of each mitigation measure	The information provided for each mitigation measure identified in Section 4.9 (Marine Fish and Fish Habitat VC) is consistent with the requirements of Section 3.6.3 of the Application Information Requirements (AIR) document for the Aurora LNG Project, which was approved by the EAO. Similarly, the information provided in the assessment of alternative means of undertaking the project is consistent with the requirements of Section 1.6 of the AIR, which is focused on alternative designs and technologies rather than mitigation measures. The Application includes a description of the mitigation measures, indication of how they mitigate potential effects, rationale for selection, evaluation of anticipated effectiveness, and description of potential risks and uncertainties associated with their implementation, if there is uncertainty regarding effectiveness. Additional details on the mitigation measures to address potential effects to marine fish and fish habitat, including written procedures, specifications, and controls that direct Project activities, will be provided in the Marine and Freshwater Resources Management Plan (see Section 14, Summary of Proposed Environmental and Operational Management Plans). For potential adverse residual effects predictions with low prediction confidence or uncertainty in a specific component of the assessment, follow-up programs will be implemented to assess the accuracy of the predictions made in the Application and the effectiveness of mitigation measures. Aurora LNG is committed to developing and implementing compliance and effectiveness monitoring and reporting for Fish Habitat Offsetting (see Section 15.3.5 of the Application) and a follow-up program for Marine Water Quality (see Section 15.3.6 of the Application).
508.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	The description of impacts from habitat changes contains several references to the biodiversity, species richness, and productivity of different habitat types with citations to studies undertaken in other countries, primarily in Europe, and no local references. The marine fish and fish habitat appendix provides site-specific information about habitat use, but is not referenced. Please update this section to include more relevant references and a discussion of biodiversity, species richness, and species abundance in the relevant habitat types based on the site-specific information collected during baseline studies.	Information on marine fish and fish habitats in areas potentially affected by the Project was collected through a literature review and numerous site-specific field studies, as summarized in the Marine Fish and Fish Habitat TDR, Appendix L. The marine fish and fish habitat assessment relies on this information to characterize existing conditions and assess potential Project effects; Appendix L is referenced in Section 4.9.3 (Existing Conditions), Section 4.9.5.2 (Assessment of Change in Habitat) and Section 4.9.5.4 (Assessment of Change in Mortality Risk).
509.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	Please provide more information of why "Changes in substrate as a result of dredging that cause a permanent alteration of soft sediment are not expected to cause serious harm to fish", while permanent alteration to other habitat types is expected to constitute serious harm.	Aurora LNG acknowledges the role of soft sediment habitats in supporting a range of infaunal invertebrates (such as clams and cockles) and benthic species (such as Dungeness crab), as well as its role in supporting eelgrass. However, Aurora LNG is of the opinion that the permanent alteration or destruction of soft sediment habitat will not constitute serious harm to fish (i.e., reduce the ability of a commercial, recreational, or Aboriginal [CRA] fishery species to complete one or more life process) and, hence, will not require offsetting. Soft sediment habitats are relatively common and widely available in the Project area, and, compared to hard substrates, they do not typically support rich vegetative assemblages (e.g., Peterson 2005; with the exception of eelgrass, for which losses will be offset). As such, soft substrate habitats are usually associated with low vegetation cover, low habitat complexity, and low species richness (e.g., Guidetti 2000; Giakoumi and Kokkoris 2013). Soft substrate communities are also relatively quick to recover from disturbance, requiring approximately one to five years to reach a climax state (Newell et al. 1998). Further discussion is provided in the Conceptual Fish Habitat Offsetting Plan, Appendix V. Aurora LNG acknowledges that this plan is conceptual and will be refined following feedback and consultation with DFO and Aboriginal Groups. References: Giakoumi, S. and G.D. Kokkoris. 2013. Effects of habitat and substrate complexity on shallow sublittoral fish assemblages in the Cyclades Archipelago, North-eastern Mediterranean Sea. Mediterranean Marine Science, 14, Feb. 2013. Guidetti, P. 2000. Differences among fish assemblages associated with nearshore Posidonia oceanica beds, rocky-algal reefs and unvegetated sand habitats in the Adriatic Sea. Estuarine, Coastal & Shelf Science, 50 (4), 515-529. Newell, R. C., L. J. Seiderer and D. R. Hitchcock. 1998. The Impact of Dredging Works in Coastal Waters: A Review of the Sensitivity to Disturbance and Subsequent Recovery of Biological Resources on the Sea Bed. Oceanography and Marine Biology: an Annual Review 36: 127-178. Peterson, C. 2005. Nearshore Benthic Communities. In: The Gulf of Alaska – Biology and Oceanography. Munday, P.R. (Ed). University of Alaska, Fairbanks.
510.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	Please provide more information about the guidelines referred to in the statement: "Deposition of sediment is expected to be measurable, but below regulatory guidelines, and unlikely to affect the long-term persistence of any marine fish population"	Dredging is predicted to result in the resuspension of sediment, which will subsequently settle over nearby substrate. The subsequent deposition of this sediment is not anticipated to permanently alter or destroy fish habitat and is not expected to constitute serious harm to fish as defined under the Fisheries Act.
511.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	The Application predicts that there will be only low magnitude impacts from sediment deposition, citing the natural deposition rate. However, the natural deposition rate is not throughout the site is not provided, just the maximum rate anywhere in the Project area, which is less than half the predicted maximum deposition predicted to be caused by Project activities. Please provide a map or series of maps that includes current deposition rates and predicted final deposition rates assuming all activities (including dredging and infrastructure installation) occur to allow for comparisons to natural state and variation.	Hydrodynamic modeling was conducted to predict potential changes in sediment erosion and accretion patterns due to the physical presence of in-water marine infrastructure (see Appendix M, Hydrodynamic Modelling of Changes in Sediment Erosion and Accretion due to Project Infrastructure). The model predicted, among other parameters, local rates of natural sediment deposition throughout the Project area. Figure 64 of Appendix M displays natural rates of sediment deposition (per year) and maximum changes in erosion and deposition patterns (per year) for areas off the southern tip of Digby Island. Figure 65 displays natural sediment deposition rates (per year) and maximum changes in erosion and deposition patterns (per year) for areas within and around Casey Cove. Sediment transport modeling was conducted to predict potential sediment transportation and deposition associated with dredging activities (see Appendix G, Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling). Predicted sediment deposition following completion of dredging activities is displayed in Figure 9-10 (MOF), Figure 10-4 (Berth 1, north dredge pocket), Figure 10-5 (Berth 1, south dredge pocket), and Figure 10-6 (Berth 2).
512.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	The Application is inconsistent where impacts from dredge disposal in Brown Passage are concerned. Descriptions of the context and existing environment at Brown Passage refer to the marine community as still disturbed by historical dredge disposal at the site, but refer to the disturbance created by the Project disposal as unlikely to persist beyond "one to five years". The most recent historical disturbance from dredge disposal at Brown Passage occurred in 2007, ten years ago. If the marine community has not yet recovered from historical impacts over the space of ten years, it seems highly unlikely it will recover from the Project disposal in less than half that time. The assessment should either be redone under the assumption that previous disturbances have been recovered from and Brown Passage is now an undisturbed environment, or the Project disturbance description should be changed to "permanent". Either way, please provide justification and citations or survey results to support the change.	Residual effects associated with the disposal of dredged material at Brown Passage are considered to occur in a disturbed context (as opposed to an "undisturbed" context). The definition of "disturbed" is: "area has been substantially previously disturbed by human development or human development is still present" (see Table 4.9-5 of the Marine Fish and Fish Habitat VC). Brown Passage is considered a "disturbed environment" because of its historical use as a disposal site; it is not considered disturbed because human development is still present or because the benthic community has not recovered. Based on available studies, soft sediment habitats (such as those at Brown Passage) are thought to recover relatively quick from disturbance, requiring approximately one to five years to reach a climax state.
513.1	round 1	Lax Kw'alaams Band	4.9.5.2	Marine Fish and Fish Habitat	Predicted annual changes in sediment deposition due to the concrete caisson option show the establishment of large areas of continual scour in Casey Cove and the nearby channel. How will this impact the stability of the Project infrastructure and the algal beds and potential clam and scallop beds of Casey Cove?	Aurora LNG has not found evidence that there are large areas of continual scour in Casey Cove and the nearby channel as a result of the concrete caisson. Please review Figures 65a and 69a and b of Appendix X (Hydrodynamic Modelling of Sediment Erosion and Accretion due to Project Infrastructure). Figure 65a shows existing sediment erosion/accretion patterns; Figure 69a shows sediment erosion/accretion after project construction; and Figure 69b shows differences between post-construction and existing conditions. Figure 65a indicates that sediment naturally accretes within Casey Cove, especially around the mouth, where over 4 cm of sediment may be deposited annually. The only natural area of sediment erosion is off Charles Point, where up to 2 cm of sediment is eroded per year. Figure 69a indicates that, following construction, sediment will continue to accrete within, and at the mouth of, Casey Cove but, in contrast to existing conditions, will also accrete off Charles Point. Note there are no blue areas in Figure 69a, indicating no sediment scouring is predicted in or around Casey Cove following construction. The blue areas in Figure 69b show a reduction in absolute accretion, and need to be interpreted in light of natural conditions. Specifically, the blue area within Casey Cove will experience up to 2 cm LESS sediment accretion annually than it does naturally; the blue area within the mouth of Casey Cove will experience, in some places more than 4 cm LESS sediment accretion annually than it does naturally. Finally, please note that the area of predicted sediment accretion off Charles Point is the focal point of the Marine Sediment Deposition Monitoring Program, which is described in Section 15.2.3 of the EA. In summary, no scouring due to installation of the concrete caisson MOF option is predicted in or near Casey Cove and, as such, no impact is predicted on the stability of the Project infrastructure, algal beds or potential clam and scallop beds of Casey Cove.
514.1	round 1	Lax Kw'alaams Band	4.9.5.3	Marine Fish and Fish Habitat	The Application states that the acoustic behavioural-disturbance thresholds for fish were not used because there are uncertainties regarding habituation and continuous vs. sporadic noise types. However, it does not appear that any behavioural thresholds were used instead and the Application does not provide any alternate method of measuring extent or severity of behavioural disturbance. Please provide more information about how behavioural disturbance to fish from acoustic changes to habitat were assessed and what approach was used to determine the magnitude and geographic extent of the disturbance.	As stated within the Application, Table 4.9-3, there are no established thresholds for noise levels that are likely to result in behavioural effects on marine fish. In the absence of such established thresholds, a qualitative assessment using published studies on variable marine fish responses to underwater noise was used for the assessment of change in behaviour to describe the range of potential responses that may occur. The lack of established thresholds is less related to uncertainties regarding habituation and continuous versus impulsive sounds, but more related to the wide range of potential responses (e.g., behaviour avoidance of sound source, startle response, no response) between life stages of the same species and between different species to various sounds types, intensities and frequencies. The majority of behavioural studies have also been conducted in a laboratory setting and findings may not be representative of responses in the marine environment. As described in the Application, Section 4.9.5.3, the conclusion of no established thresholds for changes in marine fish behaviour to underwater noise is supported by Popper et al. (2014). Reference: Popper, A. N., A. D. Hawkins, R.R. Fay, D. A. Mann, S. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P. H. Roger, B. L. Southall, D. G. Zeddies, and W.N. Tavolga. 2014. Sound Exposure Guidelines for Fishes and Sea Turtles. A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Published by the Acoustical Society of America.
515.1	round 1	Lax Kw'alaams Band	4.9.5.3	Marine Fish and Fish Habitat	The statement that a ramp-up procedure will be effective at mitigating for behavioural impacts to fish shows a lack of understanding of the function of a ramp-up procedure. The purpose of a ramp-up procedure is to induce a behavioural effect to drive fish from an area where they may experience physical injury or mortality. If there is no behavioural impact, the ramp-up procedure has no purpose and will not mitigate for mortality.	The ramp up procedure is intended to trigger localized avoidance behaviours in marine fish located near pile driving activities in order to minimize potential injury and mortality associated with exposure to elevated levels of underwater noise. This mitigation measure (#4.9.12) is included in Table 4.9-18 (Mitigation Measures Proposed to Avoid or Reduce Change in Mortality Risk). It is not intended to be a mitigation measure for potential changes in fish behaviour, and should not have appeared in Table 4.9-15 (Mitigation Measures Proposed to Avoid or Reduce Change in Behaviour). An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
516.1	round 1	Lax Kw'alaams Band	4.9.5.3	Marine Fish and Fish Habitat	The assessment of the impact of artificial lighting on marine fish states that "Changes to predator-prey relationships in artificially lit waters with elevated turbidity (e.g., active dredging sites) are expected to be limited due to a reduction in visual prey detection and reaction distances in more turbid waters". Many CRA fish in the area are piscivorous and will also be impacted due to the reduction in visual prey detection and reaction distances decreasing their ability to feed and reducing survival. This impact should be included in the assessment to marine fish.	Neither the ability to feed nor the survival of piscivorous fish species are expected to be measurably affected by the reduction in visual prey detection distances in turbid waters. Piscivorous fish, as with other fish species, are likely to avoid turbid waters and feed in the areas of unaffected marine habitats that surround the higher turbidity waters adjacent to the active dredging sites. Silt curtains employed around dredging sites (where practicable), reduce the spatial extent of suspended sediments and create a physical barrier reducing the number of fish swimming into the waters with higher turbidity.
517.1	round 1	Lax Kw'alaams Band	4.9.5.3	Marine Fish and Fish Habitat	The impact of overwater structures on fish migration was assessed by comparing the areal extent of the structures compared to the area of nearshore habitat in the estuary. This is an inappropriate way of characterizing the impact of the structures. The presence of the structures potentially alters a migration route and by altering it so that it can no longer be used as migration habitat by juvenile salmonids. The impact should be assessed by measuring the additional distance the juvenile salmonids will have to travel to avoid it on their new migration route, and the impact should be considered "serious harm" through permanent habitat alteration	Potential for residual serious harm to fish as a result of any permanent alteration associated with the construction, presence or operational use of marine infrastructure (i.e., following the implementation of avoidance and mitigation measures) is assessed in the Conceptual Fish Habitat Offsetting Plan, Appendix V. For physical works predicted to result in residual serious harm to fishas defined under Fisheries Act, Aurora LNG will apply for authorization under Paragraph 35(2)(b) of the Fisheries Act, and as required, propose a means for offsetting. Based on the limited areal extent of the proposed overwater structures that may shade nearshore waters, and considering high availability of suitable habitats in the surrounding waters, effects on the nearshoremigrations of fish (e.g., juveniles salmonids) are expected to be minimal and will not constitute serious harm to fish.
518.1	round 1	Lax Kw'alaams Band	4.9.5.4	Marine Fish and Fish Habitat	It is unclear how either colonization of pilings or the backfilling of pipelines are expected to mitigate for fish mortality. Please provide a clearer mitigation mechanism description	The use of materials (e.g., hard rocky substrate) that promote colonization of algae and invertebrates during Project construction (Mitigation No. 4.9.1), and replacing intertidal and subtidal substrates following trenching and backfilling for installation of seawater pipes (Mitigation No. 4.9.7), are not intended to reduce the potential for fish injury or mortality. Rather, these measures are expected to minimize the lag time between completion of construction activities and re-colonization of affected invertebrate and algal communities, thereby minimizing the duration of the residual effect of injury or mortality.
519.1	round 1	Lax Kw'alaams Band	4.9.5.4	Marine Fish and Fish Habitat	The citation given for the statement "More motile invertebrates (e.g., Dungeness crabs [Metacarcinus magister]) and fish (e.g., right-eye flounders [Family Pleuronectidae], pricklebacks [Family Stichidae], and eelpouts (Zoarcidae spp.) are relatively less vulnerable to injury or mortality during dredging due to their ability to flee the area" does not support the statement. In fact, it states that there was no evidence of active avoidance of dredge activities that would minimize mortality, that there was evidence "Dungeness crab populations can be negatively impacted by dredging operations unless proper precautions are taken" and moreover only examined entrainment in the dredging, not disposal at sea (Reine and Clarke 1998). Similarly, the citation given to support the assumption that active fish species would avoid burial does not support that statement as it only studied the effects on clams and crabs and states that no studies on active fish species exist (Chang and Levings 1976). These citations are the only evidence given to support the conclusion that the dredge and disposal will not impact non-benthic species, and thus that conclusion should be removed and the impact of dredge and disposal on non-benthic species reassessed.	Aurora LNG acknowledges the highlighted inaccuracies in the references. These references will be updated as described below; however, Aurora LNG is confident that the assessment of change in mortality risk described in Section 4.9.5.4 will not be affected by these updates. The Chang and Levings (1976) citation should have been : Chang, B.D. and C.D. Levings. 1976. Laboratory experiments on the effects of ocean dumping on benthic inverterbrates. I. Choice tests with solid wastes. Technical Report No. 637. Published by Environment Canada, Fisheries and Marine Service. This reference studied substrate burrowing and re-surfacing patterns in 10 benthic invertebrates and states that, "sessile or slow-moving epifauna will be most affected, since they will be unable to avoid the dumped material." The citation given for the assertion that active fish species and crab will avoid dredges should have been: McGraw, K.A. and D.A. Armstrong. 1990. Fish entrainment by dredges in Grays Harbor, Washington. In C.A. Simenstad (ed.). Effects of Dredging on Anadromous Pacific Coast Fishes. Workshop Proceedings, Seattle, September 8-9, 1988. Washington Sea Grant Program, University of Washington, Seattle. This reference states that concurrent trawl and dredge samples indicated that "larger crabs and some fish were avoiding dredges". An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.

520.1	round 1	Lax Kw'alaams Band	4.9.5.6	Marine Fish and Fish Habitat	The Application states "Rougheye rockfish, a deep water species, may occur in offshore benthic habitats along the shipping route, but is unlikely to be present within the PDA or adjacent nearshore habitats." Baseline studies of Brown Passage conducted for the Pacific Northwest LNG project found rockfish nursery areas (sponge gardens) in the deep water of Brown Passage. Rougheye rockfish may rear in these nursery areas. A survey of the habitat and fish presence and abundance of this area should be carried out.	Aurora LNG reviewed the results of the subtidal survey of the Brown Passage disposal site, as documented in the report Brown Passage Subtidal Survey, submitted by Pacific Northwest LNG in December 2014 as an addendum to the Application for an Environmental Assessment Certificate. Based on the results of the subtidal survey, glass sponges were observed in relatively low abundances (< 25% per 100 m) at the Brown Passage disposal site (see Appendix B-2 of the Brown Passage Subtidal Survey report). However, Aurora LNG is of the opinion that rougheye rockfish are unlikely to occur at the Brown Passage disposal site for the following reasons: i) rougheye rockfish were not confirmed as a species observed during the subtidal survey of Brown Passage and ii) rougheye rockfish prefer steeply sloped boulder fields surrounded by soft substrata (Love et al. 2002). Brown Passage is composed primarily of gently-sloping soft sediment habitat, with sparse and scattered pockets of cobble and boulder. If rougheye rockfish (or any other rockfish) are present during disposal at sea activities, it is reasonable to assume that most individuals will move away from the area during disposal events and return once the disturbance is completed. References: Love, M.S., Yoklavich, M., and L. Thorsteinson. 2002. The Rockfishes of the Northeast Pacific. University of California Press: Los Angeles, California. 405 pp. Pacific NorthWest LNG. 2014. Brown Passage Subtidal Survey. Prepared by Stantec Consulting Ltd. for Pacific NorthWest LNG. Submitted December 2014 as an addendum to the Application for an Environmental Assessment Certificate.
521.1	round 1	Lax Kw'alaams Band	4.9.6	Marine Fish and Fish Habitat	Building upon Screening Comment ID#120 - ROV Surveys -How did Stantec compensate for the inherent limitations of the ROV technique along with the other fisheries sampling techniques employed?	ROV surveys are best suited to characterizing benthic habitats and associated demersal fish and invertebrate species. As noted in the original Screening Comment ID #120, some mobile species (e.g., pelagic fish) may avoid the ROV, resulting in undersampling. To address this limitation, in addition to ROV, Aurora LNG used multiple complementary survey methods to characterize marine communities within the Project area, which are detailed in Appendix L (Marine Fish and Fish Habitat Technical Data Report). Specifically, intertidal surveys (Section 5.1), crab surveys (Section 5.3), eelgrass surveys (Section 5.4), and beach seine, tangle net, and trawl surveys (Section 5.5). Additional information on species presence and use of the Project area was obtained from a review of available technical reports and scientific literature (Section 4).
522.1	round 1	Lax Kw'alaams Band	4.9.6.3	Marine Fish and Fish Habitat	"It is considered that cumulative effects will occur if there are likely to be Project specific residual habitat changes overlapping with those of other projects or physical activities" (p.4.9-111) This approach is inconsistent with how impacts to fish and fish habitat have been assessed in every other instance of the Application. In every other aspect, impacts have been assessed on how they affect the population, with the particular area being affected considered irrelevant. The assessment of cumulative effects should be consistent with the assessment of Project-specific effects and either Project-level effects should be looked at on the scale of local area rather than subpopulation, or cumulative effects should be assessed anywhere another project or activity impacts the same population	Area is a measurable parameter for this potential effect; habitat use and dependency by species of the specific area affected underpins the assessment of the potential for serious harm to fish; the specific area affected, the availability of similar habitat nearby, and the ecological role played by the specific area affected underpin the assessment of whether or not habitat offsetting is required; and specific area affected is also central to the characterization metrics of Geographic Extent and Context (Table 4.9-5). The extension to populations occurs during the characterization of magnitude of effect - just one index by which residual effects are characterized - and the final determination of significance of effect. Any other project or activity that has had, or is expected to have, an effect within the RAA was considered in the cumulative effects assessment, regardless of whether or not there was a spatial overlap with the Aurora LNG-specific residual effects. Instead, a broader perspective was considered, and cumulative effects are characterized using the same metrics as for Project-specific residual effects (see Section 3.7.6), of which, as described above, one aspect is the population-level ramifications. Please note, the methods employed to conduct both Project-specific and cumulative effects assessment are standard approaches endorsed by the EAO and follow the methods described in the AIR.
523.1	round 1	Lax Kw'alaams Band	4.9.6.3	Marine Fish and Fish Habitat	The assessment of the residual cumulative effects compares the amount of high quality critical habitat (including only vegetated areas and rocky substrates while excluding soft substrates) to the amount of fish habitat of any kind in the LAA and RAA. This is an inappropriate comparison: if Aurora LNG contends that these substrates are unusually high value compared to the abundant soft substrate, then they must be compared only to similarly high value habitat in the LAA and RAA, and should be compared quantitatively, not qualitatively, and expressed as a percentage of such habitat available in the LAA and RAA	Please see the technical memo titled "Comparison of High Value Fish Habitat." This technical memo will be filed with the BC EAO.
524.1	round 1	Lax Kw'alaams Band	4.9.6.3	Marine Fish and Fish Habitat	The cumulative effects assessment was undertaken with the assumption that regulatory agencies will "require adjustments to construction schedules to mitigate potential cumulative effects on marine fish health" (p. 4.9-117) in the case of overlapping schedules. It is inappropriate for responsibility for the mitigation of cumulative effects to be offloaded to regulatory agencies with the assumption that they will put programs in place that do not currently exist. If Aurora LNG wishes to use non-overlapping schedules as a mitigation measure, they must commit to adjusting their schedule to prevent overlap	The assessment of residual cumulative effects for changes in marine fish health (Section 4.9.6.6 of the Marine Fish and Fish Habitat VC) did not assume that the construction schedules of reasonably foreseeable future projects would not overlap with that of Aurora LNG. As stated on Page 4.9-188, "If construction schedules do overlap with the Project, a relatively larger area within the RAA could be affected by suspended sediment, which could affect the health of a greater number of marine fish, or, result in longer-duration effects on individual fish if they happen to migrate through multiple sediment plumes." The characterization of residual cumulative effects for changes in marine fish health considered the possibility that construction schedules could overlap, and did not assume that regulatory agencies would schedule project works to avoid overlap.
525.1	round 1	Lax Kw'alaams Band	4.9.7	Marine Fish and Fish Habitat	Building upon Screening Comment ID#121 - Lax Kw'alaams reiterates that compliance with the *Fisheries Act* is insufficient to prevent harm to the marine environment and marine resources.	Aurora LNG acknowledges the comment. While it is not Aurora LNG's responsibility to comment on the effectiveness of the Fisheries Act, Aurora LNG looks forward to discussing this issue further with Lax Kw'alaams Band.
526.1	round 1	Lax Kw'alaams Band	4.9.9	Marine Fish and Fish Habitat	Building upon Screening Comment ID#125 - same as comments for ID#121	Aurora LNG acknowledges the comment. While it is not Aurora LNG's responsibility to comment on the effectiveness of the Fisheries Act, Aurora LNG looks forward to discussing this issue further with Lax Kw'alaams Band.
527.1	round 1	Lax Kw'alaams Band	4.9.10	Marine Fish and Fish Habitat	Building upon Screening Comment ID#126 - same as comments for ID#121	Aurora LNG acknowledges the comment.
528.1	round 1	Lax Kw'alaams Band	4.9.9	Marine Fish and Fish Habitat	The development of the marine follow up and monitoring plans is expected to be "developed in consultation with the DFO and BC Oil and Gas Commission" (p. 4.9-124). Lax Kw'alaams requires consultation on the development of these plans as well.	Aurora LNG will consult with Lax Kw'alaams and other Aboriginal Groups on the development of marine follow up programs and monitoring plans.
529.1	round 1	Lax Kw'alaams Band	4.9.9	Marine Fish and Fish Habitat	Building upon Screening Comment ID#125 - Citing additional monitoring activities (e.g. Marine Water Quality monitoring, marine sediment deposition monitoring, etc.) as going 'above and beyond the call of duty' is a fallacy at best. The additional monitoring activities cited are in reality the bare minimum that should be done to conduct a truly comprehensive Environmental Assessment (the absence of substantial baseline data sets to comprehensively inform and make monitoring activities empirically meaningful notwithstanding).	Aurora LNG acknowledges the comment.
530.1	round 1	Lax Kw'alaams Band	4.9.10	Marine Fish and Fish Habitat	Building upon Screening Comment ID#126 - Residual Effects Determination - again a case of Stantec (Aurora LNG) leaning on their 'professional experience' without a direct explanation of relevance. Essentially there is still no transparent explanation from Stantec as to how their data defensibly shows there will be no residual effects on fish populations and marine resources.	To clarify, the marine fish and fish habitat assessment concludes that residual effects on marine fish and fish habitat are expected to be not significant; it does not conclude that there will be "no residual effects on fish populations and marine resources". Residual effects are expected following the implementation of avoidance and mitigation measures; these are characterized in Sections 4.9.5.2, 4.9.5.3, 4.9.5.4 and 4.9.5.5 of theApplication. This approach follows standard EA methodology, as was stated in the Application Information Requirements.
531.1	round 1	Lax Kw'alaams Band	Appendix L	Marine Fish and Fish Habitat	Eulachon adults and larvae were not adequately sampled for in the baseline surveys. As species of conservation concern that may be present during the least-risk timing window proposed by the Proponent, their use of the habitat must be characterized. Adult eulachon were captured using midwater trawls in early March during the initial baseline data gathering. The migration routes and migration timing for adult eulachon in the Skeena River are largely unknown and their presence in March raises concerns that they may use the Project area in February for staging as well, during the least risk timing window, and experience serious harm through mortality or removal of migration habitat for the construction period due to acoustic alteration of the habitat. Lax Kw'alaams requests additional sampling with midwater trawls to determine adult eulachon presence in February, March, and April, as well as additional sampling or analysis necessary to identify the presence, seasonality, and abundance of larval eulachon.	Information on eulachon, in areas potentially affected by the Project, was obtained from both publicly available literature and from Project-specific field studies (Appendix L, Marine Fish and Fish Habitat TDR). Project-specific field studies reported the following information on eulachon: -Thirty-six adult eulachon were captured at night by mid-water trawl in March 2015 in the channel between Digby Island and Kaien Island (n=6) and in waters off the coast of south Digby (n=30, see Section 3.4.4 of Appendix 5 of Appendix L). Trawling was not completed during any other of the six marine fish surveys. -No adult eulachon were captured by beach seine at any location in the LAA during any sampling period, including February 2016, March 2015, April 2014, and May 2016. While this result does not mean that adult eulachon do not use nearshore habitats in the LAA, it does suggest that their use of these nearshore habitats - where most of the Project infrastructure will be located - is limited. -Unidentified larval fish belonging to the Family Osmeridae (which may have included larval eulachon, but also includes other smelts) were observed in beach seine catches completed in the LAA in August 2014, March 2015, October 2015, February 2016, and May 2016. Beach seine catches of unidentified larval fish are presented as catch per unit effort in Figure 41 (Casey Cove), Figure 43 (East Digby Island), Figure 45 (South Digby Island) and Figure 47 (Delusion Bay). It was not possible to identify individuals down to the species level in the field (i.e., to confirm if individuals were eulachon), as this requires DNA analysis. -In March 2015, DNA analysis of 49 tissue samples taken from unidentified juvenile osmerids captured by beach seine and mid-water trawls was completed (see Section 3.4.8 of Appendix 5 of Appendix L). Tissue samples confirmed that unidentified juvenile osmerids captured by mid-water trawl were capelin, and unidentified juvenile osmerids captured by beach seine were surf smelt. DNA analysis did not identify any individuals as eulachon. The information outlined above, coupled with information on the approximate timing of spawner migration (i.e., adults on their way to freshwater streams) and outbound migration (i.e., larvae and juveniles leaving the streams, on their way to deeper, offshore waters, see Table 6 of Appendix L) was considered in the characterization of potential residual effects. Aurora LNG is of the opinion that this level of information supports the assessment of effects on eulachon. Aurora LNG is confident that the proposed mitigation measures (i.e., measures 4.9.1 through 4.9.15, described in Section 4.9 of the Application) will be effective at reducing potential adverse effects on eulachon.
532.1	round 1	Lax Kw'alaams Band	Appendix L	Marine Fish and Fish Habitat	The Project is located near important and productive shrimping areas and contains habitat that matches the general description of shrimp and prawn nursery habitat (subtidal vegetation, particularly kelps and eelgrasses). However, shrimp and prawns were not surveyed except opportunistically during the baseline studies, so the importance of the Project to this important Lax Kw'alaams food species is cannot be determined. The response of shrimp and prawns to acoustic disturbances or dredging is not well known, so there is a high level of uncertainty related to the potential for impacts to these species. Shrimp and prawns may experience mortality due to acoustic injury, population decreases due to habitat alteration and destruction, or be driven from previously-abundant shrimping areas by acoustic disturbances causing Lax Kw'alaams harvesters to be unable to locate them. Additional studies to assess the use of the area by juvenile and adult shrimp and prawns should be undertaken	Information on marine fish (including shrimp and prawn of CRA importance) and fish habitats (including eelgrass and kelp) in areas potentially affected by the Project was collected from publicly available literature as well as dedicated field surveys, including subtidal ROV surveys (see Appendix L, Marine Fish and Fish Habitat TDR). Subtidal ROV surveys were completed in July 2014, September 2014, and October 2015, and recorded observations of shrimp and prawn in the LAA. Observations of shrimp and prawns are displayed on Figure 16 (Casey Cove), Figure 20 (East Digby Island), and Figure 24 (south Digby Island) of Appendix L. Aurora LNG acknowledges the importance of marine fisheries (including shrimp and prawn) to Lax Kw'alaams Band. An assessment of potential effects on species harvested by Lax Kw'alaams Band is provided in Section 11.3.7.3 (Assessment of effects on CEAA 5(1)(c) factors); an assessment of potential effects on Lax Kw'alaams Band's ability to harvest marine resources, including shrimp and prawn, is provided in Section 12.5.4.6 (Aboriginal Consultation, Part C). Aurora LNG acknowledges that the hearing ability and the physical and behavioral responses of benthic invertebrates (including shrimp and prawn) to underwater noise is poorly understood. However, mitigation measures intended to reduce potential behavioural effects and potential injury or mortality of marine fish (as identified in Table 4.9-15, Table 4.9-18, and Table 4.9-20 of the Marine Fish and Fish Habitat VC, Section 4.9) are expected to also reduce potential effects to marine invertebrates. For example, the installation of enclosed bubble curtains during impact pile driving will provide noise attenuation and reduce underwater sound levels emitted to the marine environment, thereby reducing potential effects to both fish and marine invertebrates in the surrounding area. Aurora LNG recognizes the value of nearshore habitats (such as eelgrass and kelp beds) as nursery areas for numerous marine species, including shrimp and prawn. The permanent alteration or destruction of eelgrass and kelp habitat will be offset as per requirements under the Fisheries Act. Offsets that have been identified as potential options include expanding existing eelgrass beds and creating new rocky habitat that will support both understory and canopy-forming kelps. Additional details are provided in the Conceptual Fish Habitat Offsetting Plan (Appendix V). This plan will be further refined through consultation with DFO and Aboriginal Groups.
533.1	round 1	Lax Kw'alaams Band	Appendix L	Marine Fish and Fish Habitat	The PDA and LAA contain abundant clam, cockle, and scallop habitat. Bivalve surveys should be undertaken to characterize species use of the habitat that may be impacted by the Project	Information on bivalves (including clams, cockles, and scallops) within areas likely to be affected by the Project was collected from a review of the literature and from Project-specific field surveys. This information is summarized in Section 4.2.4 (Marine Invertebrates), Section 5.1 (Intertidal Survey) and Section 5.2 (Subtidal ROV Surveys) of the Marine Fish and Fish Habitat Technical Data Report (Appendix L). Aurora LNG is of the opinion that this information is sufficient to characterize potential effects on bivalves.
534.1	round 1	Lax Kw'alaams Band	Appendix L	Marine Fish and Fish Habitat	More information is required regarding the visual range of the ROV, especially under turbid conditions	The intent of the ROV survey was to describe physical habitat and describe presence/relative abundance of marine vegetation, algae, fish, and invertebrates in the subtidal zone (Appendix L, Section 5.2.1). Pre-determined ROV transects were designed to provide a representative cross-section of the LAA. These transects were benthic in nature, as the ROV was typically less than 0.5 m from the sea bed (Appendix L, Section 5.2.2). Forward-facing field-of-view was typically around 1 m at any given point. During ROV surveys, field biologists continually monitored weather and visibility conditions. Aurora LNG is confident that turbidity did not affect the quality of ROV video. Typical quality or ROV footage can be seen in Table 10, and Photos 22 to 31 (Appendix L). ROV video was used as one component of the characterization of existing conditions. The absence of any given species from the ROV data was not used to infer absence from the LAA.
535.1	round 1	Lax Kw'alaams Band	Appendix L	Marine Fish and Fish Habitat	Lax Kw'alaams surveys undertaken on Flora Bank found Pacific herring spawning activity in June, which was also observed during the PNW LNG baseline surveys. Herring spawning near Metlakatla and Tugwell Island has also been reported with similar unusually-late spawning timing. The observations included in this report as evidence of the absence of herring spawning were undertaken much earlier in the year. As juvenile herring were captured but no spawning activity was observed in April, the possibility of a similar late spawning population in the Project area should be explored, and a herring spawning survey undertaken during June.	Timing of herring spawning was based on DFO's database, which spans many decades: no herring spawning was observed in the LAA, at any time of year, from 1933 - 1997 (with the exception of years for which data were not available - see Figure 6 of Appendix L).Note that Metlakatla and Tugwell Island do not fall within the LAA boundaries. Further, no evidence of herring spawning was observed during field surveys, which included March (2015), April (2014), May (2016), July (2014 and 2015) and August (2014). Aurora LNG will continue to be vigilant for signs of herring spawning during future marine work.

536.1	round 1	Lax Kw'alaams Band	Appendix L.2	Marine Fish and Fish Habitat	In general, healthy juvenile salmonids have a condition factor of approximately 1. The low mean condition reported suggests that the majority of captured salmon were extremely emaciated. This should be explored further as it may influence the response to Project-related disturbances	The condition factor reported in Appendix L.2 was calculated from 77 pink salmon measured in April 2014 and 14 pink salmon measured in March 2015. Pink salmon migrate downstream to salt water soon after emergence. They are smaller and less physically developed than other salmonids when they initially reach salt water (Gallagher et al. 2013). The fork lengths reported and timing of capture of pink salmon described in Appendix L.2 indicate that these individuals had likely recently outmigrated (Heard 1991). The condition factor of 91 recently-outmigrated pink salmon cannot be used to suggest that "the majority of captured salmon were extremely emaciated". The condition factor of stressed fish may be counter-intuitive (see Morton and Routledge 2006 for discussion) and it is therefore not considered an appropriate monitoring parameter for potential Project-related disturbance. References: Gallager, Z.S., J.S. Bystrianski, A.P. Farrell, and C.J. Brauner. 2013. A novel pattern of smoltification in the most anadromous salmonid: pink salmon (Oncorhynchus gorbuscha). Canadian Journal of Fisheries and Aquatic Sciences 70:349-357. Heard, W.R. 1991. Life History of Pink Salmon (Oncorhynchus gorbuscha). In C. Groot and L. Margolis (eds). Pacific Salmon Life Histories. UBC Press. Vancouver, BC. Morton, A. and R.D. Routledge. 2006. Fulton's condition factor: is it a valid measure of sea lice impact on juvenile salmon? North American Journal of Fisheries Management 26:56-62.
537.1	round 1	Lax Kw'alaams Band	4.10.4	Marine Wildlife - Marine Mammals	Discharges to the marine environment, expected during Construction, Operations, and Decommissioning, are described as not likely to result in impacts to marine mammals and the marine environment and are therefore not identified as a potential pathway for impact. Hocts, as described in Section 9, accidental releases may impact marine mammals and the marine environment. While large releases may be unlikely, smaller accidental releases are more likely and should be considered in the assessment of impacts. Even discharges such as sediment run-off may impact marine mammal food sources and should be considered further	Project-related discharges to the marine environment that may occur during construction, operations, and decommissioning, as discussed in Section 4.10, refer to discharge such as wastewater and storm water or release of hydrostatic test water. Based on experience on similar projects, and professional judgement, potential changes to water quality, and subsequently, marine mammal health, are not anticipated as discharges will be appropriately managed and treated prior to release, and guidelines and regulatory requirements will be followed. Section 9.0 Accidents and Malfunctions assesses potential residual effects on marine mammals as a result of small-scale and large-scale on-shore hazardous spills, vessel grounding or collision, and releases from LNG carriers (while loading). The potential residual effects associated with the introduction of land-based sediment into the marine environment were assessed in the Water Quality VC (Section 4.5) and the results from the assessment were used to inform potential effects on changes in fish health in the Marine Fish and Fish Habitat VC (Section 4.9).
538.1	round 1	Lax Kw'alaams Band	4.10.3.2	Marine Wildlife - Marine Mammals	The baseline monitoring of the acoustic environment summarizes the percentage of time recorded sound levels were in excess of the NOAA threshold for marine mammal disturbance. This provides a useful descriptor of marine mammal experience of the environment, please provide a similar estimate of the percentage of time the thresholds would be breached during Construction and Operations	It is important to note that the percentages reported in the acoustic monitoring report (Appendix O of the Application) are based on sound levels recorded in the field, as opposed to being the result of a predictive modelling exercise. The assessment therefore conservatively assumed that marine mammals in the vicinity of Project activities may be exposed to underwater noise capable of causing behavioural change over the duration of such activities. Anticipated durations of such activities are summarized below. In-water blasting is expected to occur over a period of approximately 2.5 months at the LNG jetty. Underwater acoustic modelling was not conducted for blasting, but source levels are expected to exceed the NOAA interim behavioural disturbance threshold for pulse noise throughout this activity. Underwater acoustic modelling of rock socket drilling at the LNG jetty predicted that sound levels would exceed those capable of causing sensory disturbance to marine mammals according to NOAA's interim thresholds for non-impulsive sources (i.e., 120 dB re 1 µPa rms). Assuming one pile is installed at a time, rock socket drilling at the LNG jetty is expected to occur for approximately 2,930 hours (i.e., 122 days) over a period of 23.5 months. Under a full production scenario (four drill rigs active at once), noise from rock socket drilling would be introduced into the marine environment for approximately 733 hours (31 days) over a two year period. Details concerning the amount of rock socket drilling that would be required at the MOF were not available at the time of assessment. Assuming similar durations to those expected at the LNG jetty, rock socket drilling under the pile-and-deck design would introduce up to a maximum of 4,960 hours of noise (i.e., 207 days) at the MOF over a period of 8.5 months (assuming only one pile is installed at a time). Under the full production scenario (i.e., 8 simultaneous piles) it would take approximately 620 hours (26 days) spread out over 8.5 months. For impact pile installation, according to the current schedule, there would be approximately 2 days of pile installation at the MOF under the concrete caisson design. Total pile installation time over this period would be 15 hours (assuming 1 hour per pile). Under the pile-and-deck design at the MOF, impact pile installation would introduce up to a maximum of 496 hours of noise from pile installation (assuming one pile at a time and 1 hour per pile) into the marine environment over a period of 8.5 months. If two sets of pile driving equipment were active simultaneously (the maximum expected), it would take 62 (non-consecutive) days to install the piles, spread out over 8.5 months, with pile driving noise from two simultaneous piles introduced to the marine environment for up to 4 hours each day. At the LNG jetty, impact pile installation would introduce up to a maximum of 196 hours of underwater noise, spread out over approximately 23.5 months (assuming one pile at a time). If four piles were installed simultaneously at the LNG jetty, there would be approximately 73 non-consecutive days that involved 40 minutes of pile driving (49 hours of noise over two years), and each of these days would be followed by at least two days of no pile driving. Dredging and disposal at sea are not predicted to produce underwater noise at levels that exceed NOAA regulatory thresholds for behavioural disturbance at distances more than a few hundred metres from the source. During operations a marine mammal may be exposed to underwater noise above the NOAA interim behavioural disruption threshold (for continuous noise) from LNG carriers for roughly one to two hours in every 24-hour period, along the shipping lanes.
539.1	round 1	Lax Kw'alaams Band	4.10.5.2	Marine Wildlife - Marine Mammals	The potential impacts of dredging and disposal at sea on marine mammal prey is described as non-significant due to the prediction of no significant impact to the fish species as evaluated in Section 4.9. However, Section 4.9 evaluates impacts to fish and fish habitat through the lens of the*Fisheries Act* . The *Fisheries Act* focuses entirely on fish that belong to a commercial, recreational, or aboriginal fishery, and uses the thresholds of "permanent alteration and destruction of habitat" or mortality sufficient to harm fish population viability as the threshold. Marine mammals feed on a wider range of species than are captured in CRA fisheries, including species like baleen whales that do not feed on fish at all. Marine mammals are also impacted by the abundance of their food sources, and may experience negative impacts due to lack of prey items if prey abundance decreases, even if the prey population is not completely extirpated. The evaluation of impacts to marine mammal prey (and therefore marine mammal health and survival), must be examined separately from the identification of violations to the *Fisheries Act*	The scope of the marine fish and fish habitat assessment (Section 4.9) captured a range of species guilds, including (but not limited to) benthic, demersal, and pelagic species; short- and long-lived species; anadromous and purely oceanic species; migratory and non-migratory species; and invertebrate and fish taxa; which includes many marine mammal prey species. The assessment also considered prey species of CRA fish and their habitats. Across this broad range of species, the assessment determined that underwater noise generated by in-water construction activities and Project-related vessels is expected to result in localized changes in fish behaviour (e.g., temporary avoidance behaviours, altered swimming directions or startle responses) but that with the implementation of avoidance and mitigation measures, residual adverse effects are not expected to threaten the long-term persistence of a marine fish population. Similarly, the assessment determined that some marine organisms, primarily sessile or slow-moving fish or invertebrates, are expected to be killed through burial or crushing during in-water construction activities, or experience health effects following exposure to TSS levels above the 5 mg/L guideline for the protection of marine life. However, habitats remaining after construction will be colonized via dispersal and immigration from nearby areas, and that effects would be short-term, with recovery within one to two generations. Therefore, the combined residual Project effects on marine fish and fish habitat were predicted to be not significant. Since the potential effects on marine fish and invertebrates (i.e., change in habitat, change in behaviour, change in mortality risk, and change in health) and the pathways and mechanisms of effect are the same whether the individual species in question is classified as a CRA fish (and its prey) or not, Aurora LNG maintains that residual effects to marine mammals with respect to the availability of prey species have been adequately characterized within the assessment and are expected to be not significant.
540.1	round 1	Lax Kw'alaams Band	4.10.5.2	Marine Wildlife - Marine Mammals	While Lax Kw'alaams understands that Project-specific engineering designs for blasting are not available at this stage, it is nevertheless concerning that as a result no acoustic modeling of underwater blasting was constructed. Underwater blasting is almost certain to cause significant negative impacts on marine mammals, regardless of mitigation measures. It is not acceptable to postpone attempting to estimate these impacts until after an Environmental Certification decision is made	Although no underwater acoustic modelling of Project-specific in-water blasting was completed for the assessment, the potential residual effects on change in health for marine mammals and change in behaviour for marine mammals as a result of in-water blasting (with implementation of industry-standard mitigation measures and BMPs) were assessed in Sections 4.10.5.2 and 4.10.5.3. Aurora LNG maintains that the residual effects on change in health and change in behaviour for marine mammal due to in-water blasting have been adequately characterized within the assessment.
541.1	round 1	Lax Kw'alaams Band	4.10.5.4	Marine Wildlife - Marine Mammals	The Project is predicted to have a significant, permanent impact on marine mammal mortality through ship trikes from LNG shipping and other supporting vessel traffic. The Application describes this increased risk in vague, qualitative measures such as describing the overall likelihood as "medium". Given the conservation status of several of the marine mammal species that may be impacted by ship strikes, and the predicted increase in the number of large vessels transiting through the water relative to current conditions, Lax Kw'alaams requests that a quantitative analysis of the likelihood be made. Quantitative analyses have been required of other, similar projects in BC, such as the one carried out in support of the Transmountain Pipeline Expansion Project.	As strike risk increases in higher density traffic areas, the likelihood of residual cumulative effects for change in mortality risk to marine mammals is considered high. In the event of an accidental vessel strike, effects on the marine mammal involved are assumed to be permanent and irreversible, and would be of heightened concern for SARA-listed species. Based on current marine mammal population sizes and trends for species known to occur in the RAA, changes in mortality risk are considered unlikely to affect population viability, and as noted in the Application, are therefore expected to be not significant. Quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result, and as noted in the IR, a qualitative analysis was completed, with a moderate level of prediction confidence. This approach is consistent with the approach taken for the recently approved Pacific NorthWest (PNW) LNG project, that will occur in the same region of BC. The analysis conducted for Transmountain Pipeline Expansion Project provided estimates of potential vessel-whale encounter risk. This analysis did not extend to vessel-whale strike risk due to limited data available on species-specific responses (e.g., whether the animal dives or turns) to vessel approach. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.
542.1	round 1	Lax Kw'alaams Band	4.10.6	Marine Wildlife - Marine Mammals	Screening Comment ID #140 - the Proponent states "While not explicitly referenced, the assessment was undertaken with consideration given to the modelling results of proposed future projects as well as the research on reduction in communication space." A detailed description of how the modelling results of proposed future projects were included in the cumulative effects assessment is needed. Likewise, a description of the predicted reduction in communication space from the Project alone and in a cumulative effects assessment is needed to characterize Project impacts on marine mammals	Underwater acoustic modelling for other projects (e.g., PNW LNG), where data was publicly available, was included in the cumulative effects assessment of changes in health and behaviour for marine mammals through a consideration of the extents of noise resulting from other potential projects, and the degree to which they may overlap/interact with modelled predictions for the Project. This included the potential extents of underwater noise from both construction and shipping activities. Potential loss of communication space is often estimated based on ambient sound levels (i.e., stemming from a current in-field measurement program, as opposed to a predictive modelling exercise). Modelling of potential cumulative reductions in marine mammal communication space would present substantial technical challenges as many of the necessary variables, such as specific construction equipment and vessel types, activities, timing, and use of mitigation measures would not be known. As a result, a qualitative assessment of potential cumulative effects of change in health and change in behaviour as a result of underwater noise on marine mammals was completed. The assessment of change in behaviour for marine mammals, as a result of Aurora LNG project activities, considered not only the extents of underwater noise to the NOAA interim disturbance thresholds (for pulse and non-pulse noise), but also species-specific disturbance thresholds based on literature values (i.e., killer whales [Williams et al. 2002a; Williams et al. 2002b]; humpback whales [McCauley et al. 2000]; harbour seals [Bailey et al. 2010]; and harbour porpoise [Tougaard et al. 2015]). Zones of audibility for killer whales, humpback whales, harbour seals and harbour porpoise were also calculated for Project-related activies. Aurora LNG maintains that the inclusion and consideration of the multiple marine mammal disturbance thresholds is sufficient to assess the potential residual effects of underwater noise and that predictive modelling of communication space is not expected to change the conclusions of the assessment.
543.1	round 1	Lax Kw'alaams Band	4.10.7.1	Marine Wildlife - Marine Mammals	This sections describes "hot spots" of marine mammal abundance, overlap with areas in which there are expected to be disturbances due to the project, and suitable alternative habitat. Please provide maps showing these described areas.	This section of the Application summarizes results from marine mammal surveys conducted for the Aurora LNG Project and for the PNW LNG project. For the Aurora LNG Project, please see the Marine Mammals TDR, Appendix N. The maps showing predictions of hotspots of high marine mammal density on the PNW LNG project, as referenced in Section 4.10.7.1, are presented in Stantec (2016), which is available at the link below. Stantec Consulting Ltd. (Stantec). 2016. Pacific NorthWest LNG Project Marine Mammal Program Final Report. Prepared for Pacific NorthWest LNG Limited Partnership. Burnaby, BC. 154 pp. Available at: http://www.pacificnorthwestlng.com/media/Marine%20Mammal%20Final.pdf.
544.1	round 1	Lax Kw'alaams Band	4.10.7.1	Marine Wildlife - Marine Mammals	The characterization of residual effects states that the change in mortality risk to marine mammals "is not anticipated to threaten the long-term persistence of a marine mammal species or local population in the RAA". Please provide the quantitative risk threshold that would result in an expected threat to the long-term persistence of species in the RAA.	For the marine mammals VC, a significant adverse residual effect was defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA. As outlined in Section 4.10.2.8 of the Application, the significance thresholds represent the limits of an acceptable change in a measurable parameter or state of the VC, based on applicable legislation, regulatory guidance documents or other management standards. Where thresholds are not set by legislation, guidance documents or standards (as in this case), a threshold has been developed based on scientific literature and professional judgment.
545.1	round 1	Lax Kw'alaams Band	Appendix N	Marine Wildlife - Marine Mammals	The Project is located near two major winter haulout sites and two year-round haulout sites, as well as near a Steller sea lion IA. Steller sea lions appear to use the area frequently, especially in the winter, with potentially more than 1/3 of the number of individuals residing in the entire Queen Charlotte Basin being observed in a single survey event (275 individuals, compared to the population estimates of 700-9,000). Please provide more information on how the acoustic disturbances from the Project are expected to impact the use of these sites, particularly as the use of the winter haulout sites coincides with the least-risk timing window in which the activities likely to cause the greatest acoustic disturbance are planned to be carried out	Please see the "Steller Sea Lion Haulout Sites" technical memo, which will be filed with the BC EAO.
546.1	round 1	Lax Kw'alaams Band	Appendix O	Marine Wildlife - Marine Mammals	Section 3.3 states that the data were not analyzed for sea lion vocalizations. Given the frequency at which sea lions were observed in the nearby Kinahan Islands and the proximity of important haulout sites, impacts on Steller sea lions are of interest. Please provide information on Stellar sea lion vocalizations in the marine mammal recordings	Analysis of ambient noise recordings for marine mammal vocalizations is a useful means of identifying the presence and occurrence of species of marine mammals that spend long periods of time underwater or might otherwise be difficult to detect visually. Given the surface-active behaviours of most species of pinnipeds, and their tendency to haul out, analysis of underwater noise data for pinnipeds is considered less informative (i.e., it is already understood that Steller sea lions occur in the area year-round; see Appendix N - Marine Mammals Technical Data Report). As such, it is not anticipated that the additional analysis proposed would alter the conclusions presented in the Application.

547.1	round 1	Lax Kw'alaams Band	4.11.5.2 Assessment of Change in Habitat	Marine Wildlife - Marine Birds	1. The section characterizing residual effects for change in habitat states: "Given that most marine birds present in the LAA and RAA have secure populations and have access to other suitable marine habitats, marine birds are expected to demonstrate a moderate degree of resilience to change in habitat availability as a result of the Project." Residual effects should not be characterized based on the average but rather on the most sensitive receptors; in this case, marine birds that are most sensitive to habitat impacts should be used to characterize residual effects. This consideration must be added to this section to be able to characterize the significance of the residual effect. 2. It is not clear at present whether the assessment sufficiently considered the change in wave action from increased vessel traffic on nesting habitat on the foreshore. This may be particularly important for Important Bird Areas (IBAs) and identified marine bird habitat based on TK within the LAA. Without this information in the application, it is not possible to determine whether potential effects on habitat have been fully accounted for. LKFN requests that this consideration be added to the application and considered within the assessment of impacts to habitat from the proposed Project. COMMENT CONTINUED BELOW	1. As noted in Section 4.11.5.1 of the Application, several assumptions were used in the effects assessment for marine birds to facilitate a conservative approach, including (but not limited to): The assessment was based on species that are known, or are reasonably expected, to occur within the LAA or RAA (based on range, occurrence records, and habitat requirements) and, consequently, have the greatest potential for interaction with the Project Effects of the Project on marine birds were considered for the VC as a whole; species-specific sensitivities are described within each effect where identified in supporting literature Based on these assumptions, the Application considers species (or species group) sensitivities where there is a potential for effect, and considers the extent of the potential for interaction (e.g., seasonal abundance, distribution) in combination with factors that may limit recovery from those effects (e.g., species' conservation status, habitat specialists) in characterizing resilience and determining significance. Although residual Project effects are characterized for marine birds overall, they are based on the greatest potential for effect (i.e., species or species groups most likely to be affected) with supporting discussion on the nature of that relationship. 2. The effects of transiting vessels, including noise and wake effects, are assessed as part of change in movement, in Section 4.11.5.4 of the Application. Section 6.5.4.2 of the Application provides details on wake from operational shipping traffic. Waves generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high at the source vessel and is within the size range of naturally occurring waves in the region. Historical data collected at weather buoys operated by Environment and Climate Change Canada indicate the average wave heights in Hecate Strait were 1.8 m. The Project's shipping route passes through unconfined waters in Chatham Sound towards Hecate Strait, which lends itself to larger distances between transiting carriers and shoreline habitats. This will allow wake waves to grow smaller (attenuate) as they travel over distance. As outlined in Section 4.11.5.4, Environment and Climate Change Canada recommends that large vessels maintain distances greater than 500 m from breeding colonies to reduce disturbance effects while transiting. Because the Project's shipping route is located more than 1 km from the nearest known marine bird colony, the disturbance caused by LNG carriers for the Project are expected to attenuate to levels representative of average ambient wave conditions within the LAA and RAA. Maintaining distance from active marine bird colonies will reduce the potential for disturbance, including flushing of breeding adults from active nests. Aurora LNG has committed to limited potential for wake effects in foreshore habitats by maintaining a distance of greater than 500 m from known marine bird colonies (mitigation 4.11.1) and limiting transiting speeds of LNG carriers, tugs, and barges to 16 knots or less, with slower speeds on approach to the marine terminal.
548.1	round 1	Lax Kw'alaams Band	4.11.5.2 Assessment of Change in Habitat	Marine Wildlife - Marine Birds	3. This section also states that "The SAIC (2011) determined that an underwater sound exposure level of 202 dB can cause injury to marbled murrelet, and that exposure levels exceeding 208 dB could result in barotrauma. Birds in the immediate in the vicinity of pile driving activities may be exposed to noise levels of up to 230 dB re 1 µPa during marine construction and are likely to be disturbed; however physical injury is not expected due to the distance birds are expected to maintain from pile driving and blasting activities." LKFN is concerned that birds in close proximity to pile driving activities may be injured in the absence of mitigations that would move the birds away from the area before pile driving begins. 4. This section further states that "Noise produced by Project vessels is estimated to be 206 dB re 1 µPa for transiting tugs, and up to 186 dB re 1 µPa for transiting LNG carriers of the existing shipping lane and are well below the threshold expected to cause injury in diving bird species (see Appendix P Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting)." Given that the noise associated with transiting tugs is so high, it may be expected to disrupt marine bird habitat use at a greater distance than 1 km from the shipping lane. Lax Kw'alaams requests Nexen provide a map showing noise effects at 1km out for marine birds (above and under water).	Scientific understanding and recognition of the potential effects of underwater noise (i.e., behavioural and injury thresholds) on marine mammals have increased dramatically in recent decades. However, for other marine taxa (e.g., marine birds) there remain substantial limitations in current scientific understanding of this potential stressor. Recognizing that the detailed technical information (and effects thresholds) necessary to assess effects of underwater noise levels encountered by marine birds is limited, an acoustic model for marine birds was deemed inappropriate. The nature and extent of underwater noise effects are limited to species who spend a portion of their life cycle below the water surface (i.e., diving and pursuit foragers) that are likely to use marine habitats experiencing elevated noise levels. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations). Given available scientific evidence, the SAIC (2011) concluded that terrestrial and marine mammals represent reasonable surrogates for characterizing auditory injuries to marbled murrelets, while thresholds for fish are useful for estimating non-auditory injuries. Based on that species extrapolation, the SAIC (2011) estimated that a continuous 24-hour sound exposure level (SEL) greater than 202 dB dB re 1uPa could cause disturbance or injury to marbled murrelet. However, the SAIC (2011) recommends this as a guideline given that the SEL threshold represents a 24-hour cumulative exposure period (i.e., an individual remains submerged and its distance to the noise source remains constant for a continuous 24-hour exposure period) and has limitations in its application for species that are a) mobile, and b) spend only a proportion of its daily cycle below the surface of the water. Although Project-related activities may result in underwater noise production above 202 dB re 1uPa, marbled murrelets or other marine bird species are not expected to be exposed for a sufficient period to sustain injury. Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to noise reduction for blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Reference: Science Applications International Corporation (SAIC). 2011. Environmental science panel for marbled murrelet underwater noise injury threshold. Prepared for: US Navy, Bothell, WA. 34 pp.
549.1	round 1	Lax Kw'alaams Band	5.2.2.4 Selection of Potential Effects and Measurable Parameters	Economic Conditions	The AIR clearly requires the assessment of any change in both resource-based primary industries and traditional/rights-based economies. Related measurable parameters include "Change in resource quality and quantity,change in access to resources, market value of affected resources." (p. 5-2) To adequately measure this as part of the Economic Conditions VC, Lax Kw'alaams requests that country food harvest locations, quantities, and replacement value be included in the assessment to predict and quantify change in resource-based primary industries and subsistence economies.	Detailed information on quantities of country foods harvested from specific locations, and replacement values was not available for consideration in the assessment. Therefore, the assessment of effects on subsistence harvesting drew on conclusions reached in Application sections dealing with wildlife (Sec. 4.7), freshwater fish (Sec. 4.8), seaweed and shellfish (Section 4.9), and marine fish (Section 4.9). For each of these country food sources, it was concluded that, with the application of the proposed mitigation measures, the Project would have a negligible to low effect on the sustainability of these resource. It was also concluded there would be a low to medium magnitude effect on subsistence fishing using trawling techniques. Subsistence fishing using other harvesting techniques (e.g. rod and reel, trapping, or shoreline harvesting) have less likelihood of being affected by the project due to limited overlap with the Project activities.
550.1	round 1	Lax Kw'alaams Band	5.2.2.5 Boundaries	Economic Conditions	The assessment does not provide a disaggregated baseline of existing conditions, nor any disaggregated analysis of potential effects on the Lax Kw'alaams economy - both commercial and FSC (food, social, cultural). The AIR states "Where available, disaggregated data will be presented" (p. 5-3). Nexen and LKFN will be submitting a co-authored supplemental filing that will provide a disaggregated assessment potential project effects on the LKFN economy, including subsistence. Nexen must include this missing information in the co-authored supplemental filing with Lax Kw'alaams.	Data that was made available by the Lax Kw'alaams Band prior to submission of the Application for screening was included in the assessment. Subsequent to the Application submission, Aurora LNG received the following study from Lax Kw'alaams: "Impacts of the Proposed LNG Project on Lax Kw'alaams." Aurora LNG has produced the "Review of Lax Kw'alaams Band Socio-Economic Impact Study" technical memo which reviews the additional socio-economic information contained within the Lax Kw'alaams report, and assesses the implications of this new information on the conclusions within the Application at the time of the filing. The technical memo will be filed with the BC EAO.
551.1	round 1	Lax Kw'alaams Band	5.2.3.1 Methods	Economic Conditions	Please update consumption rates of harvested traditional foods so they better reflect the regional consumption rates for Lax Kw'alaams and Metlakatla and re-assess effects on Economy VC.	Traditional foods consumption rate information provided in the Application is based on available information as of the Application submission date (November, 2016). This included consumption rate information included in the Metlakatla First Nation's Socioeconomic Conditions Report (MSS 2016). A review of the Lax Kw'alaams Band's Aboriginal Interest and Use Study (AIUS) (submitted to Aurora LNG in February / March 2017 during Application review) did not identify specific traditional food consumption rates. A review of the Lax Kw'alaams Band's Socio-Economic Impact Study (Phase 1) submitted to Aurora LNG on January 31, 2017 did not specifically identify traditional food consumption rates (although the importance of traditional foods to Lax Kw'alaams Band members is made clear in the documents). Similarly, a review of the Lax Kw'alaams Band's Socio-Economic Impact Study (Phase 2) which was submitted to Aurora LNG in March of 2017 (also during Application review) did not identify traditional food consumption rates. Aurora LNG will review and respond to additional information on traditional food consumption rates if that information is provided by Lax Kw'alaams Band or Metlakatla First Nation during the Application review period. Reference Metlakatla Stewardship Society (MSS). 2016. Metlakatla Socioeconomic Conditions Report. prepared for Aurora LNG Energy ULC.
552.1	round 1	Lax Kw'alaams Band	5.2.5.3 Assessment of Change in Resource-based Primary and Subsistence Economies	Economic Conditions	The analysis presented in this section is missing reference to Lax Kw'alaams' members' experience and perceptions of the quality of edible and medicinal plants, wildlife, fish, seaweed and shellfish, and other country foods harvested as the result of industrialization of the Prince Rupert harbour area. Nexen must include this missing information in the co-authored supplemental filing with Lax Kw'alaams.	Perceptions of the quality of traditionally harvested foods is not addressed in Section 5 of the Application. Rather, Section 5 addresses the potential for the Project to affect the availability of such food. Change in harvested foods, including perceived quality is addressed in Section 6.6 of the Application.
553.1	round 1	Lax Kw'alaams Band	6.2.2.4 Selection of Potential Effects and Measurable Parameters	Visual Quality	The Proponent's justification to omit shipping traffic (frequency) and light in the assessment of potential effects on visual quality is unsubstatiated with any compelling rationale (6.2-5). While shipping traffic may exist, the frequency and distribution of shipping traffic will increase with the further industrialization of the region.*Lax Kw'alaams requests that the Proponent include the assessment of shipping traffic on visual quality, which will have a detrimental impact of Lax Kw'alaams sense of place with the LAA and RAA, in order to adhere to the AIR requirements (6.2.4, 3.5). Without the inclusion of Project-related LNG carriers and tug traffic, the assessment remains inadequate and insufficient.*	As discussed in Section 6.2.2.4 of the Application, the effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not introduce new visual elements or be visibly prominent from most viewpoints along the shipping route.
554.1	round 1	Lax Kw'alaams Band	6.2.3.2 Overview (Existing Conditions for Visual Quality)	Visual Quality	Lax Kw'alaams sense of place, cultural continuity, and inter-generational knowledge transfer, which occur on both land and water, will be detrimentally impacted by the transformation of the visual landscape/viewshed caused by the potential Project. Thus, Lax Kw'alaams' members who traverse the water adjacent to the proposed Project will be impacted by the expanding industrial infrastructure, docked large marine vessels (and support vessels), and increased vessels along the shipping route. Lax Kw'alaams requires that the Proponent add viewpoints from the water based on As discussed in Section 6.2.2.4 effects from shipping were not carried forward in the assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not be visibly prominent from most viewpoints along the shipping route. site selection areas. The Proponent and the Crown intends to partially rely upon Part B assessment of visual quality to assess impacts on rights (Part C). For this reason alone, it is necessary that Lax Kw'alaams' perspective on visual quality be captured in this section.	Information available to Aurora LNG at the time the EAC Application submitted for screening was included in the potential effects assessment on changes in visual quality on Lax Kw'alaams (see Section 12.5.4.6 Assessment of Effects on Lax Kw'alaams Band Harvesting-Related Aboriginal Interests). Subsequent to filing the Application, Aurora LNG received additional socio-economic information from the Lax Kw'alaams. Aurora LNG prepared a memo titled: "Review of A Socioeconomic Impact Study: In Regards to the Impacts of the Proposed Aurora LNG Project on Lax Kw'alaams" (Therrien et. al 2017) summarizing this additional information and determining whether the new information altered conclusions in the Application with respect to socio-economic VCs. However, Therrien et al 2017 contains no additional information regarding visual quality or aethetics. As discussed in Section 6.2.2.4 effects from shipping were not carried forward in the assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not be visibly prominent from most viewpoints along the shipping route. Aurora LNG acknowledges the concerns of Lax Kw'alaams Band and have created additional renderings.Please see the technical memo"Additional Visual Quality Renderings" that will be filed with the EAO and includes the following information: Additional "before and after" renderings of the Project including views of Casey Cove and from marine viewpoints near the Project site. Additional night time rendering from VP01An additional day and night-time rendering of the Project that includes a flare event Reference Therrien, C, S. Thomson, and E. Wagner. March 2017. A Socio-economic Study: Phase 2, In Regards to the Impacts of the Proposed Aurora LNG Project. Submitted to Lax Kw'alaams.
555.1	round 1	Lax Kw'alaams Band	General comment	Infrastructure and Services	Nexen's decision to use an on-site industrial work camp for construction and operations, including a new float camp at a new facility during early construction and fly-in-fly-out (FIFO) operations, has not been properly discussed with Lax Kw'alaams nor have the impacts and benefits of these options been properly examined, despite AIR requirements in Section 1.6. Lax Kw'alaams asks that Nexen provide details on alternative worker accommodation and transportation options, including full accommodations in Prince Rupert, mixed work camp and accommodations in Rupert, and mixed fly-in/fly-out workforce. For each option, we ask Nexen consider potential health, social, and economic impacts and benefits to our membership. For one or more preferred options, a more detailed and community-specific analysis is required to be provided in the Supplemental Filing. The community-specific assessment must consider the following potential effect pathways identified in Lax Kw'alaam's Phase 1 Socio-economic Impact Study and consider the most recent Provincial government funded guidance Indigenous Communities and Industrial Camps: Promoting Health Communities in Settings of Industrial Change (2017): • Attracting Lax Kw'alaams members back home; • Employment and business opportunities, including at management level; • LNG investment of local infrastructure and services; • Promotion of greater cultural understanding through ceremonies and recreation; • Decreased access to land and marine use sites and harvesting participation, decrease sense of safety for women and young people; • Barriers to employment, training, and education; • Compatibility of wage employment (project-specific and spin-off) and traditional economy and other community demands; • Diet and nutrition effects related to increase cost of living and decrease access to safe recreational spaces and traditional use activities; COMMENT CONTINUED BELOW...	The assessment of Infrastructure and Services (including that of other economic and social VCs) is based on the Project Description (June 27, 2014) and Section 1 of the Application (Project Overview). Additional consideration of effects related to the lodging of workers in a floating camp in Casey Cove on economic and social VCs can be found in the technical memorandum "Floating Camp Review". Also see the technical memo "Review of A Socioeconomic Impact Study: Impacts of the Proposed Aurora LNG Project on Lax Kw'alaams" for consideration of information provided to Aurora LNG post filing by Lax Kw'alaam's.

556.1	round 1	Lax Kw'alaams Band	General comment	Infrastructure and Services	• Effects of transitory population and increased substance abuse on women and children: o Sexual harrassment, assault, and sexual health; o Demand for sex traffic and sex work; o Sense of safety and barriers to transportation and service access; o Strain on already strained health, emergency, childcare, and social services; and, o Strain on air, road, and ferry services. Nexen must consider potential impacts on Lax Kw'alaams community, members, and families who may be indirectly affected by industrial changes or who may participate in employment opportunities. Where no community-specific data is available, a comparable case study must be considered.	Population change due to in-migrating and transient workers (i.e., fly-in/fly-out workers) inclusive of their spouses and dependents is included as an effect mechanism for change in community infrastructure and services (Section 6.3.5.2), transportation infrastructure and services (Section 6.3.5.4), and change in health care infrastructure and services (Section 6.3.5.5), as well as change in community health and wellness (Section 6.6.5.3). Many of the issues raised are addressed in these sections. In particular, Section 6.3.5.2 assesses changes in the capacity of emergency and protective services. Section 6.6.5.3 subsection 'Social Environments' addresses changes in crime, prostitution, and drug and alcohol use within local communities. Section 6.6.5.3 subsection 'Crime' further explores changes in safety and security as related to changes in social environments. Sections 6.3.5.4 and 6.3.5.5 addresses changes in transportation infrastructure and services (e.g., air, road and ferry) and health care infrastructure and services. See the technical memorandum "Review of A Socioeconomic Impact Study: Impacts of the proposed Aurora LNG project on Lax Kw'alaams" for consideration of information provided to Aurora LNG post filing by Lax Kw'alaams.
557.1	round 1	Lax Kw'alaams Band	Part E Summary of Proposed EMPs - Social Management Plan	Infrastructure and Services	Nexen's Social Management Plan provides far too little detail on mitigations and measures relevant to avoiding, minimizing, offsetting, or restoring Lax Kw'alaams-specific effects identified for each of the pathways described above. Only when each of the effects are identified in the Supplemental Filing (above) can mitigations be designed in a way that addresses these effects. For each of the effect pathways described above and in the Phase 1 Socio-economic Impact Study, Nexen must identify a suite of potential mitigations appropriate for Lax Kw'alaams to bring to the community to refine and verify for Nexen to capture in the Supplemental Filing. At minimum, the following measures must be included: • A Lax Kw'alaams Business Development and Employment Plan that includes hiring targets for Lax Kw'alaams members as a proportion of total numbers trained, hired, and issued contracts for all phases. Hiring targets should include targets for management-level, skilled workers, and unskilled workers. The measure must also identify specific steps that Nexen will take to ensure these targets will be met, along with other organizations, stakeholders, and Lax Kw'alaams. • In addition to Transportation Management Plan that aims to reduce traffic congestion by limiting worker access to Prince Rupert and Digby Island, Lax Kw'alaams requests that an Access Management Plan be developed for both on land and marine access and travel for the purposes of access for small vessels and foot traffic, notably for crossing linear features (e.g. under the marine jetty structure; across the access road). Such a plan will be essential for members who may still wish to access or travel through the area for a variety of purposes. It is expected that Prince Rupert and Digby Island will experience an influx of workers for the Project, for Project service providers, and spin off jobs. • Provide detailes on Worker Lodging Plan, including (at minimum), measures Nexen will implement to ensure workers are properly trained in cultural sensitivity, adoption of zero tolerance for possession or use of any drugs and alcohol on site, prohibition of firearms or fishing equipment at camp to deter encroaching on fishing and hunting in Lax Kw'alaams territory before or after shifts, among other measures. (For an example plan, see: Teck Baldy Ridge Application B9 Environmental Management Plans (http://a100.gov.bc.ca/appsdata/epic/documents/p413/d39797/1455558728518_28l2WCQYgPTjjxgW024dfJgZS6LJYbMtjb5ZYJz8fqdBj2vdpZ9T!-1912283657!1455554744165.pdf)	The level of detail provided in Section 14 of the Application is consistent with that provided in similar applications and that required by the AIR. See the "Review of A Socioeconomic Impact Study: Impacts of the Proposed Aurora LNG Project on Lax Kw'alaams" technical memo for consideration of information provided to Aurora LNG post filing by Lax Kw'alaams. While a Lax Kw'alaams Business Development and Employment Plan is not proposed, mitigation 5.2.1 is expected to increase local content and enhance beneficial effects of the Project. Through mitigation 5.2.1, Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases and develop work packages that consider the capacity and capabilities of local and regional businesses. Through mitigation 6.4.4, Aurora LNG will develop strategies for managing access to the PDA. Strategies will be included in the Transportation Management Plan and Stakeholder Consultation Plan (see Table 6.4-17 of the Application). Information on changes in access and use of marine environments will be communicated to mariners through safe-shipping workshops held at accessible locations and times (mitigation 6.5.5). Additional information on the worker lodging plan will be developed prior to project construction. Described in the Health and Medical Services Plan, Aurora LNG will: require all staff and contractors to undertake worker orientation, including communication of expected behaviours when transiting to/from local communities (a worker code of conduct) and cross-cultural awareness to help build awareness and respect of local concerns and customs to reinforce the importance of respectful conduct when in communities (mitigation 6.3.3). implement an Alcohol and Drug Policy focused on pre-placement testing, awareness, prevention, and control (mitigation 6.3.2). With respect to deterring fishing and hunting in Lax Kw'alaams territory, Aurora LNG will prohibit workers from storing hunting or fishing gear onsite (includes camps) (mitigation 6.4.5) and prohibit recreational and commercial fishing by workers (mitigation 4.8.11).
558.1	round 1	Lax Kw'alaams Band	6.3.2.4 Selection of Potential Effects and Measurable Parameters	Infrastructure and Services	Potential changes in access to businesses and trades, availability of labour and services should be included as a potential effect for Infrastructure and Services as this could have a profound impact on on-reserve and off-reserve LKFN	Section 5.2 (Economic Conditions) assesses changes in labour supply and demand, activities for commercial businesses affected by the Project, and resource-based primary industries and subsistence economies. Through the assessment of these effects the Application considers potential changes in access to businesses, trades and the availability of labour and services within the LAA and RAA.
559.1	round 1	Lax Kw'alaams Band	6.3.2.4 Selection of Potential Effects and Measurable Parameters	Infrastructure and Services	Please include a shadow population of job seekers and their families as a measurable parameter for this section.	The measurable parameter 'change in community infrastructure and services' accounts for 'shadow populations' (including job seekers and family members) through Project-specific population modelling (Section 6.3.5.2 provides the results of this modelling). Modeled changes in population are carried forward as effect mechanisms in the assessment of change in transportation infrastructure and services, change in accommodations and change in health infrastructure and services.
560.1	round 1	Lax Kw'alaams Band	6.3.3.2 Existing Conditions	Infrastructure and Services	Please compare and contrast the assumed levels of local construction workforce (3%) and in-migrants (2%) against levels experienced in other similar communities experiencing large-scale project development, for example Terrace. Provide a similar compare and contrast for local operation workforce (12%) and in-migrants (68%).	A 'compare and contrast assessment' of differing levels of local, in-migrant and fly-in/fly-out (FIFO) employment is not a requirement of the AIR. The scope of the assessment, including the use of local, in-migrating and FIFO estimates of employment, aligns with that provided in applications for environmental certificates of other LNG export facilities in northwest BC.
561.1	round 1	Lax Kw'alaams Band	6.3.5.2 Assessment of Change in Community Infrastructure and Services	Infrastructure and Services	Please provide analysis of projected change in dwelling sales price, rental rates, and temporary accomodation rates and potential pressure placed on segments of the local area population that may be especially sensitive to increases in dwelling costs. Where possible, use actual data from communities experiencing similar large-scale project development, for example Terrace.	Section 13.5.3 (Private Property Value) and 13.5.4 (Cost of Living) addresses issues and concerns related to the cost of accommodations, among other considerations, using a case-study based approach, including the City of Terrace.
562.1	round 1	Lax Kw'alaams Band	6.5 Marine Use and Navigable Waters	Marine Use and Navigable Waters	The statement "recreational fishers targeting groundfish directly along the shipping route might be displaced temporarily if a passing agreement cannot be made" should include Aboriginal groundfish fisheries, however, this is the "go elsewhere" approach that is inappropriate and has been rejected by Lax Kw'alaams. (6.5-61) Further, it assumes there is a safe and accessible place to fish or wait at nearby while the carrier passes, which might not be true in all weather or situations. There is no further mitigation for this displacement, this should be reassessed and meaningfully included. This assumption should be reassessed, along with proper, appropriate mitigation in consultation with Lax Kw'alaams.	See the "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments"" technical memo which will be filed with the BC EAO.
563.1	round 1	Lax Kw'alaams Band	6.5 Marine Use and Navigable Waters	Marine Use and Navigable Waters	Following from Screening comment #215, Lax Kw'alaams requests the Proponent to work with our fisheries department to address the problematic nature of the fisheries spatial data obtained from DFO through supplementary studies and/or data collection that was used to inform marine use and navigation. To achieve this end, Lax Kw'alaams requests the Proponent to consider perception of risk impact pathway into a supplementary submission relevant to impacts of on rights to navigation and fishing within the project assessment area (including shipping route).	Aurora LNG used extensive spatial data (with the most recent and largest coverage) from DFO) to understand the geographical extent of marine fisheries in the LAA. These data were available for most major commercial and recreational fisheries. Additional data were obtained from Aboriginal Groups and previously published reports in the region. Collectively, these data were the basis of Aurora LNG's understanding of the baseline fishing practices in the region. Aurora LNG's understanding of the fishing gear types and common practices used, the characteristics of the shipping route, and the use of mitigation measures (in addition to all national and international maritime laws and regulations in effect), as well as conservatively overstating potential effects to err on the side of caution, allowed for a thorough and detailed assessment. Aurora LNG is confident that no major gaps in their understanding exist but looks forward to working with the Lax Kw'alaams in the future on the topic of marine fisheries. While 'perceptions of risk' was not a measurable parameter identified in the AIR for the assessment of marine navigation or marine fisheries, the perception of risk can be discussed during the Safe-Shipping Workshops (Mitigation 6.5.5) proposed for the city of Prince Rupert prior to commencement of LNG shipping.
564.1	round 1	Lax Kw'alaams Band	6.5 Marine Use and Navigable Waters	Marine Use and Navigable Waters	Lax Kw'alaams requires maintained access to fishing areas. If the statement that "fishers or recreational users may be displaced from a fishing or recreation site if shipping traffic is frequent enough to make access impractical" includes Aboriginal fisheries and traditional use, this is the "go elsewhere" approach that is inappropriate and has been rejected by Lax Kw'alaams. (6.5-54) There is no further mitigation for this displacement, this should be reassessed and meaningfully included. If Aboriginal fisheries and traditional use isn't included in this statement, then it should be included in this section, along with proper, appropriate mitigation in consultation with Lax Kw'alaams.	See the "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments"" technical memo which will be filed with the BC EAO.
565.1	round 1	Lax Kw'alaams Band	6.5.3.2 Overview (Marine Use and Navigable Waters) 6.5.3.3 Summary (Marine Use and Navigable Waters) 6.5.5.1 Assessment of Residual Effects on Marine Use and Navigable Waters	Marine Use and Navigable Waters	Publically available information should be used to assess each VC, including the substantial and important data available on Aboriginal health. Table 6.6-1 outlines key information sources. Nexen's potential effects/measurable parameters are: potential change in community health and wellness and potential change in harvested food. Nexen's assessment misses: (a) well known Aboriginal health data sets and (b) well known and important Aboriginal health effects likely to result from the Project. As such, the assessment likely underestimates the magnitude of effect. For (a) information sources are presented in a technical memo, included as Appendix C to the Application Review comments. For (b), additional effects that should be scoped into the assessment include: (i) changes in health related to traditional food use, (ii) changes to income related food security, and (iii) other relevant, Aboriginal-specific health conditions missing from the Application. This information is imperative because there are already very high levels of food insecurity in Lax Kw'alaams that can be further impacted by changes in access/availability to country food resulting from Aurora and cumulatively with other proposed Projects and activities. Any change to current use (in Section 11.3) should take this sensitivity into strong consideration. At a minimum, Nexen must review Appendix C and update baseline, update the scope of assessment to include above parameters, consider results of Sections 11.3 and 11.4, and re-assess project-specific effects, cumulative effects and significance conclusions. A supplemental filing must be submitted to Lax Kw'alaams and the EAO to provide more precise analysis relevant to Lax Kw'alaams.	Baseline Information A conservative approach is used in the assessment of change in community health and wellness and change in harvested foods. Through this approach, as noted in Section 6.6.5.2 of the Application, "whenever uncertainty exists in the characterization of residual effects, such as data limitations and availability, and where potential data gaps have the potential to affect the reliability of residual effects characterization, the assessment assumes a relatively higher level of effects". While the description of existing conditions provided in Section 6.6.3 may not capture all publicly available information on Aboriginal Health, use of the aforementioned conservative approach reduces the likelihood that an effect characterization has underestimated adverse effects. In addition, for many of the social determinants of health, effects relative to vulnerable populations (which include Aboriginal Groups) are disaggregated with higher magnitude characterizations made. This further increases the conservative characterization of effects. Potential Effects and Measurable Parameters Potential effects and measurable parameters presented in Table 6.6-2 and used in the Assessment of change in community health and wellness and change in harvested foods aligns with those identified in Section 6.6.2, Table 6-9 of the AIR. Section 11 considers CEAA 5(1) and 5(2) requirements and includes, among others, health and socio-economic conditions and current use of lands and resources for traditional purposes. Together, many of the 'additional effects' identified by Lax Kw'alaams are addressed in the Application. The assessment of additional effects not identified in the AIR is outside the scope of the Application. Food Security Assessment of food security is not a requirement of the AIR and has not been assessed. Supplemental Filing and Review of Socioeconomic Impact Study Please see the "Review of A Socioeconomic Impact Study: Impacts of the Proposed Aurora LNG Project on Lax Kw'alaams" technical memo for consideration of information provided to Aurora LNG post filing in Lax Kw'alaam's Phase 1 Socio-Economic Impact Study. This technical memo considers the information, and discusses whether the information affects conclusions of economic (section 5) and social (section 6) VCs. Please see the "Supplemental Report to the Aurora LNG Application for an Environmental Certificate" for consideration of information provided to Aurora LNG post filing. The supplemental report focuses on Sections 11 and 12 and is developed in accordance with terms of reference established between Aurora LNG and Lax Kw'alaams. Reference to "Appendix C" has been removed from the response per BC EAO guidance on March 3, 2017.
566.1	round 1	Lax Kw'alaams Band	6.6.3 Existing Conditions for Community Health	Community Health	Nexen indicates that there will be a loss of 785 ha of land/marine areas (p. 11-98; Section 11.3.7.3). This is the primary piece of information used to justify conclusions on effects related to this VC. Nexen argues that this loss is directly replaceable using the "go elsewhere" assumption discredited in the technical memo included in Appendix B. Lax Kw'alaams finds that the Project will have direct food, nutrition and related health impacts on community members, who are already highly vulnerable. Lax Kw'alaams members have an enduring reliance on the ocean as our grocery store. There is no current solid understanding of volumes taken. For these reasons, the effect is likely underestimated. In the required supplemental filing referenced above, Nexen must also include consideration of (a) trends in financial constraints (such as harvesting costs) that are already a burden on community members, (b) increasing travel distance and time and associated costs for community members to harvest sufficient volumes of country food to support their nutrition and food security needs, (c) disaggregated assessment for each community, and (d) removal of any "go elsewhere" assumptions.	The concept of interchangeable harvest sites or 'go-elsewhere' is used, among other considerations, in the qualification of residual effects; however, as noted in Section 6.6.5.4 of the Application (Characterization of Residual Effects for Change in Harvested Foods) "it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields)." See the technical memorandum "Review of A Socioeconomic Impact Study: Impacts of the Proposed Aurora LNG Project on Lax Kw'alaams" for consideration of information provided to Aurora LNG post filing in Lax Kw'alaam's Phase 1 Socio-Economic Impact Study relative to economic and social VCs.

567.1	round 1	Lax Kw'alaams Band	6.6.5 Assessment of Residual Effects on Community Health	Community Health	Without the benefit of proper consultation with Lax Kw'alaams regarding marine food consumption within the project area, Application assumes that it has overestimated dependence on this area for marine foods as "the area is under shallow waters… many types of benthic marine foods live in deeper waters…, which would be outside the study area for marine foods. Consequently, only a small proportion of the population's marine food intake would be harvested from the area affected by dredging and propeller wash" (8-31) and therefore are overestimating initial risk. No justification is provided for this false assumption, not does it take into accound Lax Kw'alaams in the Interim Land and Marine Resources Plan of the Allied Tsimshian Tribes of Lax Kw'alaams on harvesting numerous intertidal and shallow marine species, including seaweed, clams, cockles, geoduck, chitons, abalone, sea cucumbers, sea slugs, and crab. Comments made by the BC Ministry of Health in Working Group Meeting #1 underline this concern, suggesting that Nexen has misinterpreted the FNFNES (Chan et al., 2011) consumption rates and should assume daily consumption has led to a serious underestimation of effects on human health. *Lax Kw'alaams requests that a supplemental filing be prepared to re-assess conclusions, based on Lax Kw'alaams information regarding current and future use of the project affected area and on corrected consumption rates.*	The Human Health Technical Data Report (Appendix R of the Application) as it relates to marine foods is intended to investigate the risk associated with exposure to dioxins and furans in seafood within the proposed dredge footprint and sediment plume radius. Project activities are not expected to affect the quality of marine food outside of the proposed dredge footprint and sediment plume radius. The selection of marine food species for assessment must meet the following criteria: 1. The species must live and feed among the sediments because dioxins and furans have a very low water solubility and the bulk of these chemicals in the marine environment are bound to sediments. 2. The species must be present in the assessment area (i.e., the proposed dredge footprint and sediment plume radius). 3. Among the species present in the assessment area, the species selected must be harvested by people for consumption. Marine foods that do not meet these criteria are not considered in the human health risk assessment because the quality of these foods is not expected to be affected by the Project. The recommendation of crabs and horse clams for the assessment was made by First Nations during working group meetings in November and December, 2014. As well, representatives from the Ministry of Environment and Ministry of Health at those same working group meetings confirmed that these species would be appropriate because there is extensive scientific research on crabs and bivalves related to uptake of certain types of chemicals found in sediment. For information regarding the consumption rates applied from the FNFNES study (Chan et al., 2010), refer to the document "Supplemental Information forTraditional Marine Foods", which will be submitted to the EAO.
568.1	round 1	Lax Kw'alaams Band	7 Assessment of Potential Heritage Effects	Heritage	Section 7 and 11.3 require consideration of effects to Lax Kw'alaams archaeological, physical, and cultural heritage. As raised in the November 29, 2016 screening comments and subsequent meetings, Lax Kw'alaams is extremely concerned that Nexen has: a) Overlooked physical archaeological resources likely to be directly impacted by the proposed Project and pre-construction investigative activities planned for 2017 and b) Misassessed effects on these values from Lax Kw'alaams point of view by finding mitigation measure that results in destroying the value, but documenting the value, to fully mitigate the adverse effect while ignoring the weight of history and ongoing cumulative effects on physical archaeological values. Of critical concern is Nexen's lack of consideration of marine archaeological resources. Lax Kw'alaams asks that a systematic underwater archaeological survey be undertaken in areas identified directly with Lax Kw'alaams' archaeology staff before pre-construction investigative work begin in 2017. We also ask that the assessment in Section 7 and 11.3 include consideration of ship wake and shoreline erosion effects. Erosion is a serious and ongoing cumulative effect that must be assessed and managed very carefully. The Archaeological Overview Assessment does not comprehensively assess for potential high archaeological resources. While Nexen involved staff on the ground in field exercises, Lax Kw'alaams did not provide any input on field study design. Lax Kw'alaams requests that Nexen work directly with Lax Kw'alaams and Metlakatla to refine the assessment and collect additional data before any pre-construction investigative activity begins in 2017.	Several point are raised in the comment, which are addressed below in the general order they are raised. Recognizing the potential for unidentified archaeological or heritage resources in the PDA, the Archaeological and Heritage Resources Management Plan will include protocols for the unlikely event that unrecorded archaeological or heritage sites are encountered during Project activities, and for avoiding and/or mitigating potential effects. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7 1 and Figure 7 2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued by the Archaeology Branch for HCA protected sites. For non-protected heritage resources, mitigation is determined in consultation with the Heritage Branch and potentially affected Aboriginal Groups, as applicable, and typically follows established best practices. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. The archaeological assessment included pedestrian survey of inter-tidal zones and a review of the remote operated vehicle recordings for sub-tidal areas potentially impacted by the project. The results of the marine assessment are provided in the AIA report (Appendix W). The potential for wake effects from vessels was considered in this assessment (Section 7.2.5.2), and the project is not expected to have adverse effects on marine intertidal areas from ship wake generation. Aurora LNG welcomes further discussion with Lax Kw'alaams Band regarding archaeological and heritage resources.
569.1	round 1	Lax Kw'alaams Band	7 Assessment of Potential Heritage Effects	Heritage	Nexen incorrectly presumed that the collection of information about the site will fully mitigate the destruction of the site. This approach is rejected by Lax Kw'alaams. The value of archaeology is not limited to informational value. There are heritage and cultural values connected to the physical site, practices tied to the site, and the rights associated with the site will be partially or fully lost as a result of the destruction of the site itself. For these reasons, there are residual effects on archaeology, heritage, and culture of Lax Kw'alaams; indeed, Digby Island is one of the more important areas of Lax Kw'alaams physical cultural heritage, as noted in the Land and Marine Resources Plan (2004). The Project will permenantly alter or destroy a very large number of archaeological sites as a result of the Project. For the above reasons, we ask that Nexen complete a fulsome cumulative effects analysis that considers the general state of the archaeological resources across Lax Kw'alaams' territory. Lax Kw'alaams also requests that Nexen work with our staff to define an appropriate buffer around eastern shoreline of Digby Island. We request that a buffer of at least 500m be imposed as mitigation around the edges of archaeological values to accommodate for potential effects of blowdown on archaeological values. If this buffer width is not possible, Nexen must work with archaeology staff to identify and assess potential impacts. Any buffer that does not function to avoid destruction of archaeological sites must not be considered to be mitigation. In direct engagement with Lax Kw'alaams, Nexen must provide a supplemental memo that includes the above requested new baseline information, a revised assessments for Section 7 and 11.3 of the Application, including revised mitigations, and a fulsome cumulative effects assessment for both sections. The memo must be provided prior to Day 70 of the Application Review process so results can inform the Aurora-Lax Kw'alaams Supplemental Filing due to EAO by Day 90.	Aurora LNG is confident that appropriate baseline information has been collected(please refer above to response # 226 for more information) and is presented in Section 7 and 11.3 of the Application. The correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed (see Section 7 in the Application).therefore The baseline assessment for other Effects to other values related to archaeology and heritage are considered in CEAA Section 5(1)(c) and the assessment of Aboriginal Interests in Part C. The influence of new information provided by Lax Kw'alaams will evaluated in the Aurora-Lax Kw'alaams Supplemental Report to be submitted on Day 90. Therefore, a supplemental memo is not warranted. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7 1 and Figure 7 2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued by the Archaeology Branch for HCA protected sites. For non-protected heritage resources, mitigation is determined in consultation with the Heritage Branch and potentially affected Aboriginal Groups, as applicable, and typically follows established best practices. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities. Aurora LNG welcomes further discussion with Lax Kw'alaams Band regarding archaeological and heritage resources.
570.1	round 1	Lax Kw'alaams Band	7 Assessment of Potential Heritage Effects	Heritage	Sample (systematically) the underwater areas of impact(s) to locate any further archaeological sites not found by previous Archaeological Impact Assessments (AIAs) • Include information about wakes of ships – increased shoreline erosion, create a baseline standard of the current shoreline and track erosion over time o Monitor shoreline "hot spots" for erosion seasonally for the first 4 years of operation/construction • Include data on sediment erosion in intertidal areas with sites present o Perform more in-depth intertidal surveys to effectively capture all intertidal sites – ensure that the sites are located during the lowest tides possible o Utilize the sediment analyses as a starting point and monitor seasonally to determine if any of the intertidal sites will be impacted • Identify cumulative effects on archaeological sites o Discuss and include information about the loss of important cultural data o Adjust facility designs to increase the distance from the eastern shoreline of Digby to 500m or more, to address possible blowdown due to high winds o Periodic yearly site revisits to identify additional unforeseen impacts to the sites • Increase archaeological testing of area to include high points of land, not just what has been identified in "high-potential" models o Work with Lax Kw'alaams and Metlakatla to develop a more comprehensive potential model that integrates more recent studies on Paleoshorelines (that will include areas much higher than the current shore as well as deeper water sites) o This new Archaeological Overview Assessment (AOA) will guide any further work in the area and seek to avoid any further impacts	The AIA included field survey covering 100% of the PDA and all areas, including high points of land, have been field assessed for archaeological potential. The AIA also included pedestrian survey of inter-tidal zones and a review of the remote operated vehicle recordings for sub-tidal areas potentially impacted by the project. The results of the AIA of the PDA are provided in Appendix W. The assessment considered available published data on sea-level curves for the region which all indicated post-Pleistocene relative sea levels to be above modern sea levels (e.g., Shugar et al. Post-glacial sea-level change along the Pacific coast of North America, Quaternary Science Reviews 97, 170-192). The GIS model of archaeological potential developed for the project specifically included criteria for paleoshorelines from 0 to 14 m asl. It is recognized that new data with the potential to change our understanding of archaeological resources may become available during the project lifecycle. This will be considered in the Archaeological and Heritage Resources Management Plan; ultimately the Archaeology Branch would determine whether any measures need to be taken in response to new data. Aurora LNG welcomes further discussions with Lax Kw'alaams Band regarding heritage and archaeological resources.
571.1	round 1	Lax Kw'alaams Band	7 Assessment of Potential Heritage Effects	Heritage	• For site mitigations, Lax Kw'alaams members must be on site for all phases of impacts, push for 100% recovery of site, due to loss of irreplaceable information from the sites o Nexen needs to fund a Lax Kw'alaams specific heritage management plan which includes AIUS information as well as archaeological o The stop work procedure needs to identify an authority on the site to hold off work in an area that a specific archaeological concern is o Fencing the facility to prevent workers from "pothunting" o Creation of "breakwaters" around areas of high shoreline erosion • The final engineering design of the facility needs to be finalized so site impacts can be acknowledged and mitigated. • Archaeological sites are the primary indicator of aboriginal rights and title in an area and removal/alteration to these sites reduced the quantifiable data available to aid in negotiations for the Lax Kw'alaams.	Aurora LNG acknowledges this as an ongoing concern of Lax Kw'alaams Band, and is exploring additional opportunities to further address these concerns with all Aboriginal Groups. Through the course of Aurora LNG's field work activities, we have successfully involved Lax Kw'alaams members/representatives and implemented effective archaeological screening measures and chance find/stop work procedures. Aurora LNG will look to leverage this positive experience and incorporate appropriate mitigation measures in the Archaeological and Heritage Resources Management Plan. Aurora LNG welcomes further discussions with Lax Kw'alaams Band regarding heritage and archaeological resources.
572.1	round 1	Lax Kw'alaams Band	7 Assessment of Potential Heritage Effects	Heritage	As per Screening comment #104, the northern portion of the PDA has not been considered in the baseline AIA. Lax Kw'alaams requests the additional work be undertaken to inform the effects analysis within the EA process.	Prior to construction, further field assessment will be completed for the small areas in the revised northern portion of the PDA that have not been assessed. These areas are situated inland and have low potential for archaeological or heritage resources that have high scientific significance (e.g. shell middens); however, other types of resources (e.g. CMTs) could potentially be present. The field assessment and reporting will be conducted in accordance with Archaeology Branch standards with input from local Aboriginal Groups. If any archaeological or heritage resources are identified, they will be managed in accordance with provincially-regulated procedures and policies in consultation with appropriate regulatory agencies andthe Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
573.1	round 1	Lax Kw'alaams Band	9. Accidents or Malfunctions	Accidents or Malfunctions	The measurable paramters for Current Use of Land and Resources for Traditional Purposes (CULRTP) do not take a sufficiency of resources approach. CULRTP relies on access to sufficient lands, aquatic environments, and resources in which Lax Kw'alaams rights can be exercised. "Sufficient" refers not only to quantity but quality, and is evaluated from the perspective of what is required to fulfill not only subsistence requirements, but also cultural needs. While it is good that quality of resources is included in assessment this seems to focus more on abundance rather than the health of species in preferred locations. Lack of quality assessment and use of the sufficiency approach is evidenced in Table 11.3-3 as terrestrial wildlife health is not assessed, change in wetland function is not considered an interaction with current use, change in marine mammal habitat was not assessed, etc. Table 11.3-9 also should be revised to take into consideration the fact that resources are not harvested in isolation, therefore any impacted VC that will harm one kind of harvesting will also be detrimental to the harvest of another. Lax Kw'alaams requests that: 1. CULRTP be re-assessed with Lax Kw'alaams in a supplemental filing that adopts Lax Kw'alaams approach to assessing effects 2. A greater level of detail is utilized in assessing potential effects pathways related to consumptive use, e.g., noise, air quality, access of non-aboriginal people, water quality, visual resources, etc..	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). The specific characterizations for Current Use presented in Section 11.3.7.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.7.2 (Existing Conditions for Lax Kw'alaams Band) and Section 4 (Lax Kw'alaams Band) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Section 11.3.7.2 and 11.3.7.3. The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding current use, including in the PDA and adjacent marine area; and 2) identify the influence of this new information on the assessment completed in the Application. In accordance with the EAO's Acceptance Letter, the Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. Regarding Table 11.3-3, VCs were excluded (and not given a check mark indicating potential interactions with Current Use or asterisk indicating that potential effect is captured through another VC's conclusions) based on the following: § Lack of effects predicted to the environment that would interact with Section 5(1)(c) Effects § Absence of a clear pathway to the Section 5(1)(c) Effect § Residual effects were not predicted in the Part B VC § Effects relying on other (already included) VCs for conclusions Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, any additional re-assessment, as suggested, is neither warranted nor required.
574.1	round 1	Lax Kw'alaams Band	General comment on "use"	CEAA 2012	Lax Kw'alaams has raised comments and conerns to Nexen and EAO during the screening phase regarding Nexen's approach to assessing use across a variety of VCs including current use of lands and resources for traditional purposes (CULRTP) required as part of CEAA 2012 Section 5(1)(c), marine use and navigation, change in harvesting (a measurable parameter for community health), among others outlined in the detailed comments. Specifically, the proponent assumes that there is little to no use across much of the proposed Project footprint and, where use is presumed, any adverse impact that the Project may have on this use is reduced by the false assumption that Lax Kw'alaams members may engage in traditional use or other rights-based practices in another location without serious repercussions. This assumption is faulty and must be removed from all of the aforementioned assessments. Lax Kw'alaams requests that the Proponent re-assess effects and factor in the following into one ore more of these assessments: • Change in marine, land, and use acccess for Lax Kw'alaams members, especially those living and working in Prince Rupert; • Change in traditional use practices (e.g. fishing and marine access reduced and total elimination of clam digging); • Change in fish habitat productivity and other biophysical resources likely harvested in the area; • Elimination of access to preferred use areas (e.g. known to Lax Kw'alaams members where place-specific knowledge is passed down to the next generation); • Alienation from places that have Tsimshian placenames, archaeological sites, and community memories tied to this place; • Alienation from genaeological history of Lax Kw'alaams and clan governance associated with territories within Lax Kw'alaams territory; • Reduced access and sense of safety on the water; • Consideration of cumulative alientation of Lax Kw'alaams land base across the territory, and especially in the Prince Rupert Harbour Area and Prince Rupert; etc.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). The specific characterizations for Current Use presented in Section 11.3.7.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.7.2 (Existing Conditions for Lax Kw'alaams Band) and Section 4 (Lax Kw'alaams Band) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). The potential effects outlined by Lax Kw'alaams Band in this comment were addressed in the Application based on the information that was available at the time of writing. In particular, the following sections contain information relevant to these potential effects:Change in marine, land, and use access for Lax Kw'alaams members, especially those living and working in Prince Rupert: Sections 11.3.7.3; 12.5.4.6; 6.4; 6.5. Change in traditional use practices (e.g. fishing and marine access reduced and total elimination of clam digging): Sections 11.3.7.3; 12.5.4.6; 6.5.Change in fish habitat productivity and other biophysical resources likely harvested in the area: Sections 11.3.7.3; 12.5.4.6; 4.8; 4.9.Elimination of access to preferred use areas (e.g. known to Lax Kw'alaams members where place-specific knowledge is passed down to the next generation): Sections 11.3.7.3; 12.5.4.Alienation from places that have Tsimshian placenames, archaeological sites, and community memories tied to this place: Sections 7; 11.3.7.3; 11.3.7.6; 12.5.4.7.Alienation from genealogical history of Lax Kw'alaams and clan governance associated with territories within Lax Kw'alaams territory: Sections 12.5.4.7 and 12.5.4.8.Reduced access and sense of safety on the water: Sections 11.3.7.3; 12.5.4.6; 6.5.Consideration of cumulative alienation of Lax Kw'alaams land base across the territory, and especially in the Prince Rupert Harbour Area and Prince Rupert: Section 11.4. Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Section 11.3.7.2 and 11.3.7.3. The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding current use, including in the PDA and adjacent marine area; and 2) identify the influence of this new information on the assessment completed in the Application. In accordance with the EAO's Acceptance Letter, the Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12.5 of the Application. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, any additional re-assessment, as suggested, is neither warranted nor required.

575.1	round 1	Lax Kw'alaams Band	General comment on "use"	CEAA 2012	Assessments must also add consideration of post-decommissioning alienation of land and marine areas that will be stigmatised and therefore avoided for a long period of time, such that memory of harvesting and place-based knowledge built through the community will be lost. Reliance on Part B conclusions used in CEAA 2012 Section 5(1)(c) should also be avoided entirely. Assessment methods and significance thresholds are different. For example, these sections rely on findings of no significance in Part B to inform the CULRTP assessment in Section 11.3, while the threshold in Part B considers only species population in relation to conservation status and CULRTP must consider harvestable surplus to ensure hunting practices can be maintained or (as desired for future) increase.	Duration of Effects: The Section 11.3 of the Application contemplates the potential for permanent effects related to loss of traditional knowledge. In particular, the definition of "Medium-term" in Table 11.3-6 includes consideration of whether or not a residual effect restricts traditional use, such that the effects extend beyond a single generation (~ 25 years) and effectively remove the knowledge related to a practice at a particular site from the community's Traditional Knowledge. If the presence of the Project would prevent a Lax Kw'alaams Band member's use of particular known sites, then traditional users' ability to share traditional knowledge about those sites would be deprived for the duration of the Project activity. In this case, for the purposes of this assessment, residual effects on land and resources relied on for such a traditional use, which would otherwise be considered "medium –term", are instead characterized as "permanent" and "irreversible" on the basis that removing the ability to transfer traditional knowledge related to the site would no longer be possible if the site is removed for a generation (~ 25 years). Reliance on VC Conclusions: The Application, including Section 11.3, was developed in accordance with the approved Application Information Requirements (AIR). The methods described in the AIR (Figure 11-1) require that Aurora LNG consider whether the residual effects in Part B VCs are relevant to CEAA Section 5(1)(c) factors. If the residual effects assessed in Part B VCs would be experienced differently by Aboriginal and non-Aboriginal people, as was the case for Current Use, then an additional assessment was completed in Section 11.3. It is noted that while the assessments for the other Part B VCs does not broadly focus on Aboriginal use of species (as such sections are primarily focused on species and habitats generally), traditional use considerations were factored into these assessments, where applicable. For example, Section 4.7.2.3 (Traditional Knowledge and Traditional Use Incorporation) of the Application and Section 3.1.1 (Traditional Ecological Knowledge) of the associated Appendix J (Wildlife Resources (Terrestrial) TDR) indicate that available Traditional Knowledge /Traditional Use information (i.e. the information compiled in Appendix S.2) was reviewed, considered and, where appropriate, incorporated into Section 4.7 (Wildlife Resources (Terrestrial)). With respect to the use of information and conclusions from the assessments for the other Part B VCs in Section 11.3, this information is reviewed and considered in the context of the characterization criteria and significance thresholds presented in Section 11.3. In particular, as noted in the Application (e.g., see pg. 11-74), there are two parts to the assessment of each potential CEAA 5(1)(c) effect: "The first part summarizes information and findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects (i.e., based on steps #1 and #2 from Section 11.3.5.1) under headings that reflect the… measurable parameters…" "The second part… provides conclusions regarding the characterization of residual effects... based on the results of the first part of this section (i.e., the findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects), the understanding of current [use] (based on existing conditions) and the criteria and definitions outlined in Section 11.3.2.5." Harvest Surplus: The significance threshold used in the Current Use assessment considers the "viability" of continued Current Use. To this end, the assessment considers "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activity is no longer considered viable within existing conditions, it would be considered significant." While Aurora LNG considered the development of "harvestable surpluses" based thresholds, it did not proceed with this approach because of a lack of literature and data on the topic.
576.1	round 1	Lax Kw'alaams Band	Table 11.3-2 Section (5)(1)(c) Effects, Referenced Environmental Effects, Measurable Parameteres, and Referenced VCs Table 11.3-3 Potential Project Environmental Effects on Section 5(1)(c) Effects Table 11.3-9 VCs and Relevant Potential Effects for Consumptive Current Use	CEAA 2012	The Application states that the spatial boundaries for 5(1)(c) are based in part on TK and TU submissions. Lax Kw'alaams requires revised and more appropriate spatial boundaries of analysis to be developed for the Supplemental Filing due on Day 90.	The Local Assessment Areas (LAAs) for the assessment of Section 5(1)(c) Effects were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. As described in Section 11.3.2.4 of the Application, the spatial boundaries for the assessment of each Section 5(1)(c) Effect were developed by combining the spatial extent of the LAAs or Regional Assessment Areas (RAAs) for relevant VCs, considering available Project specific TK and TU information on current land and resource use by Aboriginal Groups, and taking into account relevant ecological, social and cultural information in the public domain. Aurora LNG is confident that the spatial boundaries presented in the Application are fully compliant with all provincial and federal regulatory requirements. As a result, revisions to the LAAs for the assessment of Section 5(1)(c) Effects , are neither warranted nor required.
577.1	round 1	Lax Kw'alaams Band	11.3.2.4 Boundaries	CEAA 2012	Temporal boundaries for 5(1)(c) are described as commencing at the beginning of phase 1 construction in 2020. This fails to take into account the impacts from drilling and other activities associated with siting planned for 2017. Please adjust the temporal boundaries when undertaking re-assessment of impacts for Supplemental Filing.	The temporal boundaries for the assessment of Section 5(1)(c) Effects were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. As described in Section 11.3.2.4 of the Application, the temporal boundaries used are based on the timing and duration of Project activities and the nature of predicted interactions with Section 5(1)(c) Effects (pg. 11-35). To this end, the assessment describes potential changes from the Project relative to existing conditions. Existing conditions were characterized prior to Project activities such as geotechnical investigations. Accordingly, the assessment conservatively captures the potential effects of any such early works activities that would occur as a result of the Project. Aurora LNG is confident that the temporal boundaries presented in the Application are fully compliant with all provincial and federal regulatory requirements. As a result, revisions these boundaries are neither warranted nor required.
578.1	round 1	Lax Kw'alaams Band	11.3.2.4 Boundaries	CEAA 2012	The significance threshold(s) for current use is said to have been established by input from Aboriginal groups and professional judgement. Lax Kw'alaams requires a commitment from the Proponent to re-consider and possibly amend the threshold(s) with Lax Kw'alaams for the Supplemental FIling.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). In the context of Section 11.3 of the Application, significance was evaluated against the thresholds established in Section 11.3.2.7 (pg. 11-42). For Current Use, the significance threshold is triggered "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activity is no longer considered viable within existing conditions". As indicated in the Application, the determination of viability as it relates to significance "is guided by information provided by Aboriginal Groups and applying professional judgement" and considers the magnitude, geographic extent, duration, reversibility and context (i.e. resilience) for each of the measurable parameters identified. In accordance with the AIR, professional judgement is applied as part of this evaluation in a manner that is consistent with the guidance provided in CEA Agency's document entitled "Technical Guidance for assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012" (December 2015) (see pg. 11). Aurora LNG acknowledges that Lax Kw'alaams Band may have differing views regarding the significance threshold as it relates to predicted residual effects on Current Use. Aurora LNG is confident that the significance thresholds presented in the Application are fully compliant with all provincial and federal regulatory requirements. As a result, revisions to the Current Use significance threshold are neither warranted nor required.
579.1	round 1	Lax Kw'alaams Band	11.3.2.7 Significance Thresholds for Residual Effects	CEAA 2012	Nexen notes that 5(1)(c) is assessed using the assumption, "Unless available information indicates otherwise, resources harvested on or around Digby Island and in surrounding waters are not considered unique and can be harvested elsewhere within the LAA depending on harvesting protocols and availability of other locations" (p. 11-47). This, "go elsewhere" assumption was flagged as inappropriate during screening and has not been removed from other sections of the application such as current use in 11.3.7.3 or cumulative effects 11.4.3. *Nexen must commit to revising the methodology to omit this approach in the Supplementary Filing due to EAO on Day 90.*	Please see the memo entitled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments".
580.1	round 1	Lax Kw'alaams Band	Table 11.3-10 VCs and Relevant Potential Effects for Non-Consumptive Current Use	CEAA 2012	Proposed mitigations for CULRTP have been pulled directly from Part B (biophysical and social) VC sections and lack an Aboriginal context which is essential to the protection of current use under 5(1)(c) and the requirements of the AIR. Of particular concern is the failure of the VC assessments in Part B to assess residual effects on species of cultural concern from a perspective of "sufficiency" for Lax Kw'alaam's harvesting requirements. Inappropriate solutions are also proposed in passing in section 11.3.7.3 such as that effects to non-consumptive traditional use, i.e. cultural sites could be mitigated through scientific data recovery (p. 11-95) and consultation. Neither of these mitigations meet AIR mitigation efficacy requirements. Lax Kw'alaams requests the Proponent to commit to developing appropriate mitigations and related follow-up measures with Lax Kw'alaams during the Application Review process and part of the Supplemental FIling due on Day 90.	Aurora LNG is confident that the mitigation measures listed in Tables 11.3-11, 11.3-12, and 11.3-13 (see pg. 11-47 to 11-62) will effectively mitigate potential effects to the environment that would in turn affect CEAA 5(1)(c) factors, including current use. In accordance with the Aboriginal Consultation Itinerary (February 2017), Aurora LNG is currently looking to enhance the existing suite of proposed mitigation measures, through the refinement or addition of mitigation measures based on feedback from Aboriginal Groups. Aurora LNG requested specific feedback on proposed mitigation measures from Lax Kw'alaams Band during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
581.1	round 1	Lax Kw'alaams Band	Table 11.3-11 Key Part B Mitigation Measures Proposed to Avoid or Reduce Effects Relevant to Current Use 11.3.7.3 Assessment of CEAA 2012 5(1)(c) iii – Current Use of Lands and Resources for Traditional Purposes	CEAA 2012	Nexen notes that the presence of fish-bearing streams in the LAA on Digby island were not identifiable through publicly available data. Nexen also falsely assumes in section 11.3.7.3 (p. 11-84) that Lax Kw'alaams does not use the streams for fishing in the PDA. As stated in the AIUS, freshwater streams on Digby are used by members to exercise their rights. Lax Kw'alaams requests the Proponent to commit to working with the Nation to identify important fish-bearing watercourses, re-assess for this resource, and co-develop agreed upon mitigation for the Supplemental Filing due on Day 90.	Aurora LNG notes that Section 11.3.7.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) was compiled based on the best information available at the time, which did not include the AIUS and SEIS that have since been provided by Lax Kwa'aams Band. Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Section 11.3.7.3. The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding current use of fish-bearing streams ; and 2) identify the influence of this new information on the assessment completed in the Application. In accordance with the EAO's Acceptance Letter, the Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. Regarding proposed mitigation measures, Aurora LNG requested specific feedback on proposed mitigation measures from Lax Kw'alaams Band during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.

582.1	round 1	Lax Kw'alaams Band	11.3.7.2 Existing Conditions for Lax Kw'alaams Band	CEAA 2012	As noted above, Lax Kw'alaams expects the Proponent to prepare a supplementary submission that re-assesses project-specific and cumulative effects on CULRTP informed by LK's AIUS. Specifically, we request that the supplementary submisison include: a full re-assessment of impacts to Lax Kw'alaams' access to, and use of trails within, the PDA.	Aurora LNG notes that Sections 11.3.7.2 (Existing Conditions for Lax Kw'alaams Band) and 11.3.7.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were compiled based on the best information available at the time, which did not include the AIUS and SEIS that have since been provided by Lax Kwa'aams. Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Sections 11.3.7.2 and 11.3.7.3. The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding the use of trails within the PDA; and 2) identify the influence of this new information on the assessment completed in the Application. In accordance with the EAO's Acceptance Letter, the Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period.
583.1	round 1	Lax Kw'alaams Band	11.3.7.3 Assessment of CEAA 2012 5(1)(c) iii – Current Use of Lands and Resources for Traditional Purposes 11.4.3.2 Characterization of Residual Cumulative Effects for Consumptive Current Use 12.5.4.6 Assessment of Effects on Lax Kw'alaams Band Harvesting-Related Aboriginal Interests	CEAA 2012	The potential effect of the project increasing access to non-aboriginal hunters is not a component considered in the assessment to current use. At minimum this needs to be considered in the characterization to changes in experience and will need to be included in a re-assessment of effects to current use.	The assessment in Section 11.3.7 of Section 5(1)(c) effects does not directly address the the effects associated with the potential for the Project to increase access to non-aboriginal hunters. This is due to the fact that, as per the legislative requirements in CEAA, 2012 and the associated requirement in the approved Application Information Requirement, the assessment of effects related to current use of lands and resources for traditional purposes is limited to effects to the environment . As such, potential effects associated with increased access for non-Aboriginal hunters are outside the scope of this section. However, Section 6.4.5.3 (Assessment of Change in Non-Tenured Land Use) assesses the change in non-tenured land use, including hunting, that would be restricted by the Project. According to that assessment, the increase in hunting demand from construction workers will be negligible because the camp will be closed-access with onsite recreation opportunities provided. Regardless, workers will be prohibited from storing firearms or fishing gear onsite (includes construction camps) to limit competition for wildlife and fish species of value to land and resource users (Mitigation 6.4.5) and a grievance process will be implemented to help address and related issues identified by the community (Mitigation 6.4.8).
584.1	round 1	Lax Kw'alaams Band	11.3.7.3 Assessment of CEAA 2012 5(1)(c) iii – Current Use of Lands and Resources for Traditional Purposes 11.4.3.2 Characterization of Residual Cumulative Effects for Consumptive Current Use 12.5.4.5 Assessment of Effects on Lax Kw'alaams Band Aboriginal Title	CEAA 2012	*As noted above, Lax Kw'alaams expects the Proponent to prepare a supplementary filing, due to EAO on Day 90, that re-assesses project-specific and cumulative effects on CULRTP informed by Lax Kw'alaams' AIUS and SEIS.* Lax Kw'alaams disagrees with the Proponent's determination of no significant adverse effects on Lax Kw'alaams' CULRTP. A conservative approach has not been taken in this assessment, false assumptions such as "go elsewhere" have been made,"noticable changes" are described as not being restrictive, not all impacts to VCs have been included in this determination, and the importance of the permanent loss of the PDA for more than a generation has not been understood.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). In the context of Section 11.3.7.3 (Assessment of CEAA 2012 5(1)(c) iii – Current Use of Lands and Resources for Traditional Purposes), significance was evaluated against the thresholds established in Section 11.3.2.7 (pg. 11-42). For Current Use, the significance threshold is triggered "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activity is no longer considered viable within existing conditions". Aurora LNG acknowledges that Lax Kw'alaams may have differing views regarding significance and the associated threshold as it relates to predicted residual effects on Current Use. Regarding the Supplemental Report, Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Sections 11.3.7.2 and 11.3.7.3. The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding current use; and 2) identify the influence of this new information on the assessment completed in the Application. In accordance with the EAO's Acceptance Letter, the Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. Regarding the consideration of generational effects, Section 11.3 of the Application contemplates the potential for permanent effects related to loss of traditional knowledge. In particular, the definition of "Medium-term" in Table 11.3-6 includes consideration of whether or not a residual effect restricts traditional use, such that the effects extend beyond a single generation (~ 25 years) and effectively remove the knowledge related to a practice at a particular site from the community's Traditional Knowledge. If the presence of the Project would prevent a Lax Kw'alaams Band member's use of particular known sites, then traditional users' ability to share traditional knowledge about those sites would be deprived for the duration of the Project activity. In this case, for the purposes of this assessment, residual effects on land and resources relied on for such a traditional use, which would otherwise be considered "medium –term", are instead characterized as "permanent" and "irreversible" on the basis that removing the ability to transfer traditional knowledge related to the site would no longer be possible if the site is removed for a generation (~ 25 years). Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application.
585.1	round 1	Lax Kw'alaams Band	11.3.7.3 Assessment of CEAA 2012 5(1)(c) iii – Current Use of Lands and Resources for Traditional Purposes 11.4.3.2 Characterization of Residual Cumulative Effects for Consumptive Current Use	CEAA 2012	Lax Kw'alaams requires careful assessment of any effects on fish populations, as well as on their members' access to traditional food sources such as fish. The AIR requires a description of the Project's contribution to residual cumulative section 5(1)(c) effects. Nexen predicted significant residual impacts and significant cumulative impacts to fish mortality from the project. One of the proposed mitigation measures for interactions between impacts from the project and those from fishing activities includes the following: "DFO is responsible for ensuring the long-term sustainability of CRA fish populations. This is accomplished through a variety of fisheries management measures, including vessel licensing, application of harvest limits (e.g., quotas), gear and area restrictions, area closures, and ongoing stock assessment." (Section 4.09 p.4.9-115). Lax Kw'alaams requests that it be directly consulted on any proposed mitigation measures, such as fishing restrictions, before they are proposed as mitigations to assess impacts on our fishery. Any decreased quotas, or restrictions and closures as part of their mitigation is, in itself, a potentially significant impact on CEAA 2012 section 5(1)(c) factors, including current use, socio-economic values, health, and culture. *Please prepare a supplementary filing related to impacts to CULRTP that includes mitigation measures that have been co-developed with Lax Kw'alaams and are consistent with LK's Land and Marine Use strategies.*	Aurora LNG notes that the Application did not predict significant residual effects and significant cumulative effects to fish mortality from the Project in Sections 4.8 (Freshwater Fish and Fish Habitat) and 4.9 (Marine Fish and Fish Habitat) of the Application. Please see Section 4.8 (Freshwater Fish and Fish Habitat) and Section 4.9 (Marine Fish and Fish Habitat) of the Application for a full assessment of effects on fish populations. Lax Kw'alaams Band's access to traditional food sources related to fishing is assessed in both Sections 11.3.7.3 (Assessment of CEAA 2012 5(1)(c) iii -- Current Use of Lands and Resources for Traditional Purposes) and 12.5.4.6 (Assessment of Effects on Lax Kw'alaams Band Harvesting-Related Aboriginal Interests). It is anticipated that the joint Supplemental Report, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Sections 11.3.7.3 and 12.5.4.6, will: 1) detail the new information provided by Lax Kw'alaams Band regarding fishing; and 2) identify the influence of this new information on the assessment completed in the Application. Regarding the specific proposed mitigation measure in the comment (i.e., related to consultation on any proposed fishing restrictions), the statement in the Application that DFO is responsible for ensuring long term sustainability of CRA fish populations through various management measures was provided for context and not as a proposed mitigation measure for the Project. Regarding mitigations measures more generally, Aurora LNG requested specific feedback on proposed mitigation measures from Lax Kw'alaams Band during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
586.1	round 1	Lax Kw'alaams Band	11.3.7.3 Assessment of Section 5(1)(c) iii - Current Use of Lands and Resources for Traditional Purposes	CEAA 2012	In Section 5(1)(c) Effects on Aboriginal health, Nexen determined that the overall effect of the Project on health was not significant. It is not clear how this was determined given the lack of inclusion of publicly available Aboriginal data (see comments on Section 6.6 above). Further, the lack of information and proper interpretation of consumption rates of traditional food from FNFNES (Chan et al. 2011) in the HHRA needs to be updated and factored into re-assessment in this section. Please update conclusions in regards to this section when providing the supplemental filing for Section 6.6, including how it relates to Project-specific effects and cumulative effects.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports).The assessment of Aboriginal Health considered interactions with certain components of the Human Health (Section 8.0), Acoustic Environment (Section 4.4), and Community Health (Section 6.6) assessments. In applying the six step framework detailed in Section 11.3.5.1 (Method for the Assessment of Residual Effects), it was determined that the interactions would be consistent for Aboriginal people as non-Aboriginal people, and therefore, the assessment focused on the conclusions originally described for the relevant VCs. In particular, the assessment focused on the following approaches taken in the relevant VC assessments:Human Health receptor sites used in the Human Health assessment included places where health-sensitive people are present (e.g., daycares, schools, hospitals, elderly care homes)The Community Health assessment considers effects on vulnerable populations, including: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes, individuals and households classified as low-income earners, marginally-housed individuals, and individuals classified as homeless. Regarding the Supplemental Report, Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Section 11.3.7.4 (Assessment of CEAA 2012 5(1)(c)(i)—Aboriginal Health). The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding Aboriginal Health; and 2) identify the influence of this new information on the assessment completed in the Application. In accordance with the EAO's Acceptance Letter, the Supplemental Report will be submitted to the EAO on Day 90 of the Application Review period. As described in Section 11.3.2.7 (Significance Thresholds for Residual Effects), if a residual effect that is relevant to Aboriginal Health would have a substantial effect on Aboriginal people's health beyond that considered in the VC analysis in Part B of the Application, it would be considered significant. Aurora LNG is confident that the assessment methodology for Aboriginal Health presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, revisions to this methodology as it relates to the assessment of Section 5(1)(c) Effects , are neither warranted nor required. For additional information regarding Aboriginal consumption rates, please refer to the technical memo entitled "Supplemental Information for Traditional Marine Foods" which will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
587.1	round 1	Lax Kw'alaams Band	Table 11.6-1 Summary of Potential Adverse Effects Caused by Accident or Malfunction Events related to Section 5(1)(c) Effects	CEAA 2012	Vessel grounding or collision has not been adequately assessesed. As noted in screening comments for section 9.0, the Proponent has relied upon on the accident rating for LNG carriers for determining the likelihood and risk of this accident but does not take into account the accident history of other vessels such as tugs and their consequences. This must be factored in and re-assessed for this accident. Please note that this has not been updated in section 9.0 for the Application since screening either.	Section 9.9 of the Application assesses potential effects of an LNG carrier vessel grounding or collision. The scenario is considered representative of a worst case event resulting in a an LNG carrier hull breach and containment failure leading to the release of marine fuel or LNG into the marine environment. If this type of event were to occur with a smaller vessel (i.e., tug), the amount of marine fuel released would be much smaller. Potential preventative and response measures presented in Section 9.9 would therefore sufficiently address risks of other vessel grounding or collisions. Potential effects of smaller vessel groundings or collisions are therefore covered in in the conclusions of significance related to this scenario. In accordance with the AIR, Section 11.6 of the Application includes a summary of the potential adverse effects caused by the potential accident or malfunction events as identified in Section 9.9 of the Application, on the factors set out in CEAA 2012 Section 5(1)(c). Please see the "Accidents or Malfunctions - Effects on Aboriginal Interests and CEAA 2012 Section 5(1)(c) Factors" technical memo which will be filed with the BC EAO.

588.1	round 1	Lax Kw'alaams Band	11.3.7.6 Aboriginal Physical and Cultural Heritage	CEAA 2012	Lax Kw'alaams is seriously concerned with the physical and cultural heritage baseline, effects assessment, mitigations, and conclusions presented in this Application. The flawed assessment leads us to believe that there is a likelihood that a significant adverse impact may be overlooked. The project site represents a very high value archaeological and traditional use location for Lax Kw'alaams members and has not been properly captured in the Application. We ask that CEAA also review comments for Section 7 for more information on Lax Kw'alaams concerns. In addition to these general concerns, we note that Nexen has not considered intangible elements of culture such as the following are entirely relevant to Aboriginal rights and should be integrated into the assessment of this section 5(1)(c) factor: Spiritual sites or areas, landforms, places with ancestral meaning from stories, kill sites and harvesting grounds, trails, marine travel routes (travel route between Prince Rupert and Digby Island is known and is a traditional use activity to be protected), skills development, place-based knowledge sharing, viewscapes and soundscapes tied to the place-based practice, traditional laws, etc.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). The measureable parameters assessed in section 11.3.7.6 (Assessment of CEAA 2012 5(1)(c) ii and iv—Aboriginal Physical and Cultural Heritage), include change in non-consumptive land and resource use for traditional purposes. This measurable parameter was assessed based on the information contained in Section 11.3.7.2 (Existing Conditions for Lax Kw'alaams Band) and Section 4 (Lax Kw'alaams Band) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). This included consideration of particular known Lax Kwa'aams Band sites, which was compiled based on the best information available at the time. The significance determination was then made in relation to Aboriginal Physical and Cultural Heritage based on the definitions provided in Section 11.3.2.7 (Significance Thresholds for Residual Effects) Aurora LNG is in the process of co-writing a joint Supplemental Report with Lax Kw'alaams Band, which will consider and incorporate the AIUS and SEIS into the CEAA Section 5(1)(c) assessment and Part C of the Application, including Section 11.3.7.6. The Supplemental Report will: 1) detail the new information provided by Lax Kw'alaams Band regarding non-consumptive land and resource use for traditional purposes, including in the PDA and adjacent marine area; and 2) identify the influence of this new information on the assessment completed in the Application. Aurora LNG acknowledges that Lax Kw'alaams may have differing views regarding the findings that Project-related effects on Physical and Cultural Heritage will not be significant. In addition, Aurora LNG notes that Section 12.5.4.7 (Assessment of Effects on Lax Kw'alaams Band Cultural Wellbeing) includes an assessment that incorporates many of the intangible elements of Lax Kw'alaams Band's cultural wellbeing. As described in that section, the assessment includes the following components in "cultural wellbeing": participation in cultural and spiritual activities; spending time at culturally or spiritually important sites or camping and habitation areas; knowledge of places and place-names; traditional ecological knowledge; and cultural transmission (the ability for a culture to self-perpetuate). Furthermore, effects on Lax Kw'alaams Band's Traditional Governance from the Project are assessed in Section 12.5.4.8.
589.1	round 1	Lax Kw'alaams Band	11.6; 9.0	Aboriginal Consultation	The analysis related to potential interactions between accidents/malfunction and the practice of Lax Kw'alaams rights is deficient. 1. Please revise section to include interactions of rights-based activities with obvious potential for accidents and malfunctions, (e.g. vessel grounding on abiltiy to make decisions about title lands). 2. Please clarify how findings from this section have been considered in the overall report conclusions.	Section 9 of the Application (Accidents or Malfunctions) is a stand alone section that evaluates the potential effects of a Project-related accident or malfunction as required in Section 19(1) (a) of the CEAA 2012. An accident is defined as an unexpected occurrence or unintended action that could result in a potential adverse environmental, social, economic, heritage or human health effect. A malfunction is defined as the failure of a piece of equipment, a device, or a system to function normally that could result in a potential adverse environmental, social, economic, heritage or human health effect. Section 11.6 of the Application takes the conclusions of Section 9 and briefly summarizes how those potential Project accidents or malfunctions could, in turn, potentially affect CEAA 2012 section 5(1)(c) factors (e.g., current use for traditional purposes, physical and cultural heritage). In addition, potential interactions between Aboriginal Interestsand potential Project accidents or malfunctions are briefly summarized in Section 12.6 of the Application as required by the AIR. The conclusions in Section 11.6 and 12.6 of the Application regarding the potential effects of accidents or malfunctions on CEAA Section 5(1)(c) factors and Aboriginal Interests are not repeated elsewhere in the Application. Please see the "Accidents or Malfunctions - Effects on Aboriginal Interests or CEAA 2012 Section 5(1)(c) Factors" technical memo which will be filed with the BC EAO.
590.1	round 1	Lax Kw'alaams Band	12.5.4.3 Summary of Past, Present and Anticipated Future Use of Project Vicinity	Aboriginal Consultation	Given the limited and narrow scope of the assessment provided throughout the Application, especially as it relates to effects on Aboriginal section 5(1)(c) factors and Lax Kw'alaams rights and interests, Lax Kw'alaams has additional "other matters of concern" to raise herein. As outlined in accommpanying cover letter to this table of comments, the following other matters of concern are: a) The "Go Elsewhere" argument is not acceptable mitigation, is rejected by Lax Kw'alaams, is not supported by evidence, and creates serious assessment gap for all VCs that interact with traditional use in an Application that is already deficient in mitigations. b) Environmental and socio-economic management plans lack sufficient detail to function as mitigation in the Application. c) Data on fish and fish habitat is deficient and requested primary data needed to address deficiency has not been provided. d) Baseline data is missing for the northern portion of the PDA for several VCs. e) Lack of First Nation information and perspectives throughout the Application. f) Even where First Nations' information was sought and received, Aurora did little to meaningfully integrate this information. g) Missing information on Project alternatives. h) Lack of consideration of effects on sensory values and visual quality. i) Several social and economic effect pathways are ignored. j) Required air quality and GHG emissions baseline data are missing from the Application. k) Missing information on vegetation and wetlands VC. l) Wildlife VC does not adequately consider species of priority concern. m) Marine shipping and marine vessel effects assessment on a variety of VCs is done poorly or not at all.	Lax Kw'alaams Band has indicated that the lettered items in this comment are "other matters of concern". While Aurora LNG acknowledges that these items represent Lax Kw'alaams Band concerns with the contents of the Application, "Other Matters of Concern" as described in Section 12.7 of the AIR and discussed in Section 12.7 of the Application are matters of concern raised by Schedule B Aboriginal Groups related to potential adverse environmental, economic, social, heritage and health effects of the proposed Project that are not addressed in other sections of the Application. Aurora LNG is of the opinion that the concerns raised in this comment do not fall under the description of "Other Matters of Concern", but are rather Lax Kw'alaams Band's issues and concerns with assessments of effects contained in Parts B and C of the Application. As such, no changes are proposed to Section 12.7 of the Application to include these proposed additional "Other Matters of Concern." Aurora LNG has held several successful consultation workshops with Lax Kw'alaams Band during Application review to address Lax Kw'alaams Band's outstanding concerns related to the Applicaton. Many of the issues listed in the comment were incorporated into the content of Workshop #4 (January 23-24 2017) which included a review of the findings of Part B VCs, with a focus on Project alternatives and FEED, baseline data, mitigation measures, and Part B VC conclusions. Aurora LNG discussed several of the items listed in this comment with Lax Kw'alaams Band at that workshop. Workshop #5 was held with Lax Kw'alaams Band on March 22, 2017 and included a cowriting session with Lax Kw'alaams Band to draft the Lax Kw'alaams Band Supplemental Report. Workshop #5 also included a detailed review of the methods and findings of the CEAA 5(1)(c) and Part C assessments with a focus on the development of mitigation measures and the incorporation of Lax Kw'alaams Band's AIUS and SEIS reports into these sections of the Application. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Lax Kw'alaams Band for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
591.1	round 1	Lax Kw'alaams Band	14. Summary of Proposed Environmental and Operational Management Plans	Environmental and Operational Management Plans	With the exception of 14.7 Wetland Compensation Plan, the plans described in section 14 do not commit to Aboriginal involvement for their development. Lax Kw'alaams must be involved in development of all plans, especially those that include measures that will mitigate or offset potential impacts on Lax Kw'alaams rights and other interests.	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the developmentand implementation of the Environmental Management Plans described in Section 14 of the Application.
592.1	round 1	Lax Kw'alaams Band	14. Summary of Proposed Environmental and Operational Management Plans	Environmental and Operational Management Plans	The scope provided for Environmental and Operational plans does not cite the BC Ministry of Environment (BC MOE). 2014b. Procedures for Mitigation Impacts on Environmental Values (Environmental Mitigation Procedures). Version 1.0. May 27, 2014. Available at: http://www.env.gov.bc.ca/emop/docs/EM_Procedures_May27_2014.pdf. Accessed: May 2016. This source provides guidance and a template for mitigation plans and should have been used in the drafting of s.14. Nexen must commit to including potential project impacts (without mitigation), the mitigation hierarchy used and rationale for each environmental component within a plan, and the involvement of non-proponent parties (especially Aboriginal groups) and actions required of them in the scope of every management plan.	Section 14 of the Application is consistent with the requirements outlined in Section 14 of the Aurora LNG Application Information Requirements (AIR). Mitigation measures are applied based on an understanding of the Project mechanisms with potential to result in effects to each Valued Component. Mitigation measures are implemented via management plans per Section 14. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the environmental management plans.
593.1	round 1	Lax Kw'alaams Band	14. Summary of Proposed Environmental and Operational Management Plans	Environmental and Operational Management Plans	As per Screening comment #146, Section 15 of the AIR requires EMPs to include "a clear description of the reporting structure". Lax Kw'alaams requests, at minimum, a diagram or description of involved authorities and organizations, including but not limited to an independent environmental monitor, the EAO, CEAA, DFO, OGC, Lax Kw'alaams, Metlkatla and Nexen.	As outlined in Section 15.1 of the Application, an environmental management team will be assembled for each phase of the Project (construction, operations, and decommissioning). The team may include project engineers, environmental monitors, and other qualified professionals.Reporting to agencies and Aboriginal Groups will be done in accordance with regulatory and permitting requirements. Specific roles and reporting structures will be developed as detail on the Project develops through FEED. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the environmental management plans.
594.1	round 1	NRCan	10.1.3	Effects of the Environment on the Project	The 2010 version of the National Building Code of Canada (NBCC) was used in this document to extract probability data of seismic hazards. Note that the National Research Council Canada has announced the latest version of NBCC (version 2015) last year. All seismic hazard models in this document should be updated accordingly.	Project components will be designed to comply with the publicly available amended or updated codes and standards relevant at that time. Seismic hazard models will be reviewed and updated as necessary during Project design.
595.1	round 1	NRCan	10.2.4.2	Effects of the Environment on the Project	The proponent explained that the National Building Code of Canada (NBCC) 2010 was used in the seismic hazard assessment because the NBCC 2015 was still under review at the time of study. Now that the NBCC 2015 is formally released, statements in this section should be updated/revised accordingly.	As stated in Section 10.2.4.2 of the Application, 'Project components will be designed to comply with amended and or updated codes and standards, when these versions become available'. This statement remains valid and changes to Section 10.2.4.2 are not warranted.
596.1	round 1	NRCan	10.2.6	Effects of the Environment on the Project	According to the Global Historical Tsunami Database at the National Oceanic and Atmospheric Administration (NOAA) website, the tsunami event that hit Graham Island, BC, on March 28, 1963, could not be correlated with any known seismic event or atmospheric disturbance. Therefore, its source is officially classified as "unknown" instead of relating to earthquakes, landslides, or any other natural phenomena. For this reason, the title of this section is slightly misleading. To be technically correct, the title of this section should be revised to "Tsunamis (Generated by Seismic, Landslide, Meteorological, or Unknown Events)" and a brief paragraph should be added at the end of this section to describe tsunamis of "Unknown" source.	An errata document is being created that will capture the following corrections and it will be filed with the BC EAO. For Section 10.2.6 of the Application, the section title will be revised to 'Tsunamis (Generated by Seismic, Landslide, Meteorological, or Unknown Events)'. For Section 10.2.6.1 of the Application, the subsection title 'Seismic Generated' Aurora LNG will be revised to 'Seismic Generated and Unknown Source'. For Section 10.2.6.1 of the Applicatioin, Table 10.2-2, Aurora LNG will have the following revisions:Revise the table title to 'Seismic Generated and Unknown Source Tsunamis Recorded at Prince Rupert' Insert a footnote marker following 'Graham Island' in the tableInsert the following footnote under the table. 'NOTE: [marker] The tsunami generated off Graham Island has not been linked to any known seismic or atmospheric event, and is officially recorded as a tsunami of unknown origin (NOAA 2017)' For Section 10.4.1 of the Application, the following reference will be added: 'National Oceanographic and Atmospheric Administration (NOAA). 2017. Tsunami Event Reference ID= 3932. National Centers for Environmental Information, NOAA. Available at: https://www.ngdc.noaa.gov/nndc/struts/results?EQ_0=3932&t=101650&s=42&d=42&nd=display Accessed: March 2017.'
597.1	round 1	NRCan	10.2.6.1	Effects of the Environment on the Project	Based on NOAA's Global Historical Tsunami Database, there were six (6) tsunami events that can be associated with historic earthquakes, not seven as indicated in this section. Revise text as necessary.	An errata document is being created that will capture the following corrections and it will be filed with the BC EAO. The word 'six' will replace the word 'seven' in the last sentence on p. 10-13, under Section 10.2.6.1 of the Application. The third sentence in the first paragraph of Section 10.2.6.4 on p. 10-17 will be revised to 'The Tsunami Hazard Assessment identified six seismic events and one event of unknown origin, which each triggered significant tsunami waves (>1 m) that were measurable at the Prince Rupert tide gauge.'
598.1	round 1	NRCan	Table 10.2-2	Effects of the Environment on the Project	The Graham Island event in 1963 could not be associated with any known seismic activity, and therefore should not be considered as "seismic generated." It should be removed from this Table and discussed under a separated title of "Tsunami Generated by Unknown Source."	Comment noted. Relevant changes regarding the Graham Island event will be addressed through errata identified in Aurora LNG's response to NRCan in comment #596.1. An errata document has been created that captures these corrections and it will be filed with the BC EAO.
599.1	round 1	NRCan	10.2.5.1	Effects of the Environment on the Project	Physical mobilization and displacement of submarine slopes is not addressed as a hazard. There is no information about the submarine slopes downslope from the MOF or the berths for LNG loading. There are no bathymetric data such as multibeam swath bathymetry included in the proposal documents to determine if slope instability is occurring or has occurred downslope. Such surveys could detect if old slides were visible in the adjacent deeper waters. There are no data to assess if submarine soils are subject to liquefaction or are composed of sensitive clays at the MOF or the LNG loading berths. There may be glaciomarine deposits or well sorted silts and sands that are subject to liquefaction or quick clay behaviour. NRCan recommends that the proponent confirm whether there is evidence of liquefaction at the MOF or the LNG loading berths.	Both land and submarine slope failure are discussed in Section 10.2.5 of the Application. Although small submarine slides and debris flows are apparent in the Skeena River and Prince Rupert approaches (Conway et al. 2013), submarine slope failures do not pose a risk to offshore facilities as described in Section 10.2.6. A site specific Slope Stability Assessment will be completed during Project FEED to inform project design.
600.1	round 1	NRCan	10.2.6.4	Effects of the Environment on the Project	The predictive model for tsunami run-up is 2.5 m (MHHW - mean higher high water). It is indicated that the likelihood of tsunamis affecting the project activities and infrastructure is low after the implementation of mitigation measures. However, there are no mitigation measures listed for tsunami impact. It is NRCan's suggestion that the mitigation measures be listed and provided.	The model predicted maximum tsunami run-ups of approximately 2.5 m (MHHW) to occur from a worst case seismic event. As per Section 10.2.6.4.2 of the Application, relevant codes and recommendations from the tsunami hazard assessment will be implemented 'through design, construction and operational standards.' As stated in Section 10.2.6.2 of the Application, '[t]he Project will be designed to accommodate tsunamis according to design standards of Canadian Standards Association EXP276.1-2015 express document[...]'.

601.1	round 1	NRCan	Volume 1, section 1.2, 1.3. Appendix M. References: Golder Associates Ltd. (Golder), December 2014. Hydrographic and Marine Geophysical Surveys for Nexen Aurora LNG. Terra Remote Sensing Inc. (TRSI), May 2014. Embark – Nexen Aurora Reconnaissance Bathymetric and Side Scan Sonar Survey, Digby Island and Grassy Pt, Prince Rupert and Lax Kw'alaams, British Columbia.	Marine Fish and Fish Habitat	In Appendix M, Figure 3 indicates that Spire and Tuck Islands are below 0 m GD (Geodetic Datum). Figures 58, 60, 62 and 64 show that these islands are treated as submerged in the Mike21 simulations. However, Figure 1-2 shows that supra- (or inter-)tidal portions of these islands are part of the Project Development Area, and examination of satellite imagery shows that Spire Island is vegetated and there may be vegetation on Tuck Island. It seems higjennhly unlikely that the well-vegetated Spire Island is submerged, and that the soundings from TSRI (2014) and Golder (2014 - References in column D) referenced in Figure 3 were actually collected over Spire Island. If the islands are treated as submerged in the simulations when they are not, the validity of the simulation results could be affected, particularly the fine detail in the vicinity of the proposed jetty. Figure 25 (Currents at Tuck Island) may demonstrate some problems with the simulations. It appears that the simulation is not capturing the highest of currents capable of suspending and transporting sediment. NRCan requests the proponent provide: • The TSRI 2014 and Golder 2014 reports referenced in Appendix M. • Confirmation of the elevations of Spire and Tuck Islands • Description of infrastructure (if any) that will be placed on these islands at any phase of the project • Comments on the implications of treating Spire and Tuck Islands as submerged in the simulations, particularly with reference to the simulated waves, currents and sediment transport in the vicinity of the LNG Jetty.	Yes, Aurora LNG will provide the TSRI 2014 and Golder 2014 reports referenced in Appendix M to NRCan.The elevation of Spire Island is 20 m (geodetic datum), and the elevation of Tuck Island is 5 m (geodetic datum).A weather monitoring station is currently installed on Tuck Island; however, no other infrastructure will be placed on this island during any phase of the Project. The LNG Jetty causeway (rock fill) will overlap a small portion of the western side of Spire Island. This is shown in Figure 4.9-3 of the Application (Marine Fish and Fish Habitat VC). Topographic data for Spire and Tuck Islands was not incorporated into the hydrodynamic model. Rather, the elevations of these islands were interpolated based on the bathymetric Digital Elevation Model data. As a result, the model allowed for currents and waves to overtop Spire and Tuck Islands. Compared to excluding the islands from the model, allowing for their submergence would result in higher current velocities, wave heights, and suspended sediment concentrations over the islands. Had the islands been excluded from the model, it is expected that wave heights on the leeward sides would be decreased, while longshore currents would be increased.
602.1	round 1	NRCan	Appendix M, 4.3	Marine Fish and Fish Habitat	In Appendix M Section 4.3, the proponent presents the results of validation studies of simulated waves and currents critical to simulating sediment transport. The simulations and measurements are visually compared in Figures 22 through 26. These time series plots show some agreement between the simulations and measurements but with notable discrepancies. For example in Figure 22 waves appear to be underestimated, and there are spurious events, particularly in Chatham Sound. In Figure 25 significant large current events are not simulated and there appears to be some significant differences in measured and modelled current directions with differences in timing of direction changes, and the directions themselves. In Figure 26 significant wave heights appear well-simulated but wave directions appear to default to somewhere below 3 radians. Note that NRCan does not comment on the discrepancies in measured and simulated wave periods in Figure26 as these seem to be related to the difficulties of measuring wave periods. It is difficult to determine whether the simulations are successful without some quantitative analyses such as a correlation between simulated and measured values, tabulated minimum and maximum differences, RMS errors etc. NRCan requests that the proponent please provide quantitative statistical evaluation of differences between the simulations and measurements of wave heights, periods and directions and current speeds and directions.	See the "Validation of Hydrodynamic Modelling Wave and Current Data" technical memo which will be filed with the BC EAO.
603.1	round 1	NRCan	Appendix M, 4.2.2	Marine Fish and Fish Habitat	In Appendix M Section 4.2.2, the proponent refers to the use of the Mike2 Global Tidal Model as the water level boundary condition at open boundaries. It may be more appropriate to use a regional model such as WebTide (Foreman et al., 2000). The proponent presents the results from simulating water level in Figure 25, and in Figure 20 and 21 presents comparison of measured and predicted tides from short time periods in 1967 and 1972. NRCan could not locate in the documentation a comparison of the simulation to any measurements for verification. The proponent acknowledges in Section 4.3.2.2 that the modelling is not simulating the effects of low air pressure on water levels and an important component of storm surge (with effects on waves, currents and sediment transport) is not being included. NRCan requests the proponent to 1) please comment on the rationale for choosing the Mike2 Global Tide Model over a regional model specific to the North Pacific (for example WebTide) 2)present a comparison of modelled water levels to measurements (not predictions) and 3) if possible, include atmospheric pressure effects in the hydrodynamic model, and comment on the implications of not including atmospheric pressure in the water level simulations. Reference: Foreman, M.G.G., W.R. Crawford, J.Y. Cherniawsky, R.F. Henry and M.R. Tarbottom. 2000. A high-resolution assimilating tidal model for the northeast Pacific Ocean. Journal of Geophysical Research. 105: 28,629-28,652.	1) The MIKE21 Global Tide Model has been successfully applied to various coastal projects nationally and internationally to predict the tidal levels at offshore open boundaries. As presented in Figure 20 and 21 of Appendix M of the Application, the predicted tidal levels agreed fairly well with the historical measurements of water levels (approximately two month record in 1967 at Moffatt Islands and one month record in 1972 at Lawyer Islands). Aurora LNG appreciates the reference provided on WebTide Model and will certainly consider the model as an option for future project works. 2) At the time the modelling work was conducted, no field measurement of water levels were available for comparison with modeled water levels, and therefore the first panel in Figure 25 was presented by the simulated water level only. 3) As the MIKE21 Hydrodynamic Model does not include the forcing by atmospheric pressure, the effect of atmospheric pressure on water levels could not be modeled. Aurora LNG acknowledges that extreme storm events are important considerations for engineering design, and the relevant works could be conducted during the engineering and design phases of the Project. For the purposes of the environmental assessment, the present study focuses on the discussion of potential changes under typical annual climate conditions.
604.1	round 1	NRCan	Volume 1, 1.2 Appendix M, 6.3	Marine Fish and Fish Habitat	In Appendix M Section 6.3, the proponent presents the results of sediment transport modelling and resulting bed level changes for 1 year (2015). Given the project has a minimum 25 year life span, it seems appropriate for the proponent to address potential sediment transport over 25 years (Section 1.2.4). The proponent does not appear to attempt to connect changing patterns of sediment transport and deposition with potential changes in rates of shoreline change (i.e. erosion/accretion). NRCan requests the proponent 1) provide estimates of bed level changes over the entire project, 2) confirm if maintenance dredging will be required and 3) provide evidence that there will be no changes in rates of shoreline change over the life of the project associated with changing nearshore sediment transport.	1) Aurora LNG acknowledges that the current hydrodynamic model was developed based on existing and available information at the time of modeling, with assumptions on some of the variables. However, modelling of bed level changes over a minimum of 25 years (i.e., the anticipated lifespan of the Project) would involve many uncertainties in defining the domain and boundary conditions that include, for instance, how to make appropriate assumptions on future wind climate, river sediment supply, climate change related water levels, and water quality parameters. The accuracy and validity of any predicted changes over the life span would be questionable. Rather than attempting to predict bed level changes over the entire lifespan of the Project using potentially speculative assumptions, Aurora LNG is of the opinion that a government-led joint regional monitoring and modelling program to fine tune the current model with area-specific field data would be more appropriate and would help to inform various future assessments in the area. 2) Based on preliminary engineering and design, maintenance dredging is expected to be required at the LNG jetty on a ten-year or longer cycle. However, changes in bathymetry at the berth pockets will be monitored during Project operations to confirm whether maintenance dredging is required, how often it is required, the location(s) that require additional dredging, and the volume of sediment requiring removal. 3) Please refer to responses in 1) and 2).
605.1	round 1	NRCan	Volume 1, 1.2 Voume 4,, 4.9, Appendix H	Marine Fish and Fish Habitat	Throughout the provided documents, the proponent indicates that there will be Disposal At Sea (DAS) of dredged sediments and blasted bedrock. The location for DAS is referred to as "Previously Used" (e.g., Appendix H, Section 1). The proponent does not provide detailed bathymetric baseline maps of the area for DAS and also does not provide detailed bathymetric maps of the projected DAS area for the life span of the project. NRCan requests that the Proponent please provide 1) detailed high resolution bathymetric maps of the "Previously Used" area for DAS and 2)provide detailed maps showing projections of how sediments deposited in the DAS area will be redistributed over the 25 year (minimum) life span of the project.	Figure 2-1 in the Disposal at Sea Modeling Report (Appendix H) shows bathymetry at the previously used disposal site (Brown Passage), and in the surrounding area, using data from Canadian Hydrographic Service nautical charts #3957 and #3959. The modelling specialists from ASL Environmental Sciences Inc., deemed this bathymetry resolution sufficient to model sediment dispersion and deposition at the site with high confidence. The disposal at sea model predicted complete settling out of sediment within 20 days of release at the disposal site. Given the low current speeds at the disposal site (Table 3-1, Appendic H) further movement of desposited material will be limited and will not effect fish and fish habitat. Projections of sediment redistribution are therefore not required for the effects assessment.
606.1	round 1	NRCan	Volume 1, 1.2; Volume 4, 4.9; Appendix H	Marine Fish and Fish Habitat	In Section 1.2.6.3, the proponent indicates that there will be subsea blasting in certain locations. Two locations are identified: LNG Jetty Berth 1 from which 7,160 m3 of bedrock might be removed, and LNG Jetty Berth 2 from which 18,640 m3 of bedrock might be removed. The proponent states that suitable rock removed from the marine jetty dredge pockets will be re-used in construction of the earth fill causeway (see Figure 17 Appendix M). The remaining material, depending upon suitability, is anticipated to be disposed of at sea. The proponent does not indicate the criteria for suitability for inclusion of subsea blasted material in the earthfill causeway and does not give an estimate of the amount of material that will be disposed of at sea. Appendix H does not address the disposal of coarse materials at sea. NRCan requests that the proponent please provide 1) criteria for establishing whether subsea blasted rock is suitable for inclusion in the earthfill causeway and 2) provide estimates of the volume and the fragment size of blasted subsea bedrock that will be disposed off at sea.	The criteria for establishing whether subsea blasted rock is suitable for inclusion in the earthfill causeway will be defined in subsequent design phases when the gradation for the core of the earthfill causeway is established. In general terms, it is expected that subsea blasted rock material will be gneiss or schist that is suitable for beneficial re-use as causeway fill. Other dredged materials (i.e overburden soils) consisting of gravel or coarse sand will also be suitable for re-use; material that is fine grained sand, silt or clay will not be suitable. Further geotechnical investigations in subsequent design phases will provide a more detailed understanding of the material composition and volumes of the subsea areas that require blasting and dredging and the final disposition of that material.
607.1	round 1	NRCan	General comment Appendix M, 4.9	Marine Fish and Fish Habitat	As outlined in Appendix M, Hydrodynamic Modelling of Changes in Sediment Erosion and Accretion due to Project Infrastructure, the DHI MIKE 21 Coupled Model was applied to model changes of waves, currents, sediment transport and coastal morphology due to the project structures. The model results were then used to assess the long term effects on fish and fish habitat. The conclusion was that changes in habitat caused by shifts in sediment dynamics associated with marine infrastructure are predicted to be low in magnitude, confined to the LAA, continuous, long-term, irreversible, and occurring in a disturbed context. While the MIKE21model is a widely accepted system for modelling hydrodynamics and sediment transport for environmental and engineering projects, there are some issues with the use of the 2-Dimensional current model, poor calibration of the current model, inadequacy of the grain size data and critical shear stress value, and the neglect of including the Skeena River sediment load in sediment transport modelling. These issues result in uncertainty about the model predictions on currents, suspended sediment concentration, and the seabed erosion and deposition patterns. Additional information and clarification have been requested by NRCan (NRCan comment 15-25) in order to properly assess some results and interpretations presented in the report.	With regard to comments on the 2D current model and calibration: Aurora LNG acknowledges that there exist differences in modeling current velocities and actual stratified current velocities when using a depth-integrated 2D model to simulate depth-stratified currents, and understands that, in general:The 2D model results could underestimate the surface currents and overestimate the bottom currents at locations where the current stratification is significant (e.g., in deep water areas);The overestimate of current velocity in bottom layer near sea bed could result in an overestimate of the nearbed shear stress and consequently an overestimate on bed erosion and sediment transport. On the other hand, the underestimate of current velocity in the top layer near the water surface could result in an underestimate of sediment transport;In shallow water areas where the current stratification is insignificant, a 2D model could be considered adequate in prediction of the current field. Aurora LNG is of the opinion that modeling changes in current circulation and sediment transport using a 2D model is appropriate for the purposes of predicting potential changes in sediment dynamics to support the environmental assessment. For additional information about 2D current model and calibration, see the "Hydrodynamic Modelling (Appendix M) - Validation of Wave and Current Data" technical memo which will be filed with the BC EAO. With regard to comments on the adequacy of grain size data: In the sediment transport modelling, spatially distributed bed layer thickness data was used based on the sub-bottom survey in the vicinity of the Project site, as shown in Figure 4 of Appendix M. As the layer thickness varies in range up to ten's of metres, the use of sediment samples at 0.5 m intervals to a depth of 2.5 m is considered to be consistent with, and better representative of, the sediment properties in the bed layer used in the modelling. With regard to comments on the critical shear stress: A lower critical shear stress would result in more bed erosion and higher TSS concentrations in the water column. Conversely, a higher critical shear stress would result in less bed erosion and lower TSS concentrations. With limited available field TSS data as shown in Table 9 of Appendix M of the Application, Aurora LNG experienced challenges in calibrating the sediment transport model. A sensitivity analysis was completed for a range of 0.6 to 2.0 N/m^2 during the calibration and there was very little change in TSS concentrations, thus, an average value of 1.0 N/m^2 was selected. Aurora LNG acknowledges that the spatial distributions of critical shear stress and grain size could further refine the sediment transport model. However, at this stage, Aurora LNG is of the opinion that the model is sufficient for the purposes of characterizing potential changes in sediment dynamics associated with in-water Project infrastructureWith regard to comments on the effect of Skeena River sediment load: The intent of Figure 55 in Appendix M of the Application was to investigate the effects of the sediment supply from the Skeena River, but not to quantify changes in TSS levels. The sediment boundary condition for modelling with Skeena River sediment supply was based on assumptions from limited historical point measurements (total of 67 data points from 1988 to 1992). The information should be considered as a sensitivity analysis only. To conduct a model study including the river sediment supply, as stated in Section 5.3.4 p.32, continuous and simultaneous field measurements of the TSS concentrations in the pathway from the river mouth to the Project site would be required.

608.1	round 1	NRCan	Appendix M, 4.9.5.2	Marine Fish and Fish Habitat	Based on the modelled changes in sediment erosion and accretion presented in Appendix M, the report states “Changes in habitat caused by shifts in sediment dynamics associated with marine infrastructure are predicted to be low in magnitude, confined to the LAA, continuous, long-term, irreversible, and occurring in a disturbed context”. Figures 4.9-9b and 4.9-9c show that the MOF construction will cause up to 4-7 cm/year net deposition or erosion at the mouth of Casey Cove. If these erosion and deposition rates are steady through the life span of the project, the accumulative erosion and deposition could be significant.NRCan recommends that the proponent estimate the maximum depth and extent of the erosion and deposition over the 25 year life span of the project and assess whether these could result in measurable changes in fish habitat.	Figures 4.9-9b and c (taken from Figures 65c and 69b in Appendix M respectively) depict the following key predictions for the mouth of Casey Cove: 1 - an area off the end of the proposed pile-and-deck MOF option would experience at least 4 cm more accretion of sediment per year than currently, in an area that naturally experiences sediment accretion (Figure 65a). 2 - an area to the north of the mouth will experience up to 4 cm less accretion annually than currently, also in an area that naturally experiences sediment accretion (Figure 65a). 3 - an area off the end of the proposed concrete caisson MOF option would experience at least 4 cm more accretion of sediment per year than currently, in an area that naturally experiences sediment accretion (Figure 65a). 4 - a band of substrate extending north from the east side of the proposed MOF would experience at least 4 cm less accretion annually than currently (though accretion is still predicted - Figure 69a), also in an area that naturally experiences sediment accretion (Figure 65a). 5 - a small pocket of intertidal-subtidal substrate off Charles Point will experience up to 4 cm more accretion annually than currently, in an area that does not naturally experience sediment deposition (Figure 65a). The implications of these model predictions in terms of potential effects to fish habitat must consider existing habitat in those areas, and natural sediment deposition rates. In particular, soft substrates that naturally experience sediment deposition support species that are tolerant to sediment accretion. Indeed, many filter feeders that dwell on or in soft sediment thrive on this deposition, which provides food, and are not expected to be harmed as a result of the predicted (absolute) annual sediment deposition rates (Figures 65b and 69a). In contrast, marine communities living on hard substrates, which do not experience naturally high sedimentation rates, are less tolerant of sediment deposition than soft-substrate communities. Information on existing habitats is summarised in Section 4.9.3 and detailed in Appendix L (Marine Fish and Fish Habitat TDR). In particular, Appendix L Sections 5.1.3.1 and 5.1.3.2 summarize results of intertidal and subtidal (respectively) field studies done in Casey Cove. These studies demonstrate that substrate in the mouth of Casey Cove is heavily dominated by soft bottom habitats; in contrast, substrate off Charles Point are dominated by hard substrates (Figure 14, Appendix L: Marine Fish and Fish Habitat TDR). This 'overlap' of predicted change in sediment accretion, naturally occurring sediment deposition, and existing habitat conditions underpins our assessment on page 4.9-57 of the Application and, ultimately, the characterization of effects on page 4.9-58. Of particular note, although Aurora LNG expects that the scale and magnitude of deposition predicted at Charles Point will not drive changes in fish habitat that would adversely affect marine species, this expectation will be confirmed via implementation of the Marine Sediment Deposition Monitoring Plan (Section 15.2.3).
609.1	round 1	NRCan	Apendix M, 4.9.5.5	Marine Fish and Fish Habitat	The Change in Health effect assesses the potential effects associated with exposure of marine fish to elevated TSS levels generated during Project activities. Effects of increased TSS from marine construction and dredging and disposal at sea were assessed. However, potential effects on fish health by changes of TSS caused by the presence of the project structures were not assessed. In section 6.2.3.1 Changes in TSS of Appendix M shows that the presence of the structures can cause TSS to increase up to 17 mg/L along the shoreline north of the dredge pocket at Berth 1 and up to 7 mg/L along north shoreline to the northwest of the dredge pocket of the MOF. NRCan recommends that the effects of increased TSS due to the project structures should be assessed.	Please note that the TSS concentrations cited are maximum values observed across the entire model period and across the entire water column. Such maximum observations would be momentary, occurring only during particular moments of the annual tidal cycle, and only in part of the water column. Natural fluctuations of this kind are clear in Figures 44-52 (Appendix M of the Application) and differences in TSS across depths are clear in Table 7-5 of Appendix F. Species living in the Skeena estuary are naturally exposed to concentrations of TSS greatly exceeding 17 mg/L (e.g. Figures 44-52 in Appendix M; Q1 2015 in Table 7-5 inAppendix F). With regards to the area mentioned along the shoreline north of Berth 1, this location is in the upper intertidal and marine riparian and, as such, would only be affected by TSS during very high tides. Overall, the momentary maximum changes in TSS predicted by the hydrodynamic model would rarely interact with marine species and no effects on fish health would be expected. For this reason, effects on health as a result of changes in TSS associated with the physical presence of marine infrastructure, including the berth pockets, MOF, and LNG jetty, were not considered in the assessment of potential changes to marine fish health (Section 4.9.5.5, Marine Fish and Fish Habitat VC).
610.1	round 1	NRCan	Appendix M, 4.3.4.2	Marine Fish and Fish Habitat	In section 4.3.4.2 (p. 22-23), the report indicates that model calibration with project field measurements was done through varying the bed resistance value and adjusting the elevations of wind measurement. It is NRCan’s understanding that , model tuning is typically done by adjusting the bed resistance, not by changing the elevations of wind measurement as the elevation of wind data should be at a set height (e.g. 10 m above water surface). NRCan requests that the Proponent provide a clarification on this.	In the modelling, the wind speed was adjusted to an elevation of 10 m above water surface because the measured elevation was not always at the set height (Please see notes in Table 5 of Appendix M of the Application). The text "in a systematic manner" in section 4.3.4.2 is not accurate for wind adjustment. The calibration was only done by varying the bed resistance, not by varying the wind height. This will be caputred in an eratum that recognizes deletion of the sentence ""Wind speed was modified in a systematic manner to improve the correlation between predicted and measured currents by adjusting the elevations of wind measurement." An errata document is being created that will capture this correction and it will be filed with the BC EAO.
611.1	round 1	NRCan	Appendix M, 2.2 & 4.3.4.2	Marine Fish and Fish Habitat	on p. 4 of Section 2.2 - Hydrodynamic Model indicates that the current model of the MIKE 21 Coupled Model was a two-dimensional depth-integrated model. Section 4.3.4.2 describes model calibration with project field measurement data. P. 23 and Figure 25 show that the agreement between the modelled (depth-averaged) and measured currents (at 7.7 m depth) was observed as poor. Even if the spikes of the measured currents are excluded, the peak measured current speeds are 30-40 cm/s while the model predicted currents only reach a maximum speed of 25 cm/s, suggesting the current model under-estimates by 60%. The top panel of Figure 35 compares the measured and modelled currents at the Tuck location for a longer time period and further confirms that the model systematically under-predicts the currents. NRCan notes that 3D modeling would provide more accurate predictions of bottom currents for sediment transport and bed thickness computations, however, if a 3D model is unrealistic due to computing time requirements, NRCan recommends that the proponent estimate how the under-predicted currents would affect the predictions of the changes of TSS and bed thickness due to the project structures.	Aurora LNG acknowledges that there exist differences in modeling current velocities and actual stratified current velocities when using a depth-integrated 2D model to simulate depth-stratified currents, and understands that, in general: 1) The 2D model results could underestimate the surface currents and overestimate the bottom currents at locations where the current stratification is significant (e.g., in deep water areas); 2) The overestimate of current velocity in bottom layer near sea bed could result in an overestimate of the nearbed shear stress and consequently an overestimate on bed erosion and sediment transport. On the other hand, the underestimate of current velocity in the top layer near the water surface could result in an underestimate of sediment transport; 3) In shallow water areas where the current stratification is insignificant, a 2D model could be considered adequate in prediction of the current field. Aurora LNG is of the opinion that modeling changes in current circulation and sediment transport using a 2D model is appropriate for the purposes of predicting potential changes in sediment dynamics to support the environmental assessment.
612.1	round 1	NRCan	Appendix M, 3.1.6	Marine Fish and Fish Habitat	P. 12 of Section 3.1.6 describes that all core samples at 0.5 m depth intervals to a depth of 2.5 m were averaged to derive the grain size and composition data shown in Table 10 which was used in the sediment transport module to predict sediment transport and bed thickness changes (p. 26). Since sediment transport mostly occurs in the 0-20 cm of the sediments, the grain size and composition data from averaging all core samples at 0.5 m depth intervals to a depth of 2.5 m may not be representative of the surficial sediments.NRCan recommends that the grain size and composition data averaged from the first 2 core samples of 0.2 m intervals would be more suitable and should be utilized.	In the sediment transport modelling, spatially distributed bed layer thickness data was used based on the sub-bottom survey in the vicinity of the Project site, as shown in Figure 4 of Appendix M. As the layer thickness varies in range up to ten's of metres, the use of sediment samples at 0.5 m intervals to a depth of 2.5 m is considered to be consistent with, and better representative of, the sediment properties in the bed layer used in the modelling.
613.1	round 1	NRCan	Appendix M, 5.2	Marine Fish and Fish Habitat	In section 5.2 - Modeling Conditions (p. 26) sensitivity test runs were conducted using the critical shear stress in a range from 0.6 to 2.0 N/m2. A value of 1.0 N/m2 was adopted. NRCan recommends that the proponent 1) describe how the sensitivity tests were run and how the value of 1.0 N/m2 was selected and 2) clarify if the constant value of 1.0 N/m2 was used as the critical shear stress for all grid points in the sediment transport modelling. It seems that the report did not present the spatial distribution of the observed grain size data and that a uniform grain size was used in the sediment transport modelling. NRCan recommends that spatially variable observed grain size data and spatially variable critical shear stress values based on the observed grain size be used in order to adequately model TSS, sediment transport, and bed thickness changes.	1) A lower critical shear stress would result in more bed erosion and higher TSS concentrations in the water column. Conversely, a higher critical shear stress would result in less bed erosion and lower TSS concentrations. With limited available field TSS data as shown in Table 9 of Appendix M of the Application, Aurora LNG experienced challenges in calibrating the sediment transport model. A sensitivity analysis was completed for a range of 0.6 to 2.0 N/m^2 during the calibration and there was very little change in TSS concentrations, thus, an average value of 1.0 N/m^2 was selected. 2) Aurora LNG acknowledges that the spatial distributions of critical shear stress and grain size could further refine the sediment transport model. However, at this stage, Aurora LNG is of the opinion that the model is sufficient for the purposes of characterizing potential changes in sediment dynamics associated with in-water Project infrastructure.
614.1	round 1	NRCan	Appendix M, 5.3.3	Marine Fish and Fish Habitat	Figure 16 and text on p. 14 describe sediment supply from the Skeena River and state that the river water quality data are used as the boundary conditions at the Skeena River mouth boundary. The text on p. 29 of Section 5.3.3 states that due to the lack of field measurements on the sediment supply from the Skeena River, the suspended load of the river is not included in the existing conditions modelling. Simulated TSS in 2015 for conditions with and without the Skeena River sediment load presented in Figure 55 shows that the inclusion of the Skeena River sediment load could increase the TSS by ~100% at the narrow of passage channel (OBS7) and at MOF1. Given that the Skeena River is an important sediment source to the region and significantly affects the TSS values in the project area, NRCan recommends that sediment supply from the river be included in the sediment transport modelling.	The intent of Figure 55 in Appendix M of the Application was to investigate the effects of the sediment supply from the Skeena River, but not to quantify changes in TSS levels. The sediment boundary condition for modelling with Skeena River sediment supply was based on assumptions from limited historical point measurements (total of 67 data points from 1988 to 1992). The information should be considered as a sensitivity analysis only. To conduct a model study including the river sediment supply, as stated in Section 5.3.4 p.32, continuous and simultaneous field measurements of the TSS concentrations in the pathway from the river mouth to the Project site would be required.
615.1	round 1	NRCan	Appendix M, 7.0	Marine Fish and Fish Habitat	As noted in section 7 p. 44, the report only cited the changes of TSS caused by the project structures at the observation locations of Berth 1, Berth 2 and MOF berth. The changes at these locations are low. However, much higher TSS changes are predicted for other areas around the project structures. Under the post-construction PC1 conditions, TSS was increased by 17 mg/L along the shoreline north of the dredge pocket of Berth 1 (p. 37 and Figure 62). TSS was increased by 7 mg/l along the north shoreline to the northwest of the dredge pocket of MOF (p. 37 and Figure 63). NRCan recommends that the proponent consider not only the low TSS rates, but to consider the higher TSS changes in other areas around the project structures in the analysis.	The observation locations were selected prior to completing the modelling to provide unbiased and representative locations to predict potential changes in sediment dynamics around the LNG terminal berths and MOF berths. We investigated and assessed variations in TSS levels in areas surrounding the Project as presented in Figure 62 and 63 of Appendix M of the Application, as well as in more extended areas. All of this information, including maximum changes, was considered in the assessment of potential effects on marine fish and fish habitat (see Section 4.9 of the Application).
616.1	round 1	NRCan	Appendix M, 7.0	Marine Fish and Fish Habitat	As noted in section 7 p. 45, the conclusions section only cited the predicted bed thickness changes at the selected locations of Berth 1, Berth 2 and MOF berth which are less than 0.6 cm/year. However, maximum erosion of 2 cm is predicted to the northeast of Berth 1 and maximum depositions up to 3 cm are predicted in the dredge pockets of Berth 2 (p. 38 and Figure 64). For the MOF in Casey Cove, maximum erosion of 4 cm and maximum deposition of 7 cm were predicted at the mouth to the bay (p. 38 and Figure 65). NRCan recommends that the proponent consider not only the predicted bed thickness changes at the Berth 1, 2 and MOF berth locations which are low, but to also consider the maximum erosion and deposition at the other noted locations.	The observation locations were selected prior to completing the modelling to provide unbiased and representative locations to predict potential changes in sediment dynamics around the LNG terminal berths and MOF berths. We investigated and assessed variations in TSS levels in areas surrounding the Project as presented in Figure 64 and 65 of Appendix M of the Application, as well as in more extended areas. All of this information, including maximum changes, was considered in the assessment of potential effects on marine fish and fish habitat (see Section 4.9 of the Application).
617.1	round 1	NRCan	Appendix M, 7.0	Marine Fish and Fish Habitat	On page 45 (s.7) it was estimated that approximately 2% of the TSS discharged at the river boundary would contribute to the TSS levels in Casey Cove and this could be biased and does not reflec the true effects on TSS. Simulated TSS for 2015 for conditions with and without the inclusion of the Skeena River sediment load shown in Figure 55 demonstrate that the inclusion of the Skeena River sediment load could increase the TSS by ~100% in the project area. It is noted by NRCan that these values point to the importance of including the Skeena River sediment load in the modelling study.	The statement "It was estimated that approximately 2% of the TSS discharged at the river boundary would contribute to the TSS levels in Casey Cove and .....", on page 45 of Appendix M of the Application, means that approximately 2% of the total amount of suspended sediment discharged at the river boundary (i.e., river sediment supply) could be transported to Casey Cove; the statement was not meant to suggest a percentage of increase in the TSS level at Casey Cove. The intent of Figure 55 was to investigate the effects of the sediment supply from the Skeena River, not to quantify changes in TSS levels. The sediment boundary condition for modelling with Skeena River sediment supply was based on assumptions from limited historical point measurements (total of 67 data points from 1988 to 1992). The information should be considered as a sensitivity analysis only. To conduct a model study including the river sediment supply, as stated in Section 5.3.4 p.32, continuous and simultaneous field measurements of the TSS concentrations in the pathway from the river mouth to the Project site would be required.
618.1	round 1	NRCan	Appendix G,H, M Volume 1, Volume 4	Marine Fish and Fish Habitat	The proponent has indicated in Appendix G (Section 9.4, Figure 9-10) that the deposition will occur within the MOF area following dredging. Similarly, in Section 10.4, Figures 10-4 to 10-6 it is indicated that the sedimentation will occur in the dredged areas of the LNG Jetty. Hydrodynamic modelling in Appendix M demonstrates that sedimentation in the vicinity of the LNG Jetty and the MOF is expected (e.g., Figure 53). Despite indications that the deposition of sediments in the dredged areas is anticipated, none of the documents reviewed have referenced the possibility of maintenance dredging over the project life span. NRCan recommends that the Proponent please clarify whether maintenance dredging will be required over the project life span including estimates of how frequently the areas will need to be dredged, the volume and grain size of the material to be removed, and the location of the disposal site for materials dredged during the operation phase of the project.	Based on preliminary engineering and design, maintenance dredging is expected to be required at the LNG jetty on a ten-year or longer cycle. However, changes in bathymetry at the berth pockets will be monitored during Project operations to confirm whether maintenance dredging is required, how often it is required, the location(s) that require dredging, and the volume of sediment requiring removal. If maintenance dredging is deemed necessary, sediment sampling would be undertaken to characterize the physical and chemical properties of the material. Based on the anticipated volume of dredgeate and the results of sediment analyses, a plan would be developed to identify potential disposal site options through discussions with appropriate regulators and Aboriginal Groups.
619.1	round 1	Transport Canada	Section 1 - P. 1-26,	Proposed Project Overview	Water Supply- The 430 m long intake pipeline, will also require a regulatory review under the *Navigation Protection Act* and changes to the design, direction and location may be required to complete that review.	Comment noted.
620.1	round 1	Transport Canada	Section 1, 1.2.7.5	Proposed Project Overview	Operational Shipping- The PPA/BCCP will require tug escort of LNGC’s to/from Triple Island boarding station to the project terminal. Real time simulations (to be conducted during the TERMPOL review) will determine the exact requirements of how many tugs and what size and whether or not they should be tethered.	Mitigation measure 6.5.6 has been updated to incorporate this feedback from Transport Canada. This update has been captured in the technical memo "Mitigation Ameasures Categorization Table" that will be filed with the EAO.
621.1	round 1	Transport Canada	Section 1 - Table 1-23 Authorization Table, Navigation Protection Act Approval	Proposed Project Overview	Also Habitat offsetting in the marine environment may require NPA Approval.	Comment noted.
622.1	round 1	Transport Canada	Section 1 - 1.7.4.1 Evaluation Criteria	Proposed Project Overview	More information is needed on how recreational use in the area of the berths has been gathered, considered and accommodated for. TC believes there is data available or that can be gathered on the smaller craft usage as they relate to projected vessel movements and therefore the impacts that may/will occur. Mitigation should be included as to how small vessel movements can be mitigated in and around the berths.	Aurora LNG used multiple data sources to understand recreational vessel traffic in the region. For example, the British Columbia Marine Conservation Analysis (BCMCA) spatial data repository was used to define recreational boating routes and other attributes (kayak routes, scuba sites, marinas, anchorages, campsites, etc). These data sources informed Aurora LNG's understanding of the primary routes of entry and uses by recreational boaters for the assessment. While Aurora LNG is confident in their understanding of recreational boaters in the area, any additional data provided by the respondent would be welcomed. For further information on small vessel or human powered craft, please see the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
623.1	round 1	Transport Canada	Section 5	Economic Conditions	A word search of this document does not appear to capture the effects either positive or negative of the addition of 6-8 tugs into the RAA and their requirement for docks and fuel.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.

624.1	round 1	Transport Canada	Section 6	Marine Use and Navigable Waters	General comment- TC heard at the working group on Feb 6-7 that a floating camp is being proposed. TC requests more information on this floating camp with respect to potential impacts on marine use and navigation. TC expects this section of the report to reflect the recently received AIUS information from the Lax Kw'alaams.	See the "Floating Camp Review" technical memo which will be filed with the BC EAO. In preparing this technical memo, Aurora LNG specifically considered the information contained in the AIUS in addition to the other information received from Lax Kw'alaams Band and other Aboriginal Groups.
625.1	round 1	Transport Canada	Section 6	Marine Use and Navigable Waters	TC's regulations around the construction of helipads can be found here. https://www.tc.gc.ca/eng/civilaviation/regserv/cars/part3-standards-325-325-160.htm#foreword	Comment noted.
626.1	round 1	Transport Canada	Section 6.3	Infrastructure and Services	This document does not appear to evaluate if there is sufficient dockage for the proposed 6-8 (2-3 large) tugs nor adequate fueling facilities. The existing fuel dock is already over utilized at peak periods. While the tugs will be run by a 3rd party, there appears to be no attempt to evaluate what effects or benefits this essential component will have on existing marine infrastructure in Port waters.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
627.1	round 1	Transport Canada	Table 6.3-21	Infrastructure and Services	TC would expect this Table to be updated once mitigation has been identified after receiving an updated Plume Rise Assessment report.	Aurora LNG will ensure that mitigation measures are updated appropriately, as required, following discussions with Transport Canada regarding the Plume Rise Assessment report. Please see the "Potential Effects on Aviation as a Result of Accidents or Malfunctions" technical memo which will be filed with the BC EAO.
628.1	round 1	Transport Canada	Section 6.3.1	Infrastructure and Services	The reference to Prince Ruperts Master Plan is out of date. The City of Prince Rupert updated their master plan in 2016.	Aurora LNG understands the comment to be referring to the City of Prince Rupert's Official Community Plan. Aurora LNG is aware that the City of Prince Rupert's Official Community Plan has been updated numerous times since 2007. The consolidated plan was reviewed in preparation of the assessment. The fourth bullet in Section 6.3.2.1 is updated as follows {emphasis added to indicate change):SCHEDULE "A" of the Quality of Life - Official Community Plan Bylaw 3236, 2007 with amendments to 2015 (City of Prince Rupert 2015i) The corresponding reference (City of Prince Rupert 2007) is updated to "City of Prince Rupert 2015i". An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
629.1	round 1	Transport Canada	Section 6.3.4	Infrastructure and Services	TC cannot provide any comments at this time with respect to impacts on Air Navigation until such time as we receive an updated Plume Rise Assessment report. TC understands that this report is coming mid February. TC will review the document when it comes in and provide further comments at that time.	The Plume Rise Assessment Report was shared with TC and the EAO on February 17, 2017. Aurora LNG looks forward to receiving your comments on this report.
630.1	round 1	Transport Canada	Section 6.4	Land and Resource Use	Table 6.4-17 4.2.9 Mitigation: Construction vessels, supporting tugs, and LNG carriers and assist tugs will use low-sulphur fuel in compliance with applicable marine emission standards (MARPOL 2008). TC has confirmed with the local fuel supplier that they have access to these fuel types. If the proponent sources fuels from other suppliers such as from Cherry Point, then the proponent will need to confirm the fuel meets these requirements.	Comment Noted.
631.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	Mitigation No. 6.5.2- The Marine Activities Plan needs work. will require more than VHF radios, the use of radio's and Notices of Shipping are some of the final steps in notifying stakeholders and general public.	As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. The Plan will also receive input through the safe-shipping workshops, recommendations resulting from the TERMPOL study, and participation on the Prince Rupert Port Authorities' Marine Construction and Coordination Committee. Additional information on the specific contents of the Marine Activities Plan will be shared as the plan is developed.
632.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	Mitigation No. 6.5.7 - LNG carriers will strictly adhere to the prescribed route, how does the proponent intend to enforce such a measure as the ships will be owned by a third party?	LNG carriers will be expected to travel the prescribed shipping route (it is an established and historical route commonly used by large shipping traffic). However, there are likely to be circumstances in which ships may be required to deviate from the prescribed shipping route (e.g., due to weather or interactions with other vessels). LNG carrier captains, with assistance from the marine pilots, will ultimately be responsible to navigate LNG carriers safely into the Port of Prince Rupert.
633.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	Mitigation No. 6.5.8 - LNG carriers will maintain safe operating distances from other marine craft. It is unclear what other mitigation the proponent is offering? The Collision Regulations already apply to every vessel on the water. If the proponent is intending to stipulate a safe distance between their carriers, other ships and vessels that must be met as part of a contract, then it should be stated in clearer terms.	Aurora LNG is aware that the Collision Regulations apply to all vessels on the water, but included this mitigation as a reminder to Aboriginal Groups, CRA fishers, recreational boaters, and other stakeholders of their intent to undertake all shipping activities safely and responsibly. At this time, other vessels are not being asked to remain a set distance away from LNG carriers, except when docked. When they are docked, the Canadian Standard Association recommends an ignition free safety radius. To date, the size of this radius has not been finalized. Input from the TERMPOL process will further inform safety zones when vessels are at dock and underway.
634.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	Table 6.5-14, 6.5.6 The PPA/BCCP will require tug escort of LNGC's to/from Triple Island boarding station to the project terminal. Real time simulations (to be conducted during the TERMPOL review) will determine the exact requirements of how many tugs and what size and whether or not they are tethered.	Comment noted.
635.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	CHARACTERIZATION OF RESIDUAL EFFECTS FOR CHANGE IN MARINE FISHERIES AND OTHER USES- While the shore based businesses will have access to real time data on ship movements and schedules, the small fishing vessels will not and may be coming from a remote port with no or poor internet connections, their only contact may be through the VHF radio and that may not be monitored at all times due to the small crew size. Therefore the real time data and electronic communication while being highly useful and contributing to safety, cannot ensure that it will resolve all interactions. The carriers and escorts may have to take early and positive actions to avoid collisions.	Aurora LNG acknowledges that in certain situations LNG carriers may be required to take positive and affirmative action to avoid collisions. LNG carrier captains and marine pilots will maintain a constant watch (as per the collision regulation) and will be prepared to avoid collisions during all transits.
636.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	RECREATION AND TOURISM- TC disagrees with the statements made on p. 6.5-61, the areas around Casey Cove and the South end of Digby Island will be heavily impacted by construction, the MOF and berths and it is unclear if the proponent is offering any mitigation.	The statements made and mitigation measures noted on page 6.5-61 of the Application refer to predicted effects on recreation and tourism relating to marine shipping. Shipping traffic will be transient whereas the loss of recreation and tourism opportunities in the exact location of the proposed Project infrastructure (marine terminal and MOF) will remain after mitigation and occupy space that can no longer be used until the facilities are decommissioned and removed. Aurora LNG will continue to work with regulators, Aboriginal Groups and interested stakeholders to identify potential opportunities to enhance existing marine recreational areas to help to mitigate the installation of Project infrastructure in Casey Cove and at the south end of Digby Island.
637.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	Table 6.5-16 Summary of Project Residual Effects on Marine Use and Navigable Waters- The impact on small craft does not appear to be captured here and the table seems too coarse to accurately capture various impacts. A more thorough analysis on small craft is needed, as stated above.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
638.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	Table 6.5-17 Potential Cumulative Effects on Marine Use and Navigable Waters- Canpotex can be removed from this table. Another potential cumulative effect that does not appear to be captured is the effect of numerous control zones associated with all of the existing/reasonable foreseeable projects. Discussions with PRPA (as they are responsible for control zone needs in PRPA waters) are needed to be included in this assessment.	Aurora LNG recognizes that potential control zones (required as a result of the LNG cargo and the requirement to maintain an ignition free zone) may interact with other traffic. However, because the size and restrictions associated with each control zone will depend on a detailed risk assessment, this information is not reasonably accessible to other proponents. Moreover, most of the reasonably foreseeable projects considered in the cumulative effects assessment are not LNG facilities. Consequently, they may not be required to establish a control zone. In summary, Aurora LNG did not include, nor make any assumptions regarding the potential size, shape, location, or restrictions associated with hypothetical control zones of other projects.
639.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	6.5.7.1 & 6.5.7.2 Significance of Project Residual Effects- As stated above, the long term impact on human powered craft (smaller craft) is not accurately reflected in this section and needs more analysis.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
640.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	This document is completely silent on how the natural gas will be transported to Digby Island and where any pipe will land . More information and analysis is required. The pipeline associated with this project should be part of the cumulative effects analysis. It is reasonably foreseeable as without it, this project could not proceed. Also in designing the facility the location of the pipline landfall should be approximately known.	In accordance with the Section 11 Order (as amended), the scope of the Project for the purpose of the environmental assessment does not include transportation of natural gas to the LNG facility, which is anticipated to be provided by a third party owned pipeline. The third-party pipeline provider is yet to be determined. As outlined in section 3.7.1 of the AIR,the cumulative effects assessment considers the past, present and reasonably foreseeable future projects and activities listed in the Project and Activities Inclusion list, which was finalized within three weeks of submitting the final AIR on November 23, 2015.
641.1	round 1	Transport Canada	Section 6.5	Marine Use and Navigable Waters	CHARACTERIZATION OF RESIDUAL EFFECTS FOR CHANGE IN NAVIGATION- TC disagrees with your assessment of low impacts on small vessels. It is the opinion of TC that the proposed berths, control zones and construction activities will effectively preclude human navigation on small vessels in the area.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
642.1	round 1	Transport Canada	Section 6.5.2.5	Marine Use and Navigable Waters	TC has a correction to the statement under Administrative boundaries - The waters outside PRPA's waters is not under the jurisdiction of TC.	The statement within Section 6.5.2.5 - Boundaries, under "Administrative Boundaries" that notes that waters outside the PRPA boundaries are under Transport Canada jurisdiction will be corrected in an eratum to say "shipping route extends beyond PRPA boundaries into provincial and/or federal waters." The errata document will be filed with the BC EAO.
643.1	round 1	Transport Canada	Section 6.5.3.3	Marine Use and Navigable Waters	TC recommends using spatially relevant and reliable data on small vessel movements from other projects in Prince Rupert.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
644.1	round 1	Transport Canada	Section 6.5.4	Marine Use and Navigable Waters	TC does not agree with the Assumption made that the assessment should focus on potential effects of the LNG carriers alone. There will be 6-8 tugs moving in the area every day and the impacts of these tug boats on this VC (and other VC's) should be assessed.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
645.1	round 1	Transport Canada	Table 6.5-14	Marine Use and Navigable Waters	TC recommends explaining what the difference would be between the recommended Marine Activities Plan vs the PRPA's Construction/Operation Coordination Committee. Are these at cross purposes or complementary. Will FNs be involved in which plans or committees?	The Marine Activities Plan will be complementary to other Port of Prince Rupert Initiatives of similar nature (e.g., the noted Construction and Operations Coordination Committee). As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG will engage with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders in the development of this plan. Additional input to the planning process will result from the safe-shipping workshops and the recommendations from the TERMPOL study. More information on the details of the Marine Activities Plan will be shared as they become available.
646.1	round 1	Transport Canada	Section 6.5.5.2	Marine Use and Navigable Waters	The proposed dredging of Casey Cove and the berths may also require a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review.	Table 6.5-1 in the Application notes that all marine components of the Aurora LNG project will be subject to Transport Canada review under the Navigation Protection Act. Section 6.5.5.2 acknowledges that Transport Canada approval is required before any in-water works take place and that all Transport Canada regulations, including those outlined in the Navigation Protection Act, will be followed.

647.1	round 1	Transport Canada	Section 9	Accidents or Malfunctions	Table 9.3-1 Potential Interactions of Project Accidents or Malfunction Events with VCs- It is likely that groundings, collisions causing a leak of fuel or oils could have a potential economic impact on the area, particularly to any harvest of local shellfish. More information should be provided regarding these interactions.	The potential for impact on local fishing and consumption of marine country foods is discussed in Section 9.9.3 under Marine Use and Navigable Waters, and Human Health. As discussed in this section , potential effects are expected to be limited to the LAA and be short-term. It is anticipated that there would be adequate opportunities for commercial fishing and marine country food harvest outside of a closure area such that likelihood for residual effects on resource harvesting from a vessel grounding are very low. As a result of these findings there are no anticipated effects on Economic Resources.
648.1	round 1	Transport Canada	Section 9	Accidents or Malfunctions	9. 6 On-shore Fires or Explosions- There is a potential of impacts to navigation if smoke from a sustained fire fills the navigation channel between Digby and Kaine Island. While the likelihood of a major fire is remote, the likelihood of a smoke generated impact is relatively high. TC agrees that the effect will be short term with minimal residual impact.	Comment noted. Potential delays for marine traffic in the immediate vicinity of an incident is discussed in the Application in section 9.6, 'Onshore Fires or Explosions'. The potential effects of Project flaring on aviation are discussed further in the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo which will be filed with the BC EAO. Aurora LNG will continue to consult with these agencies through the permitting process.
649.1	round 1	Transport Canada	Section 9	Accidents or Malfunctions	9.7 LNG Plant Malfunctions, Flaring- A flaring event at dusk or nighttime may impact navigation and make locating navigation aids, oncoming traffic and hazards difficult to see. More informaiton and analysis should be provided in this regard.	Aurora LNG has met with Transport Canada and NAV Canada on several occasions starting in May 2015, again in 2016, and most recently in April this year to discuss the Project flare design and potential effects on aviation. The potential effects of Project flaring on aviation are discussed further in the "Potential Effects on Aviation as a result of Accidents or Malfunctions"technical memo which will be filed with the BC EAO. Aurora LNG will continue to consult with these agencies through the permitting process.
650.1	round 1	Transport Canada	Section 9	Accidents or Malfunctions	9.9.2 Preventative and Response Measures- Any response to a grounding or serious collision will be delayed until it can be determined that there is no leak of the LNG and that a major fire risk is not imminent, as requested in the Feb 6-7th Working Group meeting.	Comment noted. LNG vessels have leak detection mechanisms. In the event of a grounding or serious collision it is expected that vessel captains will be in communication with Transport Canada and will communicate the status of any potential leaks or fire risks.
651.1	round 1	Transport Canada	Table 9.3-1	Accidents or Malfunctions	TC recommends that there is an interaction between Human health and "Facility impact from aircraft.	As per Table 3-1 in the Application Information Requirements and Valued Components Selection Document, the Human Health valued component (VC) primarily addresses the potential for public exposure to contaminants (e.g., changes in air quality). The potential for human injury or death directly resulting from a facility impact is considered through the Community Health VC. In the event of a facility impact from an aircraft, the pathway for potential effects to the Human Health VC would be through a change in the Air Quality VC resulting from a fire or explosion secondary to the impact of the aircraft. On-shore fires or explosions are considered separately in Section 9.6. Section 9.6 includes an assessment of potential effects of on-shore fires or explosions on the Air Quality and Human Health VCs.
652.1	round 1	Transport Canada	Sections 9.5.2, 9.7.2, 9.7.3:	Accidents or Malfunctions	These sections should be updated to reflect the upcoming technical memo on Plume Rise Assessment and impact on air navigation (for example what are these design standards that will be used to reduce the potential for aviation activities to overlap with the southern approach of the airport).	Please see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issues raised by this comment. The technical memo will be filed with the BC EAO.
653.1	round 1	Transport Canada	Section 9.7	Accidents or Malfunctions	TC recommends that there is an interaction between LNG Malfunctions and Visual Quality.	Aurora LNG acknowledges that in the event of an LNG Plant malfunction, emergency flaring could increase the visibility of the flare during the event. However this event would be of such short duration, and represent such a small change in the existing visual condition (relative to the operating facility) that based on the characterization of residual effects on Visual Quality in Table 6.2-5 it would be negligible in magnitude and duration. For this reason, Visual Quality was not assessed in detail in this scenario.
654.1	round 1	Transport Canada	Section 9.7	Accidents or Malfunctions	How long is a 'short term' flaring event? This should be stated in this section of the application.	Following automated shutdown, and the transitioning of all systems to a safe standby mode, emergency flaring is not expected to continue for longer than one hour. For details, please reference the Air Quality Technical Data Report included in Appendix A of the Application.
655.1	round 1	Transport Canada	Section 9.7.2	Accidents or Malfunctions	TC would expect that there is other mitigation that can be done for any birds attracted to all the lighting around the facility. Also TC encourages the proponent to discuss with ECCC-CWS any mitigation related to the attraction of birds and air navigation safety. Also what mitigation can be applied for maintenance flaring events.	Facility lighting will be designed to safely meet operational requirements. ECCC-CWS will be providing input related to risk to migratory birds and proposed mitigation. Mitigation measures for bird deterrents are described in Table 4.7-14 of the Application.
656.1	round 1	Transport Canada	Section 9.7.3	Accidents or Malfunctions	TC recommends more information be provided on the argument for the credible scenario bs the worst case scenario.	A credible accidents and malfunctions scenario at the LNG facility would includes the complete emergency shutdown of a maximum of one production train due to equipment malfunctions, upset conditions or power upset or failure with associated flaring. A shutdown of the entire facility including all four trains with complete flaring is highly unlikely and as such is only considered relative to an absolute "worst-case emissions" scenario in the Air Quality, GHGs, Human Health VCs whereby potential effects are a function of the total air emissions to the atmosphere. Consideration of one vs four train stoppage has no change to the accident and malfunction assessment findings relative to other VCs (Wildlife, Marine Birds and infrastructure and Services).
657.1	round 1	Transport Canada	Section 9.9	Accidents or Malfunctions	TC recommends using QRA data to reflect the probability of groundings or collision in the LAA or RAA.	Aurora LNG acknowledges this recommendation. A QRA will be undertaken during Project design and is expected to incorporate the risk of vessel incidents.
658.1	round 1	Transport Canada	11.3.9	CEAA 2012	On page 11-171 it is noted that Gitxaala had concerns regarding access to locations of achorages and interference with LNG carriers damaging equipment. Please explain how this concern is being addressed and mitigated to the satisfaction of the Aboriginal group, and if other Aboriginal groups have raised similar concerns.	Potential changes in access to anchorages and interference with shipping has been considered as part of the assessment of Current Use of Lands and Resources for Traditional purposes. Potential interference with access to Current Use areas including anchorages is not expected beyond that described for those locations within the Project Development Area. Travel routes to locations that overlap with the Project shipping route are expected to maintain their current level of safety and access after applicable mitigations. Key mitigation measures proposed (in Part B of the Application) to avoid or reduce predicted Project effect relevant to Current Use including access are presented in Table 11.3-11. Aurora LNG will continue to consult with Aboriginal Groups to identify additional mitigation measures through the life of the Project to reduce potential adverse Project effects as appropriate. Similar concerns have been raised by Kitsumkalum First Nation and have been considered in Section 11.3.10 of the Application.
659.1	round 1	Transport Canada	11.3.9.3	CEAA 2012	On page 11-176, it is stated that it is anticipated that marine hunting practices will continue but at potentially reduced levels. Can you please explain how this concern is being addressed and if the mitigation is to the satisfaction of the Aboriginal group, and if other Aboriginal groups have raised similar concerns.	Potential changes in marine hunting has been considered as part of the assessment of Current Use of Lands and Resources for Traditional purposes. The following statement on page 11-176 is a summary of residual effects as characterised by Aurora LNG. "…it is anticipated for marine hunting practices that current use will continue, albeit at potentially reduced levels, and it is not anticipated that there will be a measurable change in current use of marine mammals, such that current use cannot continue." This characterization takes into consideration Part B mitigation measures proposed to avoid or reduce effect relevant to Current Use, see Table 11.3-11. Aurora LNG will continue to consult with Aboriginal Groups to identify additional mitigation measures through the life of the Project to reduce potential adverse effects as appropriate.
660.1	round 1	Transport Canada	11.3.9.3	CEAA 2012	On page 11-184, it is noted that Gitxaala had concerns regard the interference with ship traffic and project infrastructure as this will reduce fishing and have an impact on fishing gear. Can you please explain how this concern is being addressed and if the mitigation tis o the satisfaction of the Aboriginal group, and if other Aboriginal groupshave raised similar concerns.	Potential interference by ship traffic and reduced fishing has been considered as part of the assessment of Current Use of Lands and Resources for Traditional purposes. The following statement on page 11-184 is a summary of residual effects as characterised by Aurora LNG rather than a concern identified by Gitxaala Nation. "…Project-related shipping traffic could result in reduced fishing or other use opportunities by physically interfering with access to Gitxaala Nation fishing grounds ("access" to fishing grounds includes interference with vessels or fishing gear)." This characterization takes into consideration Part B mitigation measures proposed to avoid or reduce potential effects relevant to Current Use, see Table 11.3-11. Aurora LNG will continue to consult with Aboriginal Groups to identify additional mitigation measures through the life of the Project to reduce potential adverse effects as appropriate.
661.1	round 1	Transport Canada	11 and 12 in general	CEAA 2012	Transport Canada is looking for a fulsome table that ties in the information found in tables (similar to 11.7-1) with information contained in 12.8-1. Transport Canada would like a table that lists the navigation concerns raised by each Aboriginal group (including the Metis Nation of BC) , how the impact of the project may interfere with the exercise of an asserted Aboriginal right, the proposed mitigation measure, and if this issue is addressed for the Aboriginal group, (if not why not), Aurora LNG's response to the issue and the current status of the issue. In the column "proposed mitigation" please give a short narrative as to what the mitigation measure relates to for ease of reference to the reader. Pulling in data and information from table 12.8-1 would be beneficial for the review to understand and appreicate the navigation concerns raised by the First Nations so that the issues can be tracked into the regulatory phase, if applicable.Please bring in information from section 6 Marine Use and Navigable Waters and specifically information assessed on Aboriginal Use 6.5.2.2.	Please see the "Concerns of Aboriginal Groups - Navigation" technical memo which will be filed with the BC EAO.
662.1	round 1	Transport Canada	12.1	Aboriginal Consultation	Please confirm the lists of Aboriginal groups in table 12.1-1 has been confirmed and approved by CEAA.	This table reflects the Aboriginal groups as set out in the Section 11 Order (as amended). The EAO issued the Section 11 Order (as amended) after CEAA agreed to the request for substitution under the Memorandum of Understanding between the Canadian Environmental Assessment Agency and the B.C.'s Environmental Assessment Office on the Substitution of Environmental Assessments (2013).
663.1	round 1	Transport Canada	Table 12.1-4	Aboriginal Consultation	In table 12.1-4 it is stated that Gitxaala Nation may experience some interference to fishing grounds within the shipping routes and there may be effects from noise and wakes. Can you please poin Transport Canada to the information on the waves and wakes to address this issue and if the response to the concern raised by the Aboriginal group satisfies their concerns? Please reference in a table in either section 11 or 12 the status of the issue and the mitigation measures to address the impacts on rights.	The assessment of Project-related effects on Gitxaala Nation harvesting activities from noise and wake is in Section 12.5.6.6, starting on page 12-170. That section also includes mitigation measures to address Project-related effects on harvesting (see page 12-173). The additional assessment of wake effects on harvesting activities was added to Section 12.5.6.6 at Gitxaala Nation's request (raised during a pre-Screening review of Part C). In response to Transport Canada's comment #318, Aurora LNG has prepared a technical memo that summarizes navigation-related concerns from Aboriginal Groups. This technical memo is entitled, "Concerns of Aboriginal Groups - Navigation", and will be filed with the BC EAO.
664.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	4.2.3.2 Seawater Intake and Outfall System- These intakes will require a regulatory review under the Navigation Protection Act and changes to the design, direction, depths and location may be required to complete that review.	Comment noted.
665.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	4.2.4.1 Pioneer Facility -This dock will require a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review.	Comment noted.
666.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	4.2.4.1 BARGE LANDING- The building of a bulkhead or placing piles may also require a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review.	Comment noted.
667.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	4.2.4.1 PASSENGER BOAT LANDING- The building of the dock or placing piles may also require a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review.	Comment noted.
668.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	10.3.2.1 Salt Marsh and Foreshore Habitat Creation (Watercourse A)- Any portion of the tidal area being modified will trigger a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review.	Comment noted.
669.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	10.4.1.2 Eelgrass Expansion- The containment berms will trigger a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review.	Comment noted.
670.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	10.4.2.1 Heterogeneous Rocky Habitats- The habitat reefs will trigger a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review. The proposed reef structures attached to the proposed berthing structures will most likely not impact small vessel navigation.	Comment noted.

671.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	Figure 15- The habitat reefs will trigger a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review. It is not clear from the information provided what are the existing traffic patterns in Casey Cove, TC has heard the concerns of the residents of Dodge Cove and will consult with them and other small craft users to determine what impacts any proposed reefs will have and make regulatory determinations based on that information.	All necessary navigable waters requirements will be adhered to during the Fisheries Act application process. Aurora LNG will consult with Transport Canada during the development and finalisation of offsetting features, including those in Casey Cove. Aurora LNG looks forward to receiving feedback from residents of Dodge Cove on potential impacts on small craft users.
672.1	round 1	Transport Canada	Appendix V	Fish Habitat Offsetting Plan	Figure 16- The habitat reefs will trigger a regulatory review under the Navigation Protection Act and changes to the design, direction and location may be required to complete that review. TC understands that there is existing small craft and Human powered marine traffic throughout the south end of Digby Island and into Delusion Bay and will consult with small craft users to determine what impacts any proposed reefs will have and make regulatory determinations based on that information. It is possible that TC will require a clear channel and marker buoys to maintain access into the bay if required.	Comment noted. Aurora LNG will consult with Transport Canada and the PRPA during the development and finalisation of offsetting features, including those around the south end of Digby Island and Delusion Bay. All necessary navigable waters requirements will be adhered to during the Fisheries Act application process. Aurora LNG looks forward to receiving feedback on potential impacts on small craft users and will work with Transport Canada to identify additional mitigation measures if required.
673.1	round 1	NCRD	All	General	Please separate mitigation strategies from legal requirements derived from legslation and regulation.	Table 16-1 in the Application separately identifies the legal requirements (if any) from VC-specific mitigation measures.
674.1	round 1	NCRD	6.3.4	Infrastructure and Services	Mitigation Strategy 6.3.4: the NCRD requests that a representative of the NCRD, Prince Rupert, Port Edward, and Dodge Cove have an opportunity to review and comment on Plan prior to it being finalized. Collaboration among agencies is required to create a better end product.	Aurora LNG will engage with the North Coast Regional District, the City of Prince Rupert, the District of Port Edward and representatives from the community of Dodge Cove prior to the finalization of mitigation measure 6.3.4. Engagement will be facilitated under the Social Management Plan (see mitigation 6.3.1 and Section 14.12) under which mitigation 6.3.4 falls.
675.1	round 1	NCRD	6.3.7	Infrastructure and Services	Mitigation Strategy 6.3.7 The NCRD recommends that regulars meetings are to occur to discuss the impacts of the project. A "review panel" of key stakeholders would assist governments and the proponent in finding meaningful solutions to concerns. This panel should encompass more than just what is covered in this section.	Aurora LNG agrees that a community advisory group comprised of local stakeholders would be beneficial and will establish such a group prior to the commencement of construction. This will provide a venue to discuss initiatives to address potential community concerns as well as provide regular Project updates back to local communities. Details of the community advisory group and how it will be structured will be included in the Social Management Plan (see mitigation measure 6.3.1). Aurora LNG will engage with the appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) and key stakeholders regarding the development of the Social Management Plan.
676.1	round 1	NCRD	6.3.8	Infrastructure and Services	Mitigation Strategy 6.3.8: The NCRD is the delegated authority for ERP in the region and must be included in the development of this Plan. A date at which this plan must be finalized should also be included.	Aurora LNG will engage with the North Coast Regional District on development of the Emergency Response Plan (mitigation measure 6.3.8). Timelines regarding finalization of the Emergency Response Plan will correspond with BC OGC permitting requirements (particularly Section 8 and 22 of the Liquefied Natural Gas Facility Regulation).
677.1	round 1	NCRD	6.3.16	Infrastructure and Services	Mitigation Strategy 6.3.16: Given the current medivac service for the region, it is recommended that a review of alternatives, such as a project-specific contract, be further explored to mitigate potential impacts on access to health services region-wide.	Following a positive final investment decision (FID) Aurora LNG will engage with Northern Health, the BC Ambulance Service and the Patient Transfer Network to develop the Health and Medical Services Plan (mitigation 6.3.13).
678.1	round 1	NCRD	4.4.1	Community Health	Mitigation Strategy 4.4.1: The NCRD requested shortened hours of high-level noise disturbance activities. It is also recommended that the proponent provide residents a minimum of two weeks' notice prior to the commencement of high-noise activities. The high-noise activities will impact the quality of life and mental health of the residents. It is recommended that the Noise Management Plan also address the concerns of residents regarding increased aircraft traffic, which also causes a disturbance to the residents.	As per Section 14.5 of the Application, Aurora LNG will develop a Noise Management Plan that will include a description of requirements for notifying local residents of high disturbance construction works, and outlining how complaints regarding noise will be addressed. Aurora LNG will engage with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) and other key stakeholders regarding the development of this plan. Aircraft noise is federally regulated by Transport Canada. Transport Canada recommends that the Noise Exposure Forecast (NEF) value not exceed 30 in residential areas. NEF values above 25 are likely to produce some level of annoyance, so when feasible, noise reduction practices should be implemented. NEF is the index used by Transport Canada to indicate noise levels from aircraft operations. Noise Exposure Forecast values can be used to predict future conditions and indicate current or even past conditions. Aircraft noise effects will vary by type of plane, number of planes on arrivals, overflight and takeoff, as well as the speed of planes, flight path, and flight altitude. Project related flights will be expected primarily during the daytime period with the exception of medical emergency flights which could occur at any time. The assessment of aircraft noise is based on the Transport Canada Ninth Edition of TP1247E, Aviation Land Use in the Vicinity of Aerodromes (Transport Canada 2013/14). Operation of the Project related aircraft is expected to follow the guidelines recommended by Transport Canada.
679.1	round 1	NCRD	4.4.9	Community Health	Mitigation Strategy 4.4.9: It is recommended that: (1) all on-island residents must be notified and any other residents within 1km; (2) a threshold be put on 'high disturbance noise'; and (3) a notification period in advance of such activities must be establish (e.g., 1 week notice).	As per Section 14.5 of the Application, Aurora LNG will be developing a Noise Management Plan that will include a description of requirements for notifying local residents of high disturbance construction works, and outlining how complaints regarding noise will be addressed. Aurora LNG will engage with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended), community members and other key stakeholders regarding the development of this plan. Noise thresholds from the 'high disturbance noise' will be based on recommendations from the Health Canada noise guidance.
680.1	round 1	NCRD	4.4.10	Community Health	Mitigation Strategy 4.4.10: It is recommended that this process of handling complaints have an associated timeline that must be followed and that this process must be established before any activities are to occur on-site.	As outlined in section 14.5 of the Application, a noise management plan will be developed that describes requirements for notification of construction work to local residents and a process outlining how complaints regarding noise will be addressed. Information on timelines in which complaints must be addressed will also be included in the plan. This plan will be completed in advance of construction.
681.1	round 1	NCRD	4.7.3	Community Health	Mitigation Strategy 4.7.3: It is recommended that the NCRD be consulted during this plans, in a collaborative process rather than an informative process.	Aurora LNG will engage with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) and key stakeholders regarding the development of the Decommissioning and Abandonment Plan. NCRD will be included in that engagement.
682.1	round 1	NCRD	6.4.6	Land and Resource Use	Mitigation Strategy 6.4.6: It is recommended that a clause be included that residents must be served a minimum notice prior to project activities occurring. The NCRD also should be included in this notification process.	The North Coast Regional District will be included in the notification process outlined in mitigation measure 6.4.6. Regular notice of project activities will be provided.
683.1	round 1	NCRD	6.4.7	Land and Resource Use	Mitigation Strategy 6.4.7: The NCRD and residents of Dodge Cove should be consulted in a collaborative manner to identify appropriate recreation offsets. Maintenance of anything such as, picnic areas, are to be negotiated and any amenities provided must align with the community's vision.	As noted in mitigation measure 6.4.7, Aurora LNG will work with community organizations to identify the appropriate enhancement and development of recreational areas on Digby Island, such as trails and picnic areas, to address removal and/or degradation of recreational areas caused by the Project. The North Coast Regional District and representatives of the community of Dodge Cove are included in this mitigation measure (i.e., through community organizations). Topics such as maintenance and the selection of any amenities will be reviewed with engaged community organizations.
684.1	round 1	NCRD	6.4.8	Land and Resource Use	Mitigation Strategy 6.4.8: It is recommended that the process be created in collaboration with the NCRD to ensure it meets the needs of the residents. A timeline for the grievance procedure must be included to ensure that each complaint is handled accordingly.	Prior to finalization of details regarding the community grievance process (mitigation 6.4.8), such as timelines to respond to grievances, they will be shared with identified stakeholders including the North Coast Regional District.
685.1	round 1	NCRD	6.6	Human Health	When describing Dodge Cove drinking water, clarification is needed regarding the boil water advisory for the community. It is utilized as a preventative measure and many residents drink the water un-boiled. This should be reflected in the application. This project would create a higher risk for a community who has never required a point-of-use personal water filtration system.	As described in the human health VC (see Section 8.2.3.2.2 of the Application), the 1988 boil water advisory is a means to address the potential for fecal coliforms (i.e., Escherichia coli) to cause illness. Boil water advisories are preventative in nature, and do not imply an imminent health concern. This section also indicates that "some" residents choose to use a point-of-use personal water filtration system as a personal preference. There is no requirement to use a water filtration system, and there will be no such requirement to do so under the proposed project operations.
686.1	round 1	NCRD	6.6	Human Health	Proposed Mitigation for drinking water: The proponent is responsible for ensuring residents have access to clean drinking water. The cost and maintenance of any water filtration systems is not to be transferred to the community because of the project's pollution.	The potential Project effects to the Dodge Cove drinking water reservoir (Lake 11 in the water quality VC) are not expected to change the water quality in a manner that would influence human health or that would require a water filtration system. Refer to the technical memo titled, "Dodge Cove Water Supply and Watershed ", which will be filed with the BC EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
687.1	round 1	NCRD	8.3.1	Human Health	Table 8.3.1 deems that there will be no significant impacts to human health. This seems contradictory to that fact that two drinking water sources will be polluted. The summary of significance should be separated from LAA and RAA and have supporting facts. Greater emphasis needs to be placed on the two drinking water sources rendered unstable.	Refer to the technical memo titled, "Dodge Cove Water Supply and Watershed ", which will be filed with the BC EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
688.1	round 1	NCRD		Accidents or Malfunctions	residents should be notified of routine and maintenance flaring to ensure they are aware of its occurrence and do not mistake it for an emergency.	Mitigation 6.3.4 discusses the development and implementation of a Community Engagement Plan. The plan is expected to facilitate ongoing and meaningful community engagement, including monitoring, recording, and addressing community complaints and concerns. It also will provide opportunities to inform communities about Project plans and requirements. It is expected this will include proposed schedules for upcoming activities including maintenance activities such as flaring. As noted in the proposed mitigation, expected success is characterized as moderate given that successful development and implementation of the plan requires full engagement by parties.
689.1	round 1	NCRD	All	General	Please refer to Feb 21 letter for request regarding subcomittee involvement. The request as stated in the letter reads as follows: …NCRD would like to request involvement in subcommittees to conduct review of specific sections. The formation of these subcommittees was mentioned several times during the working group meeting. The NCRD request involvement in areas including, but not limited to, solid waste, emergency response and social management practices.	The EAO schedules the working group and sub-working group meetings. This request is passed back to the EAO to respond as necessary.
690.1	round 1	NCRD	All	Visual Quality	Please refer to Feb letter for comment on visual quality which reads " During the working group Feb 6 meeting, Dodge Cove and other neighbouring communities expressed concern over the exent in which the visual impact study was conducted. Based on comments durning the meeting, it can be said that site locations used do not capture the areas identified during initial consultation. Residents of Dodge Cove identified areas of significance during a tour of Digby Island with the proponent. Based on feedback during the working group meeting the NCRD would like to strongly encourage the BC EAO to have the proponent conduct further investigation of the imacts to the visual quality of the region. This would require more than 4 scenarios."	Aurora LNG has undertaken further visual quality assessment to include additional viewpoints, night time renderings and flaring events. Please see the technical memo "Additional Visual Quality Renderings" that will be filed with the EAO.
691.1	round 1	City of Prince Rupert	5.2 Economic Conditions Table 5.2.37, Page 5.2-72	Economic Conditions	The proponent proposes in Mitigation 5.2.4 to pay wages consistent with the Western Canadian labour market as a means of reducing the possibility of wage inflation in the RAA. Their expected effectiveness is stated as unknown, and the risk of ineffectiveness is described as moderate. However, on page 5.2-72, the proponent describes that labour rates are expected to be $91,500 annually for a full time project worker, many times the median and average incomes of $19,006 and $24,395 for the RAA, or $37,566 or $42,632 for full time employed individuals. The proponent also states that surveys of local businesses in Terrace and Kitimat, a majority of businesses had already indicated that it was difficult to hire local staff, a figure that is similar to what has been described by Prince Rupert's local Economic Development Officer. Given this, the City suggests that the likelihood that this mitigation will be effective in reducing wage inflation in the LAA is at best low, and the risk of the mitigation being ineffective is likely high. The mitigation should be updated to reflect this.	As is acknowledged in Table 5.2-37 of the Application, it is not known how effective Mitigation 5.2.4 (Workers will be paid wages consistent with the Western Canadian labour market) will be in avoiding localized wage inflation. The intent of this mitigation is for construction workers to be paid at rates comparable to what they would make for similar construction work elsewhere in the province. However, whether and to what degree the Project contributes to wage inflation will depend on a number of factors, such as the size of the available labour pool during Project construction (related to the unemployment rate), the extent to which individuals within the LAA take up Project construction work, the extent to which people working in other sectors successfully obtain Project construction positions, and the ability of other employers within the LAA to attract workers. If the LAA's unemployment rate remains high during Project construction (in 2011 the rate was 15.7% compared to a provincial average of 7.8%), then there is less chance that the Project will contribute to wage inflation. It is not certain what the labour situation will be like in the LAA during the proposed period of Project construction, and given that there are a number of factors that could contribute to whether or not the Project induces wage inflation, the risk that Mitigation 5.2.4 will not be effective is considered moderate.
692.1	round 1	City of Prince Rupert	5.2.6.4 Cumulative Effects Assessment for Change in Commercial Businesses from Project Spending Pages 5.2-92, 5.2.93, Table 5.2.37	Economic Conditions	Proponent claims that the cumulative effects of multiple project construction will result in a more diversified economic base within the RAA. While it's forseeable that the industrial and construction sector will see growth in a cumulative project scenario, the influx of high wages to those sectors will likely create significant wage pressures in the service and retail sector. In a multiple project scenario, these pressures could be prolonged, causing further local business closures in this sector, and long term residual effects. This outcome is neither identified in the residual effects section on page 5.2-93, nor are any mitigations proposed to address it in table 5.2.37.	It is acknowledged on page 5.2-93 of the Application that in the cumulative effects case the availability of local labour will be a constraint, and that the effects on commercial businesses related to the availability and cost of labour would likely be exacerbated. Mitigation measures proposed by Aurora LNG include providing advance information on Project workforce needs to help plan for increased demand for construction labour (Mitigation 5.2.2) and work with training organizations to increase the size of the skilled labour pool (Mitigation 5.2.5). These measures will contribute to the mitigation of cumulative effects on labour supply and demand.

693.1	round 1	City of Prince Rupert	5.2.7.2 Significance of Residual Cumulative Effects Page 5.2-98	Economic Conditions	Proponent describes that in the cumulative effects scenario, the labour force would be over-subscirbed in the RAA. The proponent then suggests that regional businesses would be able to adjust their business plans due to the significant increase in business opportunities. This would not be the case for local retail or service companies who would face increased wage pressures, but would not see increased opportunities due to the closed-camp operation during construction.	While Aurora LNG will maintain a closed-camp operation (i.e. out-of-town workers will not be able to visit local communities), this may not be the case for other projects. Also, while a closed camp will limit direct spending by out-of-town workers, local retail and service companies would benefit from increased spending by LAA residents, and from other indirect and induced economic activity associated with Aurora LNG and other reasonably foreseeable projects.
694.1	round 1	City of Prince Rupert	5.2.7.2 Significance of Residual Cumulative Effects Page 5.2-98	Economic Conditions	Proponent suggests that it is reasonable to expect that proponents will implement mitigation measures to reduce adverse effects of localized labour shortages and local wage pressures, but does not propose any mitigation measures themselves which demonstrate a moderate or high likelihood of success.	Aurora LNG acknowledges the uncertainty in its ability to reduce localized labour shortages and potential wage pressures caused by people seeking Project employment without placing restrictions on the number of individuals that it will hire locally.
695.1	round 1	City of Prince Rupert	5.2.5.1 Characterization of Residual Effects for Change in Labour Supply and Demand Page 5.2-61	Economic Conditions	Proponent suggests that local employment will be drawn only from currently unemployed labourers. Given that the wages that are expected to be paid to labourers on the project are much higher than local median and average wages, the likelihood that the project construction will draw from already employed labourers within the LAA and RAA is high. Given this, the proponent should revise their estimates on the number of residents of the LAA and RAA who will be employed by the project in construction, and to characterize how many will be drawn from existing employment.	Aurora LNG does not expect that local employment will be drawn only from currently unemployed workers. Rather, the estimate of available labour supply undertaken in the characterization of residual effects for change in labour supply and demand (page 5.2-61 of the Application) is used to help characterize potential labour supply vs. labour demand. Labour, other than unemployed labour, will reasonably work on the project. For example, people working in construction trades work on a project by project basis, so the Aurora LNG Project may simply be another project that they work on. Aurora LNG has made a very high level estimate that 5% of the construction labour force will be hired locally. This number may be higher or lower depending on extent of labour availability, interest in working on the project, and the extent by which there are individuals within the community possessing the qualifications and experience needed to secure construction employment positions.
696.1	round 1	City of Prince Rupert	5.2.5.1 Characterization of Residual Effects for Change in Labour Supply and Demand Page 5.2-61	Economic Conditions	Proponent suggests that local employment will be drawn from currently unemployed labourers, applying the local unemployment rate to the number of current residents employed in construction and labour. The proponent also suggests that construction activities will be conducted from a closed camp, which will have a strict drug and alcohol policy. The proponent does not appear to have considered the proportion of those who are currently unemployed who would be ineligible to work for the project due to drug or alcohol addiction, or due to child-care or family responsibilities which would preclude them from employment in a closed camp system. Proponent should examine these considerations, update their local employment predictions to reflect them, or propose mitigations to reduce their effects.	As discussed in the response to comment # 352, Aurora LNG does not expect that local employment will be drawn only from currently unemployed workers. The estimate of the number of individuals that will be hired locally is very high level at this stage of Project planning. If fewer individuals from the LAA are available to work on the Project, due for example to drug and alcohol issues, then Aurora LNG will increase the number of individuals hired on a FIFO basis.
697.1	round 1	City of Prince Rupert	5.2.5.1 Assessment of Change in Labour Supply and Demand Page 5.2-56	Economic Conditions	Proponent provides and assumption that 80% of operational workforce will reside in Northwestern BC. For an ongoing operation with an estimated employment level of 600 persons, it seems unlikely that 20% or 120 persons employed during operations would reside outside of Northwestern BC. The proponent should provide some justification for this figure, or update their predicted local labour force during ongoing operations.	The assumption of 80% operational workforce residing in the LAA was made to provide a basis for estimating potential labour effects. The actual extent that operational workers will live within the LAA depends on a number of factors including the extent that local residents have developed the skills needed to work at an operating LNG plant, and the degree to which technical specialists from outside the LAA choose to migrate into the LAA to work on the Project. Aurora LNG anticipates that in the early years of Project operations a higher proportion of its operational workforce will be from out-of-region, and working on a FIFO basis. However, over time as the pool of skilled local residents increases, supplemented by individuals moving into the LAA to take up operational positions, a larger proportion of the operational workforce will be local residents.
698.1	round 1	City of Prince Rupert	AS2.4.3 Government Revenue Page AS-9	Executive Summary	Proponent estimates that municipal government revenue to be paid during the construction period is estimated to be $50 million, while during operations, the proponent estimates it will pay annual property taxes of $15 million per year. Neither of these estimates are identified in the sections regarding economic activity or infrastructure, and it is unclear to whom these amounts would be directed and in what proportion. The proponent should include these estimates in greater detail as part of their mitigation for adverse housing, labour, and infrastructure demands.	The estimated municipal (i.e. property) taxes payable during construction and operation should be considered indicative only. Aurora LNG expects to pay appropriate property taxes, of which the exact amount will be established based on the assessable value and the applicable industrial mill rate. Aurora LNG agrees that the property taxes it pays can help offset Project-associated demands on local infrastructure and services.
699.1	round 1	City of Prince Rupert	6.3.5.4 Assessment of Change in Transportation Infrastructure Pages 6.3-73, 6.3-76	Infrastructure and Services	Proponent estimates that during peak construction periods, the project is estimated to result in 260,000 passengers per year enplaning and deplaning at the Prince Rupert Airport (YPR). The proponent then acknowledges that if a threshhold of 180,000 passengers per year is passed at the Prince Rupert Airport, the airport will face significant operational cost increases due to requirements for additional firefighting and rescue equipment equipment. The proponent suggests that their mitigation no 6.3-12 will resolve this, but the description of this mitigation does not include any language regarding how traffic will be maintained below the 180,000 passenger threshhold, especially in a cumulative effects scenario. Given that this project alone would require the purchasing of expensive safety equipment at the airport, it is suggested that the proponent add a mitigation to provide firefighting and rescue staff and equipment in the event their contribution to airport traffic causes an exceedance of the threshold, and can share costs for such equipment and staff with other local proponents in the event their cumulative effects result in an exceedance.	As discussed in Section 6.3.5.4 Project-related traffic could result in an exceedance of the 180,000 enplaning/deplaning threshold; this is without the additional traffic related to other projects and physical activities considered in the cumulative case. It is also noted that this exceedance could occur prior to construction of the Project due to other proposed projects and activities in the region. From a cumulative case, traffic either from the Project or related to other projects and physical activities in the region would further increase the exceedance in the 180,000 enplaned/deplaned passenger threshold. The Transportation Management Plan (Mitigation 6.3-12) as detailed in Section 14.12.3, will describe the plans for Project-related air traffic, among other forms of traffic, on Digby Island and in the Prince Rupert area.The Plan will describe transportation policies and mitigation measures that will be implemented, monitored, and measured for effectiveness. With respect to air transportation, the objective of this plan is to reduce congestion on airport infrastructure. Aurora LNG is committed to ongoing engagement with the Prince Rupert Airport Authority and Transport Canada(which will be facilitated under mitigation 6.3.1 'Social Management Plan' of which the Transportation Management Plan falls) to understand how Project-related activities could affect the capacity of the Prince Rupert Airport and what mitigation measures can be implemented to manage adverse effects. It is understood that airport capacity issues must be managed by the airport and Transport Canada on a regional basis and in consideration of demands from all sources throughout the region.
700.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions Table 6.3-9	Infrastructure and Services	The listing of available health practitioners indicates that there are exactly 73 physicians, specialists, and supplementary practitioners per 100,000 population in Terrace. It seems unlikely that these numbers are correct, and so should be confirmed or updated.	The information provided in Table 6.3-9 of the Application for LHA 88 - Terrace regarding the number of physicians, specialists and supplementary practitioners per 100,000 population is accurately summarized as reported in the Provincial Health Services Authority publication "BC Community Health Profile - Terrace 2014" as available from: http://www.phsa.ca/Documents/Community-Health-Profile/Terrace.pdf .
701.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions Table 6.3-9	Infrastructure and Services	The listing of available health practitioners uses figures of practitioners per 100,000 population. For local health areas with substantially fewer than 100,000 residents, these figures are misleading, and provide the impression that there is more capacity in local hospitals and health care facilities than is actually present. To accurately reflect the impact on local health services, this baseline table should provide absolute numbers of practitioners.	Baseline information provided in Section 6.3.3.2 subsection 'Health Care Infrastructure and Services' is based on the latest publicly available authoritative sources at the rate published (e.g., per 100,000 population). Aurora LNG recognizes that these figures have likely changed since their publication and that interregional differences likely exist (e.g., that the number of physicians per resident population may be less in a Prince Rupert than the Prince Rupert Local Health Area as a whole). Regardless, it is Aurora LNG's understanding form Northern Health that no additional capacity exists within the LAA or RAA to accommodate Project-related demand. This understanding is reflected in this section and reaffirmed in the assessment of residual and cumulative effects. As such any additional demand on health care infrastructure and services is understood to exceed available capacity.
702.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions Page 6.3-19	Infrastructure and Services	Figures for hospital registrations show absolute numbers, which does not provide a useful characterization of the level of demand on local services. To understand whether these services are over- or under-subscribed, the proponent should describe these registrations in proportion to the number of availble practitioners, or in proportion to the city's population, with corresponding provincial and regional figures. This would allow for an accurate understanding of the relative demand on local health services when compared to other regions of the province, and the relative capacity available to absorb increased demands as a result of project related activities.	Referenced baseline information is summarized without additional manipulation as provided by Northern Health to Aurora LNG. It is Aurora LNG's understanding (as communicated by Northern Health) that no additional capacity exists within the LAA or RAA to accommodate Project-related demand. As such, an attempt to describe available capacity on a per-resident or per-physician basis was not attempted. Rather, the qualification that any additional demand on health care infrastructure and services would exceed available capacity was applied throughout the assessment of residual and cumulative effects.
703.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Fire and Emergency Response Table 6.3-11	Infrastructure and Services	Proponent provides absolute figures for the number of calls received by the Prince Rupert Fire Department (PRFD), which does not provide an understanding of the demand on fire services or any excess capacity available. Figures for calls per year should be described in relation to either the staffing levels or service area population, with regional and provincial equivalents provided for comparison purposes.	Absolute figures regarding the number of calls received by the Prince Rupert Fire Department are provided in Section 6.6.3 subsection 'Emergency and Protective Services'. Since qualifying information regarding existing capacity was available through a recently completed report by KPMG, as commissioned by the City, calls were not described in relation to staffing levels or population. Qualifying information suggests that limited capacity is available to absorb LNG development; however, capacity is available to accommodate fluctuations in population. This understanding is carried throughout the assessment of residual and cumulative effects.
704.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Police Services Pages 6.3-26 & 6.3-27	Infrastructure and Services	Proponent describes the cost of the fire hall and pumper truck at estimated costs of $22.6 million. This cost was estimated in the City's 2015 KPMG report as comprising $10.6M for the Firehall and pumper trucks and additional equipment, and $12M for a new RCMP facility. These costs should be separated into the relevant Fire and Police services sections to provide a better understanding of the infrastructre deficits specific to each function.	Baseline information regarding capital expenditures estimated by the City of Prince Rupert to replace the existing RCMP facility was incorrectly included under the total cost estimate provided in the subsection 'Fire and Emergency Response". Noted in the 205 KPMG report (which is cited throughout Section 6.3.3.2), the City of Prince Rupert estimates a capital cost of $12 million to replace the RCMP facility with an additional $3.2 million annually for increased policing services to support LNG-related operations. Estimated capital cost to replace the existing fire hall and to purchase a new pumper and additional equipment to sustain existing operations is estimated at $10.6 million. To support LNG-related operations a capital expenditure of $10 million is estimated with an additional annual operating cost of $1.4 million. An errata document is being compiled that captures these corrections and will be filed with the BC EAO. KPMG. 2015. City of Prince Rupert Preparing for Growth – KPMG Report. Available at: http://www.princerupert.ca/sites/default/files/Planning/MajorProjects/City%20of%20Prince%20Rupert%20-%20Preparing%20for%20Growth%20-%20KPMG%20-%20Jan%2022%2C%202015.pdf. Accessed: February 2017.
705.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Traffic and Road Infrastructure Page 6.3-33	Infrastructure and Services	Proponent describes the outcomes of the 2015 KPMG report which identified an annual recurring cost to the City of $6.6M to support LNG related operations due to increased demand on roads and bridges within the LAA. The proponent does not specifiy any mitigations to alleviate the burden of these costs on the city.	Aurora LNG proposes that through the use of the Social Management Plan (mitigation 6.3.1) and the Transportation Management Plan (mitigation 6.3-12) that adverse effects of the Project on transportation infrastructure and services can be managed. Described in Section 14.12.3 the Transportation Management Plan will describe transportation plans for air, marine support vessels, truck, and vehicular traffic in the Price Rupert area and on Digby Island. The Plan will describe transportation policies and mitigation measures that will be implemented, monitored, and measured for effectiveness. The plan will address, to the extent relevant and required, transportation planning related to air, truck, and vehicular traffic. The objectives of this plan are to:Reduce congestion on airport infrastructureReduce volume and congestion from road traffic and marine support vessels. Included under the Social Management Plan, the Transportation Management Plan will be managed through an ongoing adaptive process where mitigation measures are identified, monitored for effectiveness and modified as required. Additionally, under the Social Management Plan Aurora LNG will continue to engage with the City of Prince Rupert to understand and mitigate Project-related effects on transportation infrastructure and services.
706.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Air Transport Page 6.3-35, Table 6.3-21	Infrastructure and Services	Proponent acknowledges that the Prince Rupert Airport currently has three navigation aids that require protective zoning, which includes restrictions on the heights and construction materials of objects in that zone. In particular, the airport is surrounded by a outer surface restriction to a radius of 4 kilometers from the airport center, which restricts building heights to under 45 meters in elevation above the airport elevation. This zone encompasses a significant portion of the project area, however the proponent does not include any mitigations in table 6.3-21 which reflect this requirement, or propose any plans to ensure that their on-site structures will comply with these regulations.	Noted in Section 6.3.4 of the Application and reproduced here, potential interactions between Project infrastructure and air navigation will be further assessed and mitigated, if required, through the continuing Project design and Nav Canada permitting processes. In addition, voluntary adherence to Transport Canada's Standards Obstructions Marking Manual is expected to further mitigate potential interactions. Since Aurora LNG will obtain all relevant Nav Canada and Transport Canada permits to construct and operate the LNG facility and supporting infrastructure including any required design modifications, the assessment of change in transportation infrastructure and services does not consider these non-interactions. Excerpt from Section 6.3.4 Through the presence of the flare stack, LNG production could affect air navigation. Assessed in the Aviation Impact study conducted by LPS (2014) and updated by MMM Group (2016) for the Project, the LNG facility and marine terminal are located outside the primary protected areas specified in TP1247 and do not affect the non-directional beacon or distance measuring equipment within the aerodrome (see LPS 2014; MMM Group 2016). However, although the flare stack should not affect the instrument landing system, it may be considered an obstruction by Nav Canada depending on its location and the selection and use of construction materials. As such, it is anticipated that Aurora LNG will be required to submit a Land Use (airspace) Application to Nav Canada to determine acceptable flare stack design and mitigation, and changes to airspace procedures or air navigation documents. For fixed wing and rotary aircraft operating on Visual Flight Rules (VFR) destined for the Prince Rupert Airport or the Seal Cove Waterdrome, Project infrastructure could affect aviation. Pursuant to Standard 621.19 of the CAR, any obstruction greater than 90 m above ground level and located within two nautical miles of a VFR navigation route must be marked and/or lit. Since the flare stack is proposed to be greater than 90 m and will be located within two nautical miles of sections of the South Corridor VFR Route, the North Corridor VFR Route and the Tuck VFR Route, markings and/or lighting will be required. Since the potential interaction with the flare stack on the Prince Rupert Airport will be mitigated to an acceptable level during the Nav Canada process, adherence to Standard 621.19 of the CAR and can be further mitigated through voluntary adherence to Transport Canada's Standards Obstructions Marking Manual this interaction is not assessed further. Effects associated with emergency flaring events are assessed in Section 9.0 (Accidents or Malfunctions). See LPS (2014) and MMM Group (2016) for additional information. Also see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo for additional consideration of issues related to plume-rise effects form the flare stack. The technical memo will be filed with the BC EAO.

707.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Housing Availability Page 6.3-38	Infrastructure and Services	Proponent has described rental rates which are out of date and should be updated, as they are significantly lower than the current market rates. Given that the proponent intends to use average housing costs as a proportion of income as a measure of their effects, these baseline figures should be established based on the most current information.	Baseline information on rental rates provided in Section 6.3.3.2 subsection 'Housing Availability' is based on 2014 data with trend data provided from 2010 to 2013. This information is supplemented with vacancy rate information ranging from 2007 and 2010 to 2013 and 2015. While Aurora LNG acknowledges that this information may not perfectly align with current conditions, which are subject to continually changing housing market conditions, these figures are considered sufficient to support the assessment of change in accommodations provided in Section 6.3.5.3 of the Application. Additional consideration of cost of living based on case study analysis, which includes consideration of changes in the affordability of accommodations, is provided in Section 13.5.4 of the Application (Cost of Living).
708.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Home Construction, Sales and Pricing Tables 6.3-8, 6.3-9	Infrastructure and Services	Displaying building permits sold for Prince Rupert, Port Edward, and the SQCRD only alongside those of the Kitimat-Stikine RD and Terrace obscures an understanding of the changes to the LAA construction market. LAA building permit figures should be provided separately from RAA, so that the City may determine their accuracy, and so that local fluctations in the construction market can be identified and understood.	The graphical representation of the number and value of residential building permits issued by year for communities within the RAA is intended to illustrate trends applicable to the assessment of change in accommodations. This information is not intended to provide the basis of a detailed comparative analysis between changes in residential construction among LAA and RAA communities. Additional detailed baseline information can be obtained from the Canadian Mortgage and Housing Corporation's Housing Market Information Portal available at: https://www03.cmhc-schl.gc.ca/hmiportal#Profile/1/1/Canada
709.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Salary to Income Ratio (STIR) Page 6.3-41, Table 6.3-18	Infrastructure and Services	Section heading is titled Salary-To-Income Ratio (STIR) but the section actually addresses the shelter-cost-to-income-ratio as defined by the CMHC. Section heading should be corrected to reflect the information presented.	The subsection 'Salary-To-Income Ratio (STIR)' is labeled in error and should read "Shelter -Cost- To-Income Ratio. An errata document is being compiled that captures this correction and it will be filed with the BC EAO.
710.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Salary to Income Ratio (STIR) Page 6.3-41, Table 6.3-18	Infrastructure and Services	Proponent describes average annual household income in the LAA as of 2011 as being $17,581, while average monthly shelter costs for each household are estimated to be $666. At these levels, the STIR for the LAA across all households would be 45%, however in table 6.3-18 the proponent describes a STIR for the LAA as being 21.5%. The figure presented by the proponent in the table is based off the CMHC report, which describes a much higher average household income than presented by the proponent in section 5.2 (CMHC estimates average household income as $71,798). In the interest of accuracy and consistency, we suggest the proponent calculate the STIR for the LAA themselves based on available census data to provide STIR information that is related to household income figures used elsewhere.	The reported average household income (before tax) of $17,581 and average monthly shelter cost of $666 were made in error. The average before tax household income and average monthly shelter costs correspond with that of households in core housing need. The average household income (before tax) should have been reported as $71,798 and the average monthly shelter cost reported as $861. This change is reflected in an errata document. Similarly, average and median before tax incomes were reported as increasing 19% and 11% respectively between 2006 and 2011. These increases should have been reported as 17% and 14% respectively. Remaining baseline data and text provided in this subsection remains unchanged. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
711.1	round 1	City of Prince Rupert	6.3.3.3 Summary Page 6.3-46	Infrastructure and Services	Proponent claims that most infrastructure and services have capacity to accommodate increased population and demand, excepting housing and health infrastructure. The City does not agree with this assessment. The demand on Airport landings will increase landings beyond the existing regulatory level, incurring significant costs for the City. Increased population also creates the potential to increase the proportion of local policing costs borne by the City, which the City does not have the means to absorb. Demands on roads and bridges would also be significant, and cause many millions of dollars in costs to be borne by the City, which the City does not have the means to absorb. This characterization of infrastructure demands informs the choice of mitigations, which is why there are few to none which address these concerns. The City suggests that these are effects which are significant, and measureable, and which should be mitigated against.	In the Section 6.3.5.4 of the Application, it is noted that the peak workforce estimate of 5,000 persons during Phase 1 construction, combined with the annual enplaned/deplaned passenger traffic at the Prince Rupert Airport could peak at 318,604. This volume of passenger traffic exceeds the 180,000 passenger enplaned/deplaned threshold over which aircraft firefighting and rescue equipment is needed. Additionally, it is noted that based on finalized workforce air lift strategies developed by Aurora LNG, infrastructure improvements to the Prince Rupert Airport may be required. In response, Aurora LNG, will structure Project rotations and schedule charter flights to alleviate pressure on airport terminal facilities. Furthermore, as part of the Social Management Plan (mitigation 6.3.1), Aurora LNG will engage in on-going communication and collaboration with the airport authority to understand changes in demand and to develop strategies to decrease the magnitude of effect the Project has on the operational costs of the airport. The following measurable parameters were used to assess potential demands on police services: police officers/1,000 population and police caseload (see Table 6.3-2 of the Application: Potential Effects and Measurable Parameters for Infrastructure and Services). As identified in Section 6.3.3.2 and Section 6.3.5.2, the caseloads per officer for Prince Rupert's RCMP provincial detachment is lower than the provincial average (37 caseloads per officer vs. 56 caseloads per officer). Because caseloads "represent the workload per officer… they are often a better indicator of the demand for police services than either a jurisdiction's population or its crime rate (Police Services Division, BC Ministry of Justice, December 2014)". Therefore, the baseline data suggests that Prince Rupert has adequate capacity to handle increased demands on police services. Additionally, to reduce the potential magnitude of adverse effects on local security and police services, Aurora LNG will use onsite security at the facility and construction camp. As identified in Section 6.3.5.4 of the Application, traffic volume and transportation infrastructure may be adversely affected during the construction phase by the movement of equipment and materials to the Project site. However, most movements will be by marine vessel via the MOF, which will largely avoid the need to use local roads and highways. During the operations phase, the requirement for equipment and materials will decrease. While on shift, FIFO (operation) workers will be lodged in onsite accommodations. However, in-migrant workers and their families will add to local traffic in the LAA. Small increases in traffic are also expected. Based on existing levels of service and recent and planned infrastructure improvements, the roads can accommodate small increased levels of traffic. Aurora LNG will also encourage a worker ride-share program for local workers, and provide bus and/or ferry transport for workers from communities within the LAA through the Transportation Management Plan (Mitigation 6.3-12). As a result, the local workforce is not expected to have a substantial effect on road and highway traffic conditions. Tax revenue realized by the City from in-migrating workers and their families will also help to offset increased demand on roads and bridges.
712.1	round 1	City of Prince Rupert	6.3.5.2 - Mitigation for Community Infrastructure and Services Table 6.3-21	Infrastructure and Services	Mitigation 6.3.7 suggests that simply notifying the City on expected project timelines and estimates on resident numbers has a high degree of likelihood at being effective at assisting the municipality in preparing for demands on infrastructure and services. Respectfully, without direct financial commitments to alleviate the increase in demand, the likelihood that this will provide any tangible assistance to the City in preparing for this demand is very low.	The subsection 'summary' of Section 6.3.3 provides high-level concluding statements on available capacity of community infrastructure and services within the LAA. This summary does not attempt to replicate in detail the information provided in previous sections which provide a more thorough description of existing conditions. Of note, throughout section 6.3.3 estimated capital expenditures on the part of the City of Prince Rupert to sustain current operations are considered baseline; that is, regardless of whether the Project or other projects and physical activates are developed, these capital expenditures are required. This information is important in recognizing the qualification that many of the services and infrastructure within the LAA have capacity to accommodate potential increased demand from changes in population. This understanding should not be extended to suggest that capacity exists to meet direct project demand (e.g., for potable water etc.) which is not proposed. With respect to proposed mitigation measures, Table 6.3-21 of Section 6.3.5.2 lists nine measures that are expected to reduce the magnitude of adverse effects on community infrastructure and services. In a summarized form these include:Mitigation 6.3.1 – Social Management Plan Mitigation 6.3.2 – Alcohol and Drug Policy Mitigation 6.3.3 – Worker Orientation, Code of Conduct and Cross-Cultural Training Mitigation 6.3.4 – Community Engagement Plan Mitigation 6.3.5 - The construction camp will include a potable water, wastewater collection and treatment system, fire water system, medical centre, fire-fighting equipment, and heliport for medivac transfers Mitigation 6.3.7 - Provide local and regional governments with information on anticipated changes in resident populations due to the Project's workforce and their families to facilitate their planning for municipal expenditures related to community infrastructure and services Mitigation 6.3.8 – Emergency Response Plan Mitigation 6.3.9 – Onsite Security Services Taken together, these mitigation measures are predicted to address effect mechanisms (i.e., direct project demands, population-change related demands) identified in Section 6.3.5.2 subsection 'Project Mechanisms for Community Infrastructure and Services'. Mitigation measures proposed in Table 6.3-21 take into consideration Project design (e.g., a closed-access camp, on-site potable water etc.). Importantly, as part of the Social Management Plan Aurora LNG will continue to work with the City of Prince Rupert to understand potential Project demands on community infrastructure and services and discuss measures that can be taken to mitigate identified effects. Additionally, as noted in Section 6.3.6.2, while the Project falls outside the City of Prince Rupert and as such industrial tax revenues will be managed at a regional level, additional tax and service fee revenues paid by in-migrating populations to the City of Prince Rupert will be realized and managed at a local level. Noted in the 2015 KPMG report, 'Sale of Services' (e.g., utilities, transportation etc..) and 'Residential Tax' revenues accounted for the two largest revenue sources for the City of Prince Rupert in 2013. In-migration associated with the Project, will further increase these revenues increasing the funds available that the city could choose to use to offset incremental increases in demand.
713.1	round 1	City of Prince Rupert	6.3.5.2 - Characterization of Residual Effects for Community Infrastructure and Services Page 6.3.61	Infrastructure and Services	The proponent states that they are considering the option of usign a third party offsite waste management solution, which will thermally oxidize waste. If the proponent intends to puruse this, they should make an effort to describe where and how this will take place, and estimate the contribution of this process to local air quality measures.	The assessment of effects on air quality related to the potential use of a third party owned and operated offsite thermal oxidizer to further process dewatered sewage sludge is not within the scope of this Project assessment. This disposal option is not the preferred option for this assessment but will be considered in more detail if required as the Projects progresses through front end engineering and design.
714.1	round 1	City of Prince Rupert	6.3.5.3 - Characterization of Residual Effects in Accomodations Pages 6.3-67, 6.3-68	Infrastructure and Services	Proponent on page 67 describes the low vacancy rate in Prince Rupert of only 3.7%, indicating that in-migrating workers might place demands on the housing market in excess of capacity. In the next paragraph however, the proponent suggests that in the long term, housing demands will be met by existing supply, which is sufficient because of population declines in recent years leading to a surplus in housing. The city can't have both a significant housing surplus and a low vacancy rate at the same time. The statement that a housing surplus exists seems to be based on declining population without taking into account loss of housing stock due to deterioration and loss from accident or fire. The vacancy rate is the truer measure of available supply, and the city's low vacancy rate is evidence that the city does not have substantial capacity to absorb long term in-migration without negative effects on affordability, as the proponent claims.	The assessment of potential project effects on renter-occupied and owner-occupied (permanent) accommodations over the long-term (Pg. 6.3-68 of the Application; paragraph #1) should be revised from: "Over the long-term, workers (direct, indirect and induced) and their families who in-migrate to the LAA/RAA will increase demand for renter-occupied and owner-occupied (permanent) accommodations. Effects on permanent accommodations are expected to be minimal because the declining population of the LAA has led to a surplus of housing. In addition, there currently exists available developable land within in the LAA from which increased demand for new builds (housing starts) can be satisfied. During operations Aurora LNG will engage with local communities and Aboriginal Groups to address community concerns associated with the Project." To: "Over the long-term, workers (direct, indirect and induced) and their families who in-migrate to the LAA/RAA will increase demand for renter-occupied and owner-occupied (permanent) accommodations. During operations, effects on permanent accommodations are expected to be low to moderate because there currently exists available developable land within in the LAA. Combined, up to 3,815 single-family and multi-family units could be built within Prince Rupert (Section 6.3.3.2), which would accommodate the need for 460 units. The peak population estimate of approximately 1000 workers (direct, indirect and induced) and their families during operations" can be housed in 460 new units within the LAA (see pg. 6.3-67). An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
715.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Solid Waste Management Page 6.3-28	Infrastructure and Services	Proponent quote a figure for the capacity of the planned landfill expansion of 54 years. This estimate was based on lower levels of use than have been experienced in recent years, and would be drastically less in the event that the landfill were tasked with receiving any waste from large scale industrial development. The planned landfill expansion has a designed life of 35 years, which may be reduced or extended depending on demand from local residents and industry.	Aurora LNG thanks the City of Prince Rupert for this clarifying information. Based on Project design and requirements to dispose of most Project waste (including that generated at the accommodation camp) at industrial landfills and in consideration of Project-related in-migration (528 persons during construction, 410 at peak operations [assuming full buildout]), this reduction in the designed life of the landfill does not affect the conclusions presented in Section 6.3 of the Application.
716.1	round 1	City of Prince Rupert	6.3.3.2 Existing Conditions - Solid Waste Management Page 6.3-28	Infrastructure and Services	Proponent describes that the the City will be spending $9.5 million on landfill upgrades by 2018. These upgrades have been delayed due to capital constraints, and are now planned to be completed by 2020.	Comment noted. To account for this delay, the following revised sentence has been captured in the errata: "...will spend up to $9.5 million by 2020..." An errata document is being created that will capture this correction and it will be filed with the BC EAO.

717.1	round 1	City of Prince Rupert	6.3.5.4 - Characterization of Residual Effects for Change in Transportation Infrastructure Page 6.3-75	Infrastructure and Services	Proponent claims that the municipal roads in Port Edward and Prince Rupert are well maintained and meet current levels of demand. This contradicts the information described in the 2015 KPMG report, which the proponent cites on page 6.3-33, which describes 58% of Prince Rupert roads as being more than 25 years old, and in poor to average condition, requiring at least partial reconstruction. This also contradicts the report, which describes that the three wooden bridges in Prince Rupert are all more than 70 years old and in need of replacement, while many local retaining walls do not meet current safety standards. Given this, to claim that the road infrastructure is sufficient to meet increased demand from in-migrating workers and construction traffic is misleading, without significant mitigation which is not currently proposed or described.	The discussion of baseline information on traffic and road infrastructure (Section 6.3-33 of the Application, pg. 6.3-32 to 6.3-33) states that "In general, both [Highway 16 and Highway 599R] are well maintained, and have seen many recent improvements, including repaving." This was based on the information available at the time of writing, which indicated that "In 2015, the federal government announced funding to realign approximately two kilometres of Highway 16 and build a grade separation to carry traffic over the CN railway line. This will improve safety and highway access to communities, as well as reduce delays and improve the flow of goods to and from the Port in Prince Rupert (BC MOTI 2015a)." Additionally, the baseline information on traffic and road infrastructure does acknowledge that: "A 2015 report by KPMG, over half (58%) of the roads in Prince Rupert are more than 25 years old and in poor to average condition; these roads require partial reconstruction. Additionally, three wooden bridges currently in use within the city are beyond their operational life expectancy (~70 years old), many existing retaining walls do not meet current safety standards (constructed of stacked stone). In total an estimated $36.4 million is required to upgrade or replace existing infrastructure to continue to meet current demand (KPMG 2015). An additional $320,000 is also estimated in planning related to these works (KPMG 2015). (Pg., 6.3-33 of Section 6.3-33)" In the Section 6.3.5.4 and the Characterization of Residual Effects for Change in Transportation Infrastructure (Pg., 6.3-73 to Pg., 6.3-75) it was found that "the majority (approximately 75%) of construction equipment and materials will be shipped to the Project site and offloaded at the MOF. Of the remaining equipment and materials, approximately… 5% would be by truck...To address increased demand on transportation infrastructure Aurora LNG will develop and implement a Transportation Management Plan to address Project-related road, ferry and airport traffic. In conclusion, the assessment found that "During construction, residual adverse effects on transportation infrastructure are expected to be of low to moderate magnitude and occur continuously over the medium-term. They will occur in a moderately resilient context because the transportation infrastructure as designed is expected to be able to accommodate the changes with little effect on the available capacity or Level of Service (LOS). Residual effects are expected to be concentrated in the LAA, although it is recognized that transportation infrastructure connecting to the LAA will also be used by the Project. Effects will be the same magnitude during operations but will occur over the long-term and be reversible. "
718.1	round 1	City of Prince Rupert	6.3.6.3 - Cumulative Effects Assessment for Change in Community Infrastructure and Services Page 6.3-89	Infrastructure and Services	Proponent describes that additional tax revnue and service fees for current and future projects in the RAA could help fund major infrastructure improvements, but then goes on to point out that the proposed project would be outside the taxation jurisdiction for the City. The proponent then claims that through the increase in population, sufficient tax revenue will be received to meet current and future infrastructure demands. Given the severe infrastructure deficit faced by the City of Prince Rupert, there is a very low likelihood that this will be the case without significant funding from non residential sources. The characterization of infrastructure effects as beneficial over the long term without mitigation of overburdened infrastructure demands is overly optimistic.	The referenced text from Section 6.3.6.2 of the Application is as follows: "Additional tax revenue, service fees and other sources of income generated from current and future projects in the RAA could help fund major infrastructure improvement projects and improve service delivery; however, the Project falls outside the municipality of Prince Rupert and as such government revenues will be largely restricted to that realized through indirect and induced population effects.". Noted in the comment and stated in Section 6.3.6.2 of the Application, the Project falls outside the municipality of Prince Rupert and changes in the municipal tax base will be primarily related to in-migrating populations to the City of Prince Rupert. However, through tax revenue sharing (a Provincial Government authorized formal tax sharing agreement established through adjustments in municipal letters patent or through legislation) with the North Coast Regional District the City of Prince Rupert could realize increased tax revenue from the Project itself. Noted in the 2015 KPMG report, 'Sale of Services' (e.g., utilities, transportation etc..) and 'Residential Tax' revenues accounted for the two largest revenue sources for the City of Prince Rupert in 2013. Project-related in-migration will increase these revenues and funds available to offset incremental demand associated with the Project. In addition to Project-related population effects, in-migration associated with other projects and physical activities considered in the cumulative case (see Table 6.3-28) will also increase 'Sale of Service' and 'Residential Tax' revenue. In addition, those projects and physical activities that occur within the municipal boundaries of the City of Prince Rupert will increase commercial or industrial tax bases. 'Payment in Lieu of Tax' (payments based on the principles of equity and relative impact on local Governments), as is the case of the Port, could also be beneficially affected through the development of projects considered in the cumulative case. While it is recognized that short-term adverse effects could occur regarding funding for demand for services, over the long-term, continued economic development and increases in resident, commercial and industrial tax bases, as enhanced through adjustments in municipal and regional government plans and policies, effects are expected to be beneficial.
719.1	round 1	Kitselas First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.1 - "Pre- construction rare plant surveys will be conducted in the PDA, near known locations of rare plants" How is this a mitigation to avoid or reduce change in the Abundance of Plant species of Interest when it is known and assumed that all vegetation within the PDA will be removed? The rationale for selection of this mitigation measure states that it will increase the confidence in the location and extent of the occurrence of rare plants? Kitselas questions the reasoning behind this because confirming that rare plants exist and then clearing them away so that construction can occur is not mitigation for reducing or avoiding a plant species of interest. It's simply identifying where something is so that it can be documented and subsequently destroyed.	A pre-construction survey is required to reconfirm the full extent of each known occurrence as a precursor to plant relocation, which is the subsequent pre-construction mitigation measure. If additional plants are detected at the time of the pre-construction survey, contingency measures would be implemented such as relocation or collection of seed or propagules of those newly identified plants to reestablish populations off-site, or to augment existing off-site populations.
720.1	round 1	Kitselas First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.3 -"The red-listed non vascular plant, Sphagnum majus and blue listed non-vascular plant, Sphagnum centrale will be translocated from the known locations within the PDA" - Kitselas sees translocation of f this species of moss as a poor mitigation measure. The likelihood of failure is too great to suggest this as a viable mitigation. What evidence does Aurora LNG have that this mitigation is viable? and what kind of monitoring measures is Aurora LNG prepared to put forth to monitor the success or failure of this measure?	The BC Conservation Data Centre's Guidelines for Translocation of Plant Species at Risk (Maslovat 2009) notes that, "in some cases, translocations may be the only viable option. For example, translocation can be a useful tool to mitigate threats to plants in development areas where no other option is feasible." Avoidance is not feasible for Sphagnum centrale and Sphagnum majus because they are located within the PDA. If the Project proceeds, the risks of attempting translocation are limited because the populations would otherwise be lost as a result of clearing within the PDA. Aurora LNG considers this a potentially-viable mitigation measure considering the successful research trials and methods of peatland restoration and moss propagation that have been developed in conjunction with the horticultural/agricultural sector and oil & gas sectors in North America and Europe. Examples of research institutes with publications that address the restoration of Sphagnum spp. include, but are not limited to the following: Peatland Ecology Research Group at the University of Laval, http://www.gret-perg.ulaval.ca/ See: Quinty, F. and L. Rochefort, 2003. Peatland Restoration Guide, second edition. Canadian Sphagnum Peat Moss Association and New Brunswick Department of Natural Resources and Energy. Québec, Québec. Peatland Restoration program at the Northern Alberta Institute of Technology http://www.nait.ca/70709.htm See: Sobze, J., M. Gauthier and R. Thomas 2012. Peatland Restoration – Harvest and Transfer of Donor Material. Technical Note. Available at: http://www.nait.ca/docs/1_Donor_Site_Harvesting_and_Moss_Transfer.pdf Aurora LNG will monitor the performance (survival, establishment, and growth) of the translocated populations during the growing season according to the Guidelines for Translocation of Plant Species at Risk (Maslovat 2009) . Translocation results will be made available to the BC Conservation Data Centre in order to increase collective knowledge of the species.
721.1	round 1	Kitselas First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.6 - "An invasive Plant Management Plan will be implemented - The Weed Control Act and Regulations prohibit the spread of noxious weeds on highways and prohibits…" Kitselas does not consider this a "mitigation". Aurora LNG has to do this because it is the law. It should therefore not be considered mitigation bit rather a requirement of development.	This comment cites the rationale for the mitigation measure, not the mitigation itself: The mitigation is to develop and implement an Invasive Species Management Plan.
722.1	round 1	Kitselas First Nation	4.6	Vegetation and Wetland Resources	In the Summary section under "Likelihood of Residual Effects For Change in Abundance of Plant Species of Interest" it is stated that "the translocation (of plant species of interest) will be successful". This is in direct relation to Sphagnum majus and Sphagnum centrale. Kitselas disagrees with this conclusion. There is no evidence presented in the document that supports this statement.	The full statement in the Summary Section says, "There is a medium likelihood that residual effects to plant species of interest will occur and that the translocation will be successful. Although Sphagnum majus and Sphagnum centrale are known to be present within the PDA and disturbance cannot be avoided, their translocation to outside the PDA is expected to be successful in mitigating the effect. Potentially suitable habitat (i.e., bogs) is present within the terrestrial LAA, which will increase the likelihood of successful translocation (Maslovat 2009)." Section 4.6.2.7 defines Medium likelihood as " Medium—Adverse interactions between the Project and vegetation and wetland resources may be difficult to avoid or mitigate, and adverse residual effects are likely". So while the translocation mitigation is expected to be successful, the medium likelihood rating accounts for some uncertainty. The assumption is that if the species can be relocated to a suitable habitat (which is known to exist) then it is reasonable to assume it will be successful.
723.1	round 1	Kitselas First Nation	Table 4.6.11	Vegetation and Wetland Resources	Mitigation 4.6.10 - This is monitoring not mitigation. It is stated that soils will be monitored and adaptive management will be provided if necessary. What does this mean? What adaptive management? If vegetation and soils are effected from NO2 and SO2 atmospheric concentrations and soil acidifaction or soil eutrophication occur to levels that are unacceptable what actual mitigation measure outside of "monitoring" will occur?	Monitoring the predicted areas of exceedance (for acidification or eutrophication) to determine whether any adverse effects are detectable is the first step to determine whether any additional mitigation is required. The following factors are uncertain:whether potential effects will be observable and measurable,the timeframe within which effects from this mechanism could be detectable,the degree to which they could occur, andthe rate of change observed in soils and/or ecological communities. Therefore, monitoring is required before further mitigation measures are evaluated and applied. It is expected the monitoring effort will be regionally focused to encompass all of the potential airshed contributors and coordinated through the BC Ministry of Environment. In establishing that regional monitoring effort, it is assumed that the Ministry will determine the monitoring criteria and outline a suite of potential mitigation measures to address expected outcomes based on the monitoring results. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
724.1	round 1	Kitselas First Nation	Table 4.6.11	Vegetation and Wetland Resources	Mitigation 4.2.8 - "An Air Quality Management Plan" is cited as a mitigation measure. It is Kitselas' view that Management Plans are not mitigation measures but rather a Management Plan would list mitigation measures within it. Therefore what exactly is the mitigation measure in this case? is it the "Project Specific Program" to reduce air emissions? if so, what is the "Project Specific Program" exactly? How will it reduce Air Emissions? Those would be the mitigations measures....Please be specific about what exactly the mitigation measure is going to be.	See table 4.2-10 of the Application for specific mitigation measures that would be included in the Air Quality Management Plan. The intent of listing mitigation measure 4.2.8 in this vegetation and wetlands section is to acknowledge that mitigation measures within the Air Quality Management Plan would contribute to reducing effects (due to emissions) on vegetation.
725.1	round 1	Kitselas First Nation	4.6	Vegetation and Wetland Resources	Under the heading "Characterization of Residual Effects for Change in Abundance or Condition of Ecological Communities of Interest" The conclusion is made that the implementation of the mitigation measures in table 4.6-10 will reduce potential edge effects to "negligible magnitude". Kitselas does not see the detailed reasoning behind this conclusion. How did Aurora LNG come to this conclusion?	The reasoning behind the conclusion of negligible magnitude is based on first identifying the potential mechanisms that could affect ecological communities at the edges of the PDA, and then identifying a feasible mitigation measure for each potential effect-mechanism. Examples of effect mechanisms that were considered include the following: creation of additional edge by windthrow; deposition/aggradation due to erosion processes; or, changes in soil moisture levels due to stormwater flows. Examples of corresponding mitigation measures include the following: windthrow management (windfirming treatments) of remaining stands; application of erosion and sediment control measures; and maintaining pre-existing surface hydrology patterns While there may be some changes to soil moisture, soil temperature, air temperature, or light levels within communities located at the edge of the PDA, given the feasible mitigation/management measures identified in Tables 4.6-10 and 4.6-11 of the Application, any remaining changes to abiotic factors are not anticipated to result in measurable effects to ecological communities of interest due to edge effects. The characterization of residual effects is thus predicted to be negligible (see Table 4.6-5 of the Application for the definition of negligible in this context).
726.1	round 1	Kitselas First Nation	4.6	Vegetation and Wetland Resources	It is stated that the residual loss of old-growth forest is low in magnitude. If the old growth forest that the project will be effecting is considered in terms of the PDA (10%), Kitselas would say that the residual loss of old-growth forest is high and long term. The Characterization of Residual Effects does not consider the PDA. It gives thresholds in consideration of the entire RAA whcih produces a skewed conclusion of what is actually going to happen on the ground. In our view this is unaccepatable. If the project is going to cut down 100% of the old growth forest within the PDA regardless of what populations are present in the RAA or LAA, this will have a high residual effect that is long term in duration. This is of particular interest to traditional users in that the "go elsewhere to get your resources" arguement does not hold well with. If people wanted to use the resources on the PDA they will no longer be able to because it will be gone. Therefore the residual effect of the loss of this resource, within that geographical extent, is high and long term. The assessment of residual effects, in this particular case, is flawed.	The government of BC has developed the approved Great Bear Rainforest Order (GBRO), which establishes explicit retention targets for old growth forest within the landscape units that this Project intersects. The GBRO is based on a regional ecosystem management approach, which means natural resources such as old growth forests are managed on a regional scale, such as the landscape units identified in the GBRO. These landscape units are considerably larger than the PDA, or LAA. The Application aligns with the ecosystem management approach in effect within the region, and uses the retention targets contained in the GBRO to guide characterization of the magnitude of Project effects (See table 4.6-5 in the Application re: old growth magnitude criteria relative to the GBRO thresholds for the relevant landscape units.) The GBRO represents an approved Ministerial Order which allows for up to 40% loss of old growth forest from the specified landscape units which correspond to the Project's RAA. The loss of old growth forest due to the Aurora LNG Project is far below such allowable thresholds set for other (timber harvest) industries within the region. Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include assessment on vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address the site-specific loss of vegetation resources for traditional use within the PDA. See also the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species.
727.1	round 1	Kitselas First Nation	Table 4.6.13	Vegetation and Wetland Resources	Mitigation No. 4.6.15 - a Wetland Monitoring Program is not a mitigation; it is a Monitoring Program. What exact mitigations are Aurora LNG proposing? If the monitoring program finds that the wetland functions have not been adequtely replaced or met, what actual mitigations is Aurora planning on?	Mitigation measure 4.6.15 specifically refers to monitoring the performance of restored, enhanced, or created wetlands that are established according to the Project's approved Wetland Compensation Plan. This monitoring is intended to determine whether or not the compensatory habitat is functioning as intended. In the event that restored, enhanced, or created wetland habitat is determined, through monitoring, to be not functioning as intended, then adaptive management would be applied. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Precise adaptive management measures cannot be defined ahead of time without knowing what the issue(s) regarding function is, however potential examples could include such management measures as: adjustment to wetland hydrology through grading or channel design; replanting with more-suitable plant species; controlling herbivory; or removing invasive plant species. The precise measures would depend on the stressors and/or monitoring plan results.
728.1	round 1	Kitselas First Nation	Table 4.6-14	Vegetation and Wetland Resources	It is unclear to Kitselas how Operations are not applicable to the residual effects on the change in Abundance of Plant Species of Interest and Wetland Function in the PDA, TLAA, VALAA and/or RAA .	During operations, no plant species of interest or wetlands will remain in the PDA; they will have been removed during construction. During operation of the Project, no residual effects on plant species of interest or wetland functions are anticipated in the remaining study boundaries, thus the use of N/A in the residual effects summary table. Effects on wetlands due to acidification/eutrophication are addressed under changes to condition of ecological communities of interest, for which there are residual effects during the operations phase; these are characterized in Table 4.6-14 of the Application.

729.1	round 1	Kitselas First Nation	Section 4.6	Vegetation and Wetland Resources	"Old-growth forests are relatively undisturbed and common in the RAA; they are considered resilient because they can recover from perturbation, albeit taking over 200 years to develop". The last part of this statement is key to concerns Kitselas has when reading that the old growth forest loss that will occur is expected to be low in magnitude. The time it takes to re-establish vegetation populations to existing levels should be considered when evaluating residual effects.	The duration of an effect is one attribute that is used to characterize residual effects, while magnitude is another attribute. See Table 4.6-5 of the Application for definitions of each characterization. All characterizations in Table 4.6-5 are considered for each measurable parameter that contribute to each residual effect. The duration of effects on old growth forest are considered long-term, but of low magnitude according to the definitions of each term provided in Table 4.6-5.
730.1	round 1	Kitselas First Nation	Section 4.6.6.5	Vegetation and Wetland Resources	Under Cumulative Effects Mitigation it is stated that it is expected that future projects will be held to the same standards as past and present projects, including compensation required for ecologically important wetlands and offsetting. This is not adequate mitigation. Kitselas believes that specific mitigations are needed in order for us to be comforatable with this project going forward in relation to all of the other projects and development which have occurred or will possibly occur within the RAA.	Please see Table 4.6-13 of the Application for the full suite of mitigation measures intended to avoid, limit, and/or offset the loss of wetland functions for this Project. These Project-specific mitigation measures will also directly reduce potential for cumulative interactions.
731.1	round 1	Kitselas First Nation	Section 4.6.7.1	Vegetation and Wetland Resources	Kitselas disagrees with the conclusion that the project residual effects to vegetation and wetland resource will not be significant based on the reasoning that plant species of interest are viable withing the RAA and traditonal use plants are abundant elsewhere. The "can be found elsewhere" reasoning is not acceptable. It is our opinion that the vegetation and wetland resources within the PDA will be significantly altered because the project will destroy them. The fact that they can be found elsewhere in the RAA is irrelevant to us when considering what will be lost within the boundaries of the PDA.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4, of the Application and include assessment of vegetation gathering. Effects on First Nations harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address the site-specific loss of vegetation resources for traditional use within the PDA. Please also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. This technical memo will be filed with the BC EAO.
732.1	round 1	Kitselas First Nation	Section 4.9.2.4	Marine Fish and Fish Habitat	Table 4.9-3 Change in Habitat: Although non-permanent changes to fish habitat is difficult or impossible to quantify, it does have an effect on habitat availability during the time it is disturbed. Temporary effects may not be a measurable parameter, but need to be included in overall effects assessment.	As per the comment, it is possible that a change to fish habitat could be reversible but still affect the ability of fish to perform one or more life processes. Given the reversible nature of such changes, they may conform to a 'dictionary definition' of temporary; however, if a change could occur for long enough to limit the ability of fish to perform one or more life process, it was considered permanent as per DFO's definition. Consequently, 'temporary' changes were considered in the assessment if their duration was such that it would impair the ability of a CRA species to perform one or more life process. If it was determined that a temporary change would not affect fish to the extent that the performance of one or more life process could be impaired, than it was not considered further.
733.1	round 1	Kitselas First Nation	Section 4.9.2.4	Marine Fish and Fish Habitat	Table 4.9-3 Change in behaviour: measurable parameters were selected based on best available data & methodology - Just because it is the best available, doesn't mean that it's sufficient. Due to the nature of these unprecidented and large development projects in this geographical area, the EA should be requiring equally large and unprecidented efforts to adequately determine effects and long term impacts by commissioning appropriate studies to establish adequate thresholds (rather than having an EA state that there is a lack of adequate thresholds).	The lack of established thresholds for changes in marine fish behaviour in response to underwater noise is not representative of a lack of studies regarding marine fish behaviour to underwater noise. Instead, the lack of established thresholds relates to the difficulty in developing appropriate thresholds given the differences in response (e.g., behavioural avoidance of the sound source, startle response, no response) depending on life stage, species, and frequency, intensity, and type of noise (Popper et al. 2014). For this reason, additional studies into the behavioural response of marine fish to underwater sounds are not expected to measurably support the establishment of such thresholds. Reference Popper, A. N., A. D. Hawkins, R.R. Fay, D. A. Mann, S. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P.H. Roger, B. L. Southall, D. G. Zeddies, and W.N. Tavolga. 2014. Sound Exposure Guidelines for Fishes and Sea Turtles. A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Published by the Acoustical Society of America.
734.1	round 1	Kitselas First Nation	4.9.5.2	Marine Fish and Fish Habitat	Analytical methods: change in habitat is assessed by identifying habitat permanently altered or destroyed. Habitat that is temporarily altered is also "changed" for that period of time. Clarify if this temporary change in habitat quality or availability is considered in the effects assessment.	Temporary changes were considered if their duration was such that it impaired the ability of a CRA species to perform one or more life process. In such instances, the assessment considered (among other metrics) the importance of the habitat affected (e.g., species-specific importance of soft substrate vs eelgrass vs rocky substrate) and relative availability of similar habitat nearby. For an example of how these factors were considered, please see the second paragraph under "Infilling: Loss of Substrate" on Page 4.9-53.
735.1	round 1	Kitselas First Nation	4.9.5.2	Marine Fish and Fish Habitat	Operations- LNG shipping: at least twice, the report states "no meaningful changes". There is not a explanation of what "meaningful" is.	The term "meaningful" is used twice. In both cases "No meaningful changes" indicates that the mechanisms are not expected to cause changes that could be considered a permanent alteration or destruction of marine fish habitat used for spawning, rearing, feeding, or migration.
736.1	round 1	Kitselas First Nation	4.9.5.2	Marine Fish and Fish Habitat	In this table and throughout the EA document, existing legistlation, BMP's and guidelines are included in the mitigation tables. These are project requirements, not additional mitigation. The Project has not chosen to implement these proactices - they are required. Therefore, should be removed from the mitigation tables.	It is recognized that compliance with all applicable regulatory requirements, through adherence to relevant guidelines and best management practices (BMPs), is mandatory and considered a "standard" aspect of environmental management planning. In some cases it has been considered appropriate to add these requirements to the list of VC-specific mitigation measures for ease of reference and completeness regarding the overall suite of measures to manage adverse environmental effects on a VC and to maintain a complete record of commitments . In addition, per the BC Ministry of Environment (2017) definition, best management practices (BMPs) are the science-based approaches that, when followed, should enable a project to achieve objectives, standards, or legal requirements. There is no legal requirement to follow BMPs, rather there is a requirement to meet legal objectives. By committing to following BMPs, Aurora LNG is using approaches that are known to be highly effective in mitigating potential effects. Reference: BC Ministry of Environment, 2017. Guidelines and Best Management Practices (BMPs). http://www.env.gov.bc.ca/wld/BMP/bmpintro.html. Accessed February 24, 2017.
737.1	round 1	Kitselas First Nation	Part C	Aboriginal Consultation	Kitselas requests an explanation of the difference between how schedule B and C First Nations were consulted. Please specify the criteria for separating the Tsimshian Nation First Nations in this manner and how the groups were consulted differently	Aurora LNG's consultation objectives apply to all Schedule B and C Aboriginal Groups. Those objectives are described in Table 3-1 of Appendix S2 (Second Aboriginal Consultation Report [ACR#2]). In that table, each objective is listed along with specific sections of the ACR#2 that demonstrate Aurora LNG's related consultation activities undertaken to meet the objectives. In addition to the activities referenced in Table 3-1, Aurora LNG has undertaken additional consultation activities with Lax Kw'alaams Band and Metlakatla First Nation in accordance with Section 3.4.2 of the Aboriginal Consultation Plan and as directed by the Environmental Assessment Office (e.g. see EAO section 13 order dated August 30, 2016) . Details related to these additional measures are provided in Sections 5.2.4 and 6.2.4 of the ACR#2.
738.1	round 1	Kitselas First Nation	Part C	Aboriginal Consultation	It is stated that "Aurora LNG does not have evidence that the PDA itself or the shipping route is of particular importance for Kitselas First Nation harvesting". Both the PDA and the shipping route is of particular importance for Kitselas harvesting. The shipping route and PDA are within Kitselas' traditional Marine Harvesting Area. The PDA itself supports ecological communities that Kitselas harvests on a regular basis. This was outlined in the TUS that we supplied to Aurora LNG. Aurora LNGs conslusion is incorrect.	Aurora LNG considered the TUS information provided by Kitselas First Nation in the assessment of effects on Kitselas First Nation Aboriginal Interests. The conclusions are consistent with the TUS information available at the time of writing.
739.1	round 1	Kitselas First Nation	6.2.2.8	Visual Quality	Kitselas has concerns regarding the threshold for significance. 1) Why use the Partial Retention VQC as the threshold as opposed to Retention or Modification VQCs? No justification is provided. 2) Why is the presence of VQ planning objectives among local authorities a criterion for significance? Would this not imply that the visual quality VC could have just been scoped out of the EA altogether if no planning objectives were present? Furthermore, it assumes that if no planning objectives were present, then visual quality is of no concern to any other groups who had input into the plans, which is almost certainly not the case. It also assumes that there are no groups external to the local planning process that are concerned about visual quality, which not true given the Kitselas' interests in the area. Kitselas requests that this criterion be omitted from the assessment.	The significance threshold used in the assessment of effects on visual quality incorporates a number of elements. These are: - The post-development EVC exceeds Partial Retention. - The average existing EVC was either Preservation, Retention or Partial Retention - The viewpoints from which the change is viewed are of moderate to high importance - Visual quality is documented as an important planning objective for government authorities in the LAA. These thresholds incorporate both quantitative and qualitative elements. The first two elements relate to existing visual condition (EVC) in the post-development and baseline conditions. EVC is a measure of the degree of visual disturbance that is present. This element indicates that if the project is causing the EVC to exceed partial retention (i.e. over 7% disturbance) in an area for which disturbance is less than 7% then this could result in a significant effect. A higher threshold for potential significant effect was not used because then even with substantial project-induced change to visual quality the effect would not be significant. The third element relates to importance. While there is a degree of subjectivity in quantifying "importance", the criteria considered include the number, type, and intensity of receptors that may be affected, including residences, scenic highways, tourist locations, and recreational areas. The fourth element, planning context, recognizes that the assessment of visual quality should not be based on measurable criteria only, but should incorporate the extent to which government agencies (local, regional, provincial) seek to protect visual quality as a policy objective. This element allows for the possibility that significance determination can be made even in situations where change in visual quality based on measured elements (e.g. EVC) does not warrant it. Conversely, if protection of visual quality in an area is not considered an important policy objective by relevant government and regulatory authorities then this is also relevant when making a significance determination.
740.1	round 1	Kitselas First Nation	6.2.5	Visual Quality	The justifications to exclude the shipping route from the assessment are not convincing. First, while the Project's LNG tankers will not add a "new visual element" to the viewscape, they are expected to triple the current shipping traffic through the PRPA, which is significant. If it is not considered significant, it should be explained why that is the case. Second, the Pacific Northwest LNG EA concluded that the effects of the project were not significant on the basis that there were no planning objectives specific to visual quality in any local development plans. As indicated in the previous comment, Kitselas does not agree that this is an appropriate criteria to evaluate significance. Additionally, the Pacific Northwest LNG EA indicated that along with the terminal, the LNG tankers created a residual effect that triggered a cumulative effects assessment. No comparable CEA would be possible if shipping is scoped out of the assessment. Given the large increase in shippping traffic the Project will bring, a cumulative effects assessment including shipping seems warranted. Kitselas therefore requests that an assessment of shipping on visual quality be included.	As discussed in Section 6.2.2.4 of the Application, the effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because the Prince Rupert Port is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which is proposing to use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not introduce new visual elements or be visibly prominent from most viewpoints along the proposed shipping route.
741.1	round 1	Kitselas First Nation	6.2.3\6.2.5	Visual Quality	There seems to be a disconnect with respect to the assessment methodology and the determination of significance. The assessment goes to great lengths to describe the current and post-development EVC for each VSU affected by the project, but the final determination of significance is based only on the average change in EVC over the entire LAA. It is clear from table 6.2-14 that each of the three VSUs located on Digby Island will undergo significant changes to EVC, yet that is not considered at all in the significance determination. Given that the bulk of the analysis in the assessment is specific to the VSUs, the potential changes to EVC in those VSUs should be included as a criteria in the determination of significance.	The assessment considers the change to visual quality within the LAA, not change specifically from the assessed viewpoints. The four viewpoints that were analysed show potential effects from a number of different locations, including several locations located close to the facility. These viewpoints could be expected to be affected more than those located further away within the LAA. The assessment weighted the potential effects on the assessed viewpoints, but also considered the likely change to visual quality within the LAA overall. This balance is evident in Table 6.2-14 of the Application, which presents change in EVC both to individual visual sensitivity units, as well as to the overall view from each viewpoint.
742.1	round 1	Kitselas First Nation	6.2.5.2	Visual Quality	Table 6.2-14 indicates that the % Alteration for the Project Condition for the overall view of VP01 is 1.9%, but the EVC is listed as Retention, when it should be Partial Retentiaon. The same goes for VLI 292 for VP02. Additionally, the Existing Condition EVC for VLI 280 should be Partial Retention.	In Section 6.2.5.2, Table 6.2-14, Page 6.2-39, the EVC of the Overall View for VP01 in the Project Condition should be changed to “Partial Retention” from “Retention.” In the same table the EVC for VP02, VLI 292 should be changed to “Partial Retention” to “Retention.” As well, the EVC for VPO2, VLI 280 should be changed to “Partial Retention” from “Retention.” An errata document is being created that will capture this correction and it will be filed with the BC EAO.
743.1	round 1	Kitselas First Nation	6.2.3.2	Visual Quality	No information is presented on night time viewers of the landscape and/or night sky in order to establish context on any assessment of lighting effects. For example, Metlakatla potentially lies within the light dome for a project of this size, where the view of the night sky would be affected. Are there any beaches or camp sites where the views of the night sky could be affected? Additional information is needed to assess the lighting effects.	It is acknowledged in Section 6.2.10 of the Application that the Project will contribute to skyglow in the Prince Rupert area. Depending on atmospheric conditions, the sky glow created by a combination of Prince Rupert, nearby industrial facilities, as well as the Project may be discernable from a considerable distance. However, the magnitude of sky glow generated from the Prince Rupert area at receptor locations located more than a few km away is likely limited by the relatively small size of the lit urban and industrial areas. Through the use of shielded and directional lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow will be minimized. Other lighting effects (glare and light spill) are more relevant to receptor locations within a direct line of sight to Project lighting. As discussed in Section 6.2.5.2 of the Application, the only residential receptors within a direct line of site of the Project are in Prince Rupert. There is a possibility that the Project will be visible from one campground - the Prince Rupert R.V. Campground, though topographical and/or vegetation screening are expected to limit the line of view towards the Project from this location. If the Project is visible from this location, it is anticipated that the change in visual quality will be similar to that for VP03 (Prince Rupert Residences), in that the Project will result in a small incremental change in a view already heavily modified by industrial development along the Prince Rupert waterfront.
744.1	round 1	Kitselas First Nation	6.2.3.2	Visual Quality	The selection of viewpoints did not include any considerations for use as light receptors. Of the four viewpoints selected, only VP03 was suitable as a light receptor, as it was the only one that people would actually visit at night. Additional receptors for the light assessment could have been identified that were appropriate for use in an assessment of lighting effects and were safe to access at night. We request that at least one additional view point as a light receptor be considered.	Other viewpoints were considered in the assessment of lighting effects, including potential receptor locations in Port Edward. However, because Port Edward does not have a direct view towards the Project, lighting effects were not assessed. Similarly, most streets in Prince Rupert run SW to NE, with most homes and commercial buildings oriented SE to NW (i.e. either looking back towards Mount Hays or looking across the harbour towards the Tsimshian Peninsula). Because the Project is located SE of Prince Rupert, and because of topographical shielding, it will not be visible to the majority of Prince Rupert residences. For this reason, VP03 was selected for assessing lighting effects, because it is the closest residential area within a direct line of site of the Project, and thus has the highest potential to experience adverse effects.
745.1	round 1	Kitselas First Nation	6.2.5.1	Visual Quality	The justification for the qualitative assessment of ambient light is based on the distance of VP03 from the Project, but no mention is made of the effect of sky glow, which could very well be apparent at that distance, especially under more rural conditions. A discussion of sky glow in the context of nighttime use of the surrounding landscape should be included in the justification of a qualitative assessment.	It is acknowledged in Section 6.2.10 of the Application that the Project will contribute to skyglow in the Prince Rupert area. Depending on atmospheric conditions, the sky glow created by a combination of Prince Rupert, nearby industrial facilities, as well as the Project may be discernable from a considerable distance. However, the magnitude of sky glow generated from the Prince Rupert area at receptor locations located more than a few km away is likely limited by the relatively small size of the lit urban and industrial areas. Through the use of shielded and directional lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow will be minimized. Other lighting effects (glare and light spill) are more relevant to receptor locations within a direct line of sight to Project lighting. As discussed in Section 6.2.5.2 of the Application, the only residential receptors within a direct line of site of the Project are in Prince Rupert. There is a possibility that the Project will be visible from one campground - the Prince Rupert R.V. Campground, though topographical and/or vegetation screening are expected to limit the line of view towards the Project from this location. If the Project is visible from this location, it is anticipated that the change in visual quality will be similar to that for VP03 (Prince Rupert Residences), in that the Project will result in a small incremental change in a view already heavily modified by industrial development along the Prince Rupert waterfront.
746.1	round 1	Kitselas First Nation	6.2.7.1	Visual Quality	It is not described anywhere how the average post-development EVC of the LAA was calculated, nor how that relates to Table 6.2-14, despite both items being critical to the assessment. Please include an explicit methodlogy regarding the calculation of average post-development EVC over the LAA.	The average post development EVC change resulting from the Project considered the change in views from assessed viewpoints, as well as potential visibility of the Project based on the viewshed analysis. The viewshed analysis shows that the Project will not be visible from most areas within the LAA (see Figure 6.2-5), and thus will not contribute to a change in visual quality for most of the LAA. Those areas where the Project is visible is represented by the four assessed viewpoints. Of the four viewpoints assessed, only VP02 (Mt. Hays) is expected to have an overall change in EVC that exceeds partial retention, and is attributable to the Project. For these reasons, it is concluded that the average post development EVC change in the LAA resulting from the Project will not exceed 7% (i.e. partial retention).

747.1	round 1	Kitselas First Nation	7.2.2.4	Heritage	Increased human presence should be considered during construction, operations and closure as a potential adverse effect on archaeological sites. Sites such as coastal shell middens are particularly sensitive to increase human presence and it is known that there currently are and will likely to continue to be exposed archaeological materials in the LSA.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
748.1	round 1	Kitselas First Nation	7.2.2.5	Heritage	The RAA should be larger that than the LAA. As there is no regional setting provided it is not possible to assess the significance of the sites that will be impacted (How rare are the site types that are being impacted? Is the density of sites in the project area normal for this region? . The LAA and RAA are limited to ground disturbance from construction but do not consider disturbance to archaeological sites as a result of increased human presence on the island. Both the LAA and RAA should be increased in size to take this into consideration.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. For these reasons, no change to the Application is considered warranted.
749.1	round 1	Kitselas First Nation	7.2.2.6	Heritage	The assessment assumes that archaeological sites will only be impacted during the construction phase. This needs to be revised to account for increased human presence that will also occur during operations and construction and closure that may result in impacts to sites. Additionally, buried deposits such as shell midden sites may be disturbed during closure and reclamation.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
750.1	round 1	Kitselas First Nation	7.2.3.2	Heritage	Kitselas is very concerned with the lack of testing on Spire Island where two rock overhangs were identified and visually examined but not tested. High potential areas like these must be tested or more information provided on the rationale for not testing.	Two rock overhangs were identified on Spire Island during the AIA. Visual examination of the areas did not identify any archaeological materials or remains. However, given the potentially sensitive nature of these features as potential burial places, intrusive subsurface inspection was not conducted. As per the AIA report (Appendix W), avoidance is recommended. If avoidance is not feasible, additional archaeological study would be undertaken prior to construction.
751.1	round 1	Kitselas First Nation	7.2.9	Heritage	With the large number of sites in very close proximity to the Project, on going monitoring to ensure the sites are not impacted is required. Kitselas would like to see monitoring during construction and yearly monitoring of the sites during operations and monitoring during closure and reclamation activity.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, monitoring of the sites after initial construction (tree removal and ground disturbance)may not be required however Aurora LNG will review the requirement for monitoring on a site by site basis in discussion with the appropriate regulatory authorities. Aurora LNG welcomes further discussions with Kitselas First Nation regarding heritage and archaeological resources.
752.1	round 1	Kitselas First Nation	7.2.3.2	Heritage	Fossil sites have been attributed to Digby Island, however the report states that there is no potential for fossil finds. It is not clear from the Paleontology report if a qualified professional paleontologist conducted this assessment. Please state the qualifications of the person who did the study.	Edits were made to Sections 7.2.1, 7.2.2.1, 7.2.2.8, 7.2.3.1, 7.2.3.2, 7.2.3.3, 7.2.8, and 7.2.9 in response to comments from the Heritage Branch duringthe screening of theapplication in December 2016 which address this comment. To clarify, a high-level review of paleontology has been conducted for the Project. The review was conducted by a professional Palaeontologist with a PhD who is a member of the British Columbia Paleontological Alliance. A paleontological assessment will be conducted prior to construction and will include review of relevant information and databases. The assessment and reporting will be conducted under a permit issued by the province. If any fossils are identified, they will be managed in consultation with the Heritage Branch. The Archaeological and Heritage Resources Management Plan will include measures to manage any unexpected fossil finds during project activities. The plan will meet Heritage Branch standards regarding management of fossil sites. The management plan will be prepared prior to construction. An edit was made to Table 7-7 during screening to reflect that the Heritage Branch will be consulted during its preparation.
753.1	round 1	Kitselas First Nation	7.2.4	Heritage	Kitselas disagrees with the assessment of potential project interactions with archaeological sites. This section needs to include potential impacts from increased human presence throughout the project lifecycle, and impacts to buried deposits during construction, decommissioning and closure.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
754.1	round 1	Kitselas First Nation	7.2.5.1	Heritage	Kitselas disagrees with the assumption that the affects of the Project on Heritage resources are well understood based on the work done in the LAA and RAA. The LAA and RAA are too small to understand the affects of the Project and Heritage resources and need to be expanded. Additionally, the authors do not appear to fully understand the potential affects of the Project.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. For these reasons, no change to the Application is considered warranted.
755.1	round 1	Kitselas First Nation	7.2.5.2	Heritage	Kitselas disagrees with the assessment of residual effects. The assessment has not considered the significance of the sites regionally. This project area has a very high density of archaeological and historic sites and is evidence of the high use and significance of the area over a long period of time. There a few places on the coast that have such a high density of sites in such a small area and location. It is also an excellent area for public interpretation to occur. The loss of these sites would have a significant residual impact on the population of archaeological and heritage sites in the larger region.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA. Aurora LNG acknowledges the concern of Kitselas First Nation regarding the archaeological and heritage sites in the PDA. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
756.1	round 1	Kitselas First Nation	7.2.5.3	Heritage	The assessment of residual effects needs to be revised to reflect the significance of the very high density of archaeological and heritage sites in this location and how the loss of this resource will carry forward in to the future and result in the loss a significant resource. Mitigation through data recovery and monitoring of the sites will not be enough to offset losing an area like this that has this time depth of occupation, density and diversity of sites.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA. Aurora LNG acknowledges the concern of Kitselas First Nation regarding the archaeological and heritage sites in the PDA. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
757.1	round 1	Kitselas First Nation	7.2.6	Heritage	A cumulative effects assessment is necessary for this project as the logic that the mitigation will offset the residual effects is flawed. The current mitigation plan does not offset the significant loss the collective archaeological and heritage resources in this area.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
758.1	round 1	Kitselas First Nation	4.8	Freshwater Fish and Fish Habitat	In table 4.8-13 the proponent describes the area of fish habitat to be lost in the PDA to be 10,857 m². This would require an off-setting replacement at 2x which is 21,714 m² of similar fish habitat. Kitselas has considerable doubt that this can be achieved in the region and an even lesser degree of confidence that said off-setting will be successful.	Offsetting for serious harm in the marine and freshwater environments will be considered collectively by Aurora LNG. This is because the freshwater habitats affected by the Project will affect anadromouos fish species (e.g., pink and coho salmon) that use freshwater and estuarine habitats for spawning and rearing. While efforts will be made to maximize the amount of freshwater habitat created or enhanced to offset the loss of fish habitat in watercourses within the PDA (i.e., "like-for-like" habitat replacement such as those on Digby Island presented in the Conceptual Fish Habitat Offsetting Plan [Appendix V]), the overall objective of the offset plan will be to maximize fish productivity for CRA fish species affected by the Project. Thus, where opportunities exist to create, restore, or enhance habitats used by juvenile salmon in estuarine or marine environments, particularly where options in the estuarine or marine environments have lower risks, uncertainties, or time lags than options in the freshwater environment, these projects will be included in the detailed offset plan with the objective of providing a net gain in production in the regional fishery. Through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets.

759.1	round 1	Kitselas First Nation	4.8	Freshwater Fish and Fish Habitat	Further to table 4.8-13, the riparian habitat to be lost is 218,830 m², replacement at 2x would be 437,664 m². Kitselas considers this to be impossible to duplicate or offset this unique island wetland complex. In addition, to apply a minimum DFO standard 15 m riparian zone is unacceptable. The complex moss -forest environment acts as a buffer to provide a moderated slow release of the ~ 3 meter annual rainfall received by his maritime island. It would be more appropriate to apply a minimum 30 meter riparian management zone on either side of the streams and inter-tidal zones of the Delusion Bay Estuary. It may be importasnt to reserve more fore-shore habitat to prepare for the future rise in sea-levels, this may be as much as 2 meters during the life of the project.	Potential effects of the Project on fish and fish habitat, including riparian habitat, that result in serious harm to fish will be offset as per the requirements of the Fisheries Act and associated permitting. Replacement of 218,830 m2 of riparian habitat at a 2:1 ratio is not likely possible in the LAA; however, riparian areas next to watercourses that no longer exist do not provide services to the watercourses that have been removed (e.g. shade, leaf litter, insect input) and will not be accounted for in the fina offsetting calculations. Riparian area measurements have been applied as per the Riparian Management Area Guidebook (Ministry of Forests, 1995). Aurora LNG has provided a conservative protection of a minimum of 15 m riparian reserve zone (RRZ) on all streams, including non-fish bearing, where MFLNRO guidelines do not specify an RRZ. Offset riparian habitat will be a component of the detailed habitat offset plan developed for the project. The area of riparian habitat offsets proposed will be proportionate to that which will provide full riparian function to instream freshwater habitat and marine habitat designed to offset the predicted loss in fisheries productivity resulting from the project. Discussion on the foreshore habitat is addressed in the Marine Fish and Fish Habitat section (4.09) of the Application.
760.1	round 1	Kitselas First Nation	4.8	Freshwater Fish and Fish Habitat	Kitselas considers the potential for serious and irreversible harm to the watershed of Delusion Bay and the valuable contribution to the productivity of this small Estuary to the function of the greater Skeena River estuary.	Aurora LNG acknowledges that Kitselas First Nation considers Delusion Bay a valuable contributor to the function of the greater Skeena River estuary. Aurora LNG believes that the annual contribution of fish from the watercourses within the PDA to the CRA fishery of the Skeena River estuary is negligible in comparison to the annual contribution other tributary watersheds and the mainstem habitats make to the Skeena River estuary. This is because the majority of streams within the PDA on Digby Island are short (<500 m), small (S3 or S4), with non-fish-bearing reaches above impassable barriers, and water quality that is less than optimal for salmonids (i.e., low pH). Therefore, Aurora LNG believes that effects of the Project on watercourses within the PDA are likely to have a negligible effect on annual production of the CRA fishery in the Skeena River estuaryAurora LNG will, through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, provide habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the Project.
761.1	round 1	Kitselas First Nation	4.8	Freshwater Fish and Fish Habitat	Kitselas considers the freshwater invertebrate productivity to be essential to sustain fish health and productivity. A baseline invertebrate inventory for the streams affected in the PDA would be appropriate to provide an indicator for stream health. This should be initiated pre- construction and for reasonable increments throughout the project operations up to and including de-commissioning.	Aurora LNG acknowledges that freshwater invertebrate production is essential to fish health and productivity. However, Aurora LNG believes that it is not necessary to collect baseline invertebrate data or monitoring invertebrates in streams throughout the life of the Project. This is because Aurora LNG has committed to mitigation measures that avoid, eliminate, or reduce potential effects to CRA fish species e.g. salmon and charr, as a result of changes in water quality, stream flow, and sedimentation. By doing so, Aurora LNG believes that these mitigation measures will equally protect freshwater invertebrates and their habitat. Additionally, changes in water quality that would cause a change in the abundance, distribution, or species composition of freshwater invertebrates are not anticipated. Aurora LNG will engage with appropriate regulatory agencies and Aboriginal Groups identified in Schedule B of the Section 11 Order(as amended) to develop the environmental effects monitoring plans required for freshwater and marine environments.
762.1	round 1	Kitselas First Nation	4.8	Freshwater Fish and Fish Habitat	Kitselas is concerned about the potential for harm to the Delusion Bay estuary habitat. We would suggest that a baseline condition assessment be initiated and monitored over the life of the project to assess the productivity and condition of this transition zone between fresh and salt water.	Aurora LNG acknowledges that Kitselas is concerned about the potential for harm to Delusion Bay estuary habitat. However, changes in water quality and stream flow that would cause a change in the productive capacity of the Delusion Bay estuary are not anticipated due to retained marine riparian buffer and because all discharged water will meet regulatory requirements. As such, Aurora LNG does not believe a baseline condition assessment needs to be initiated in Delusion Bay. During construction and operation specific water quality parameters (e.g., total suspended solids, total nitrogen) will be recorded to support permitting.
763.1	round 1	Kitselas First Nation	4.8 p. 4.8-53	Freshwater Fish and Fish Habitat	In Additional Mitigation measures#58; to transport salvaged fish outside the PDA is unacceptable. The final paragraph about surface water quality changes is vague and lacks a level of description to provide assurance that fish and fish health will be protected. It is well known that clear-cut, clearing and grubbing produce a flashy hydrological response in a watershed. Kitselas is very concerned that an industrial disturbance this close to critical fish and fish habitat will cause serious and permanent damage to the fresh water and estuary environment. Settlement ponds, ditching and filter fabric systems will require careful design and engineering to mimic the natural buffering of this coastal ecosystem.	Aurora LNG will transport and release fish salvaged from affected watercourses within the PDA to the nearest watercourses with similar water quality (e.g., temperature and salinity) and habitat (e.g., pools for rearing). However, transport and release of fish to watercourses outside of the PDA may be required if similar water quality and habitats are not present. The selection of potential release areas will be determined in advance of any fish salvage conducted with consideration of the water quality and habitat conditions as well as the distance and access that may affect the time required to hold fish in tanks or tubs before release. Riparian buffers (15 m minimum on both sides of the streams) will be left adjacent to all watercourses remaining within the PDA after construction and impact to the upstream watershed will be minimized, where possible. These measures will reduce the potential effect of sediment reaching the streams and the estuary, and minimize the reduction in freshwater run-off reaching the estuary; no change in any water quality parameter is expected to occur. Aurora LNG agrees that careful planning will be required in developing a detailed water management plan and erosion and sediment control measures. FEED will provide input to the Marine and Freshwater Resources Management Plan and Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
764.1	round 1	Kitselas First Nation	4.8 table 4.8-15	Freshwater Fish and Fish Habitat	Kitselas finds this description to be inadequate for such a critical piece. Include " and excessive grease" behind leaks in the opening sentence. Remove" where possible" with respect to fueling construction vehicles. We require more information for the proponents fuel management safety systems such as#58; Spill response capacity must be adequate to contain/ control all volumes of hydrocarbons on site. Spill capacity must be adequate to contain/ control Spills to the ditches, ponds and silt fences for site water management systems. All machinery will be supplied with spill kits and additional spill containers will be onsite at strategic locations. All crew members will be trained and understand spill response equipment and their use. We would expect to see a detailed description of spill capacity for all Marine operations including fuel storage and adequate containment for these storage stations.	Aurora LNG acknowledges the wording suggestions and have revised Mitigation No. 4.8.10 as follows: All construction equipment onsite will be kept clean, free of leaks, excess oil, and grease. Refuelling or servicing of construction equipment will take place at least 30 m away from any watercourse or waterbody; exceptions may be made for large or immobile construction equipment in which case drip trays or bermed areas will be utilized so that any spillage will not enter the waterbody. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. The mitigation has been revised to clarify the intent of the "where possible" wording as relocation of such equipment for fueling purposes may cause more environmental disturbance. M easures related to the use of fuels and machinery on site will be included in the Marine and Freshwater Resources Management Plan. The plan will address spill containment capacity, number, type, and size of on site spill kits, and training for all personnel on site . All site personnel will review, understand, and follow all of the management plans while working on site. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan.
765.1	round 1	Kitselas First Nation	4.11	Marine Wildlife - Marine Birds	Kitselas is has considerable concern to the potential for severe impacts to the disturbance of Great Blue Heron habitat in Delusion Bay estuary. The Riparian buffer between the habitat and the flares is considered insufficient. Operations and construction have the potential to exclude or seriously reduce the success of overwintering, breeding and juvenile survival of this blue listed species of special concern.	Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). Maintenance and emergency gas flaring is not expected to occur during normal operating procedures but only occasionally during emergency and upset conditions and during controlled events such as startup, shutdown, venting and purging (see Section 1.2.5.1 of the Application). As the flare stack is located approximately 3 km from the heron rookery in Dodge Cove, interaction with nesting birds is expected to be negligible. Mitigations for great blue heron presented in the Application focus on measures to protect herons during breeding, the most sensitive timing period. The setback distances defined in mitigation measures 4.7.4, 4.7.6, and 4.7.18 are intended to reduce disturbance at active nests sites as well as surrounding habitat use for fledging and foraging. The marine riparian disturbance buffer of 30 m will be applied during all phases of the Project and is expected to further reduce potential for disturbance of herons foraging in Delusion Bay during Project operation.
766.1	round 1	Kitselas First Nation	4.11	Marine Wildlife - Marine Birds	Kitselas considers the entire Delusion Bay Estuary to be rare, sensitive and critical habitat to a myriad of Marine species. The Marine Riparian zone is considered insufficient in width and the location of the flaring structures will cause unacceptable disturbance or avoidance of this otherwise productive habitat.	Section 1.2.5.1 of the Application describes the proposed flare system design. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). As per mitigation 4.7.20, maintenance flaring events will be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. Additionally, the marine riparian disturbance buffer of 30 m will be applied during all phases of the Project to retain shoreline habitats and limit noise and light dispersal, and is expected to further reduce potential for disturbance marine species using shoreline and nearshore habitats in Delusion Bay.
767.1	round 1	Kitselas First Nation	4.7	Wildlife Resources (Terrestrial)	Kitselas considers the Marine riparian management zone associated with Delusion Bay to be too narrow to provide a sufficient buffer between construction and operations. The inherent richness of the estuary and edge effect are favoured habitat for many species. The conceptual layout of project components at full build-out (figure no. 1-2) does not provide a depiction of a realistic concept to support terrestrial wildlife species. Species such as Western screech owl and Little brown Myotis are expected to favour these habitats . The project does not depict a concept that considers natural breaks in terrain or an effort to protect or maximize cover.	Habitats surrounding Delusion Bay were rated as having high or moderate suitability for western screech-owl and little brown myotis under existing conditions, however Delusion Bay was rated as Nil suitability for both species to support breeding activity (Section 4.7.3.2 of the Application). The assessment for change in habitat identifies that the change in area of preferred habitat (i.e., high or moderate suitability) from clearing within the PDA will result in a 17% change from existing conditions for western screech-owl and little brown myotis (Table 4.7-13) with indirect effects extending beyond the PDA boundaries (Table 4.7-14). As described in Section 4.7.5.2, the assessment of change in habitat was considered conservative because it assumed that all vegetation will be removed from within the PDA. Collectively, the riparian reserve zones, management areas, and marine riparian disturbance buffer will result in the retention of mature and old forested habitat; these areas are not predicted to continue to serve as preferred habitat for either species during operations (e.g., Figure 4.7-10 and Figure 4.7-11), but will reduce noise and light disturbance effects to adjacent habitats, including Delusion Bay. The riparian buffers also maintain connectivity between forested and wetland communities northwest of the PDA and Delusion Bay. These corridors will facilitate access to upland and intertidal habitats for species that rely on them for breeding, roosting, foraging, and staging activities.
768.1	round 1	Kitselas First Nation	4.7	Wildlife Resources (Terrestrial)	Kitselas is concerned about fencing the facility, especially along the streams and Delusion Bay. There should be no restrictions or blocking of escape for terrestrial prey species such as Coastal Black tail deer. Stream crossing should be full span bridges to allow wildlife passage.	Aurora LNG is proposing to install fencing around the LNG facility to support security requirements and to reduce the potential for negative interaction between Project personnel and wildlife (e.g., bears, wolves). To the extent practicable, Aurora LNG will install stream crossings that faciliate wildlife passage throughout the LAA while restricting access to the LNG facility.
769.1	round 1	Kitselas First Nation	12.5.8.5	Aboriginal Consultation	Kitselas fails to see how the list of Mitigation Measures in this section mitigates the effects that are outlined. The Mitigation measures centre around consultation and negotiation. What actual mitigation will be put forth in consultation with Kitselas that will mitigate the effect that this project will have on our access to the PDA and the resourcese therein? Consultation on it's own is not a mitigation measure. Rather it can lead to a mitigation measure. Kitselas would like to know how exactly Aurora LNG expects to mitigate the effects that the Project will have our Aboriginal Title.	The potential effect mechanisms for effects on Aboriginal title as described in Section 12.5.8.5 include effects on Kitselas First Nation's ability to make decisions regarding how the land is used and managed. Ongoing and meaningful consultation between Kitselas First Nation and Aurora LNG can help mitigate Project-related effects on Kitselas First Nation's ability to influence land and marine use decisions within the PDA. Another potential effect mechanism described in Section 12.5.8.5 relates to Kitselas First Nation's ability to use the PDA and Project area for its own economic purposes. Two mitigation measures are designed to directly address this potential effect:Aurora LNG will continue to consult with Aboriginal Groups regarding economic opportunities related to the Project Aurora LNG will use reasonable efforts to progress negotiations regarding appropriate long-term benefits and accommodation for Project effects with Aboriginal Groups
770.1	round 1	Kitselas First Nation	12.5.8.10	Aboriginal Consultation	"because shipping has occurred along the shipping route for decades Aurora LNG expects that mariners will be accustomed to navigating around large vessel traffic". This statement doesn't take into account the cummulative effect that the increased shipping traffic is going to have on Kitselas' Use of marine travelways. Although mariners are used to navigating around large vessels, more and more vessels are using the travelways that Kitselas has traditionally used and cummulatively this has an effect on our use of the area. The more conjested the travelway becomes the less likely our members are going to be to want to use it. We disagree with the conclusion that one or two additional vessels will not reduce access to travelways located along the shipping route. Even though people may be able to access the area they may not want to because it is too busy. Safety concerns paired with quality of the experience may deter people from using the travelway they would have traditionally used when fewer vessels were using it.	Aurora LNG acknowledges that Kitselas First Nation disagrees with the conclusions of the assessment; however, the conclusions were developed in accordance with the requirements of the AIR and were informed by the pre-application consultation conducted with Kitselas First Nation. The consideration of cumulative shipping effects on Kitselas First Nation Aboriginal Interests is included in Section 12.5.8.5 (page 12-253) as part of the assessment of changes to Kitselas First Nation harvesting locations and access routes. In the assessment of effects on use of trails and travelways in Section 12.5.8.10, Aurora LNG acknowledges that the Project has the potential to adversely affect Kitselas First Nation's use of the protected passage between Kaien Island and Digby Island for marine navigation during both construction and operations phases.
771.1	round 1	OGC	Table 10.2-3	Effects of the Environment on the Project	The values for the 10-year average (2003-2012) in the last two columns are incorrect.	The data provided in Table 10.2.3 of the Application was provided by the BC Wildfire Services Management Branch (pers. comm. WMB 2015).
772.1	round 1	OGC	Table6.2-1	Visual Quality	This table should also reference section 4(1)(e) of the LNG Facility Regulation.	Table 6.2-1 will be revised in an erratum to include reference to Section 4(1)(e) of the LNG Facility Regulation. An errata document is being created that will capture this correction and it will be filed with the BC EAO.
773.1	round 1	OGC	Table 4.4-13	Acoustic Environment	The permissible sound level determined for R1 (Crippen Cove) is lower than the measured existing condition; the measured background noise level at this receptor is high without impact from oil and gas activity. The high background noise level will be considered during a BC OGC permit review process.	Comment noted.
774.1	round 1	OGC	Table 4.4.-18	Acoustic Environment	The table states that the BC OGC limit of 20 dB has not been exceeded for R21, this is incorrect. The results and conclusions are unlikely to be incorrect due to this typo.	The table should state that the BC OGC limit of 20 dB has been exceeded for R21. However, the typo will not affect the results and conclusions. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
775.1	round 1	OGC	Section 9	Accidents or Malfunctions	General comment: Malicious and security related incidents that can instigate several of these scenarios will need to be considered, though there may be separate documentation that addresses those concerns.	Aurora LNG acknowledges that potential causes of accidents or malfunctions may include deliberate acts such as vandalism or terrorism. Historical data on incidents involving terminal infrastructure or vessels resulting from deliberate acts are not readily available in international casualty databases; however, the probability of such incidents occurring and resulting in high consequences is expected to be low or negligible. Site and staff security precautions for the marine terminal and associated infrastructure are expected to reduce the probability of deliberate acts causing incidents that may result in consequences of concern. This will include but is not limited to site fencing and security gate entrance requirements.
776.1	round 1	OGC	Page 9-1	Accidents or Malfunctions	We must also consider the potential for deliberate acts as the cause of incidents.	Aurora LNG acknowledges that potential causes of accidents or malfunctions may include deliberate acts such as vandalism or terrorism. Historical data on incidents involving marine terminal infrastructure or marine vessels resulting from deliberate acts are not readily available in international casualty databases. However, the probability of such incidents occurring and resulting in high consequences is expected to be low or negligible. Critical marine terminal infrastructure must meet the Transport Canada Marine Terminal Security Measure (MARSEC) standards for marine security that came into force in 2004. As well, the site is proposed to be fenced with all critical areas surrounded by fencing with controlled access. The site is proposed to be patrolled by security staff which is expected to reduce the probability of deliberate acts that could cause an incident that may result in consequences of concern.
777.1	round 1	OGC	Table 9.3-1	Accidents or Malfunctions	Need to consider hazard to navigation should there be a significant release that can create an immediate fog bank. Additionally, none of the release options on this chart considers the impact a methane plume would have on aircraft - which may fly through an area where combustion conditions were met (LEL/UEL) - note the airport to the west of the plant site.	Although the specific scenario of a sudden fog bank is not explicitly described in section 9.9.3 of the Application, this effect is captured within the characterization of potential effects on Marine Use and Navigable Waters. Also see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issue raised by this comment. This technical memo will be filed with the BC EAO.
778.1	round 1	OGC	Section 9.4.1	Accidents or Malfunctions	Will Aurora have or consider mutual aid agreements with any first response resources - fire (municipal or airport), spill response organizations (WCMRC, etc)	As per the Application, Section 14.16, during development of the Emergency Response Plan, Aurora LNG will consider the establishment of standing agreements and mutual aid agreements with emergency response service providers.

779.1	round 1	OGC	Section 9.5.1	Accidents or Malfunctions	Also need to consider the reverse - i.e. impact of LNG facility on aircraft.	Section 9.7 of the Application discusses the potential effects of a facility malfunction including potential effects on infrastructure and services such as civil aviation. Also see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issues raised by this comment.
780.1	round 1	OGC	Section 9.6	Accidents or Malfunctions	Will Aurora also reference NFPA 600 and NFPA 1081 standards as a preventative and precautionary measure to mitigate this risk?	Aurora LNG expects that standards such as NFPA 600 will be followed for the training of Project personnel in fire prevention and management. NFPA 600 is a requirement under the BC OGC LNG regulations. Aurora will consider the application of NFPA 108 regarding minimum job performance requirements for industrial fire brigade personnel (NFPA 1081) during the development of the emergency response plan.
781.1	round 1	OGC	Section 9.6.2	Accidents or Malfunctions	Can we see any plume modeling of a catastrophic release?	The Plume Rise Assessment was submitted to the BC EAO as a supplemental filing on February 17, 2017. The assessment simulated the maximum possible plume rise from 37 plume sources. A full facility shutdown and subsequent flaring event was modeled for Air Quality and is present in the Air Quality TDR in Appendix A of the Application.
782.1	round 1	OGC	Section 9.6.2	Accidents or Malfunctions	"Project personnel will complete fire prevention" - NFPA 1081?	As stated in the Application, Section 9.6.2, 'Project personnel will complete fire prevention and management training and will have equipment readily available for risk related activities.' Aurora LNG expects that the fire prevention and management training will follow the NFPA 600 standard. NFPA 600 is a requirement under the BC OGC LNG Facility Regulations.
783.1	round 1	OGC	Section 9.6.2	Accidents or Malfunctions	"Project personnel will complete fire prevention and management training and have equipment readily available for risk related activities." - To what levels and how broadly within plant staff?	During detailed design and planning, Aurora LNG will identify and document the appropriate level of training for fire prevention and management, and the Project employment positions that will receive this training.
784.1	round 1	OGC	Section 9.7.1	Accidents or Malfunctions	Though unlikely, Aurora should consider their capacity and capability to conduct an emergency shut-down of all trains. The position taken by Aurora is very similar to that noted in the post-incident report from the International Atomic Energy Agency on Fukushima - failure to consider an unlikely event and plan on how to effectively manage for it. To quote: The operators were not fully prepared for the multi-unit loss of power... [and] had therefore not received appropriate training... and the equipment available to them was no adequate in the degraded plant conditions.	The probability of an emergency shutdown of one train is low but more likely than an emergency shutdown of all four trains. For this reason, one train shutdown was considered in the assessment of Wildlife Resources (Terrestrial), Marine Birds, Infrastructure and Services. Potential effects of a four train shutdown were assessed for Air Quality, GHGs, and Human Health VCs as a result of air emission and dispersion modelling assumptions. Aurora LNG personnel will receive appropriate training to respond to emergencies, including a full LNG plant shutdown. See Section 9 of the Application that outlines the response to an emergency event. The Project will be designed with automated shutdown systems to address any scenario including a single train shutdown or complete facility shutdown. The automated shutdown will place all systems in a safe controlled standby mode to reduce the loss of train inventory. Under upset conditions, natural gas vapours from the shutdown systems will be safely redirected to relevant flares for incineration and controlled discharge to the atmosphere. With respect to the event at Fukushima, it is difficult to provide a comparison given the large discrepancy between the relative level of risk of a controlled shutdown at an LNG facility and a catastrophic incident at a nuclear complex.
785.1	round 1	OGC	Page 9-22	Accidents or Malfunctions	Notes the potential for impact on aircraft operations from flaring - where is the consideration for potential impact on aircraft from a major LNG release?	See the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issues raised by this comment.
786.1	round 1	OGC	Page 9-22	Accidents or Malfunctions	What measures, if any, will Aurora use to ensure public emergency services have sufficient knowledge of the specific hazards related to a cryogenic product to act in support of the Aurora staff?	Aurora LNG will develop the ERP in consultation with local municipal jurisdictions, regulators, and emergency response organizations. The ERP will be prepared according to the guidance found in Emergency Preparedness and Response for Petroleum and Natural Gas Industry Systems (CAN/CSA-Z246.2-14). The ERP will include measures which include emergency support services and corresponding support staff. Aurora LNG will engage with the local community groups to inform the public of emergency procedures prior to project commencement. Aurora LNG will ensure public emergency services are informed of accidents and malfunctions by initiating the Emergency Response Plan (ERP). In the event of an accident or malfunction that requires the implementation of the ERP, notification of the event will also be provided to residents, landowners, members of the public, local municipalities, regulators, and Aboriginal Groups.
787.1	round 1	OGC	Page 9-47	Accidents or Malfunctions	Should also add airport use - any aircraft on visual flight rules could be impacted by the sudden and unforecasted fog bank a large LNG release could create.	See the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issues raised by this comment.
788.1	round 1	OGC	Section 4.7.1	Wildlife Resources (Terrestrial)	Summary of key legislation, policy and regulatory guidance for wildlife resources (terrestrial) - The Oil and Gas Activities Act applies to all oil and gas activities in BC. Specific reference to section 103 is misleading. 103 simply provides for the development of environmental protection management regulation. The EPMR should be included in the list of key legislation (4.7.1) The EPMR regulates oil and gas activity interaction with the environment on crown land, specifically section six provides environmental objectives with respect to wildlife and wildlife habitat. The Liquefied Natural Gas Facility Regulation and Applications and Operations Manual should also be referenced as there are references to noise, lighting and other factors that influence wildlife resources within these documents.	Comment noted. Table 4.7-1 describes compliance requirements with the Environmental Protection and Management Regulation. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
789.1	round 1	OGC	Mitigation Table 4.7-10	Wildlife Resources (Terrestrial)	Clearing Master License to Cut and Cutting Permits for oil and gas activities are permitted through the Commission not FLNRO. There are a number of references to FLNRO & MWLAP guidance throughout the mitigation table in many cases for oil and gas activities the appropriate guidance is the EPMG. (This comment is applicable to Mitigation Tables 4.7-14 and 4.7-15)	Comment noted. Mitigation measures for Wildlife Resources are inclusive of guidance provided in the BC OGC's Environmental Protection and Management Guideline document (where applicable); however, these mitigation measures also consider other relevant provincial best management practices, to further avoid, reduce, or mitigate for potential effects of clearing. Table 4.7-1 describes compliance requirements with the Environmental Protection and Management Regulation and the Environmental Protection and Management Guideline. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
790.1	round 1	OGC	General comment	Air Quality	Will there be increased flaring associated with commissioning? If so, the EA should mention this. When doing so, where possible emissions should be estimated both in terms of CAC release and the potential to emit black smoke (when flare opacity is 40% opacity or more). Experience with existing LNG facilities could be used as a basis for providing this information.	Commissioning includes unusual operating conditions while the Project is progressively brought online and equipment undergoes performance tests. Variation in flare volumes and frequency during commissioning will occur and is consistent with standard industry practice. Flaring activity will reduce over time as the Project moves from commissioning into consistent operations. The flare systems will be designed to combust gas efficiently under all conditions including plant start-up, shut-down, continuous operation, and emergency flaring at all gas flow rates. The frequency of potential flaring during commissioning and the volume of gas flared will not be available until the detailed engineering and construction planning phase of the Project.
791.1	round 1	OGC	General comment	Air Quality	Provincial SO2 objectives have been revised see http://www.bcairquality.ca/reports/pdfs/aqotable.pdf Please provide comment on how the modelling results could compare to new objectives.	The provincial ambient air quality objectives for SO2 were revised on December 16, 2016 to 183 ug/m3 based upon the 99th percentile of daily 1-hour maxima averaged over 3 years and 13 ug/m3 based upon an annual average. The provincial ambient air quality objectives were revised to be consistent with the federal Canadian Ambient Air Quality Standards (CAAQS). Maximum predicted SO2 concentrations for all assessment cases (Base, Project, Application and CEA) are less than the recently revised provincial air quality objectives.
792.1	round 1	OGC	3.2 (pg 7)	Assessment Methods	What is the "fired heater exhaust" and how much VOC would it release?	The term "fired heater exhaust" refers to the exhaust gases from the four natural gas fired heaters. Emission rates from each heater including VOCs are presented in Table 4-12 (Appendix 2, Air Quality - TDR). Each heater emits 0.98 kg/h of VOCs.
793.1	round 1	OGC	Table 11	Air Quality	SO2 will not be zero from the compressor gas turbines. SO2 from the thermal oxidizers is not zero. Suggest an estimate gets included for this. For NOx are the turbines assumed to be emitting 25ppm, 15 ppm, or some other amount of NOx in ppm?	The requested details are provided in Section 4, Appendix 2: Emission Inventory, Air Quality - TDR (Appendix A of the Application). Emissions of SO2 will be zero from the Project compressor gas turbines and heaters as the boil off gas will contain zero sulphur compounds. The detailed boil off gas composition is provided in Table 4-1 (Appendix 2, Air Quality - TDR). The liquefaction equipment at an LNG plant is very sensitive to the presence of sulphur compounds and it is necessary to remove all sulphur compounds upstream of liquefaction. As detailed in Section 4.1 (Appendix 2, Air Quality TDR), the Project emissions for the compressor gas turbines was calculated based upon 16 Siemens Trent 60 gas turbines. Each turbine is assumed to be equipped with dry low emission (DLE) combustors and will emit 25 ppm NOx in the turbine exhaust gas.
794.1	round 1	OGC	Page 41	Air Quality	"The predicted 1-hour, 24-hour and annual average ground-level NO2 concentrations associated with the CEA case are 223(228), 130 and 69.7µg/m3, respectively. Including baseline, these values increase to 248 (362), 144 and 75.4 µg/m3. The predicted 1-hour 98th percentile maximum and the annual average ground-level NO2 concentrations are greater than applicable objectives." - Would the use of turbines that release 15ppm NOx prevent exceedance of the objective (Page 30 appendix 2 indicates the model run for the EA is based on a turbine emission of 25ppm)	The area of predicted exceedance of the BC air quality standards for NO2 are limited to a small area immediately adjacent to the PRPA Fairview Terminal. Dispersion modelling has indicated that the elevated NO2 concentration predictions are dominated by emissions from the post expansion Fairview Terminal itself. Other emission sources in the study area are not substantive contributors to these predicted exceedances. The maximum predicted 1-hour (98th percentile and maximum) is predicted to occur 20 m southeast of the Fairview Terminal (Phase 2) boundary. The maximum annual average NO2 concentration is predicted to occur 50 m southeast of the Fairview Terminal (Phase 2) boundary. Concentrations greater than the 1-hour objective are predicted to occur infrequently (approximately 0.3% of the time). Emissions from the Aurora LNG Project do not contribute materially to the highly localized NO2 concentration predictions as they occur adjacent to and are dominated by emissions from the Fairview Terminal. As a result, changes to the NOx emission rate for the Aurora LNG Project associated with adopting lower emitting gas turbines will not prevent the predicted exceedances.
795.1	round 1	OGC	4.5.1 (Page 41)	Air Quality	"100% conversion efficiency of H2S to SO2 is assumed during normal operations." - Typical flare efficiencies are in the 98% range. Since we are dealing with potential H2S releases that have low ambient objectives - please change the flare efficiency and add a comment as to what this might do to ground level concentrations of H2S.	During normal operation, emissions from the flare are limited to a small quantity of sweet pipeline quality natural gas used for purge and pilot gas purposes. Pipeline quality natural gas contains negligible quantities of H2S (~ 7 ppm). Gas composition is provided in Table 4-5 (Appendix 2, Air Quality - TDR). Emissions from the flares during normal operation are presented in Table 4-19 (Appendix 2, Air Quality - TDR). Similarly, the three emergency flare scenarios evaluated for the LP Flare, HP Flare and BOG Flare involve flaring of gas streams that contain negligible quantities of H2S. The gas composition and emissions from the flares during emergency flaring are shown in Tables 4-21 and 4-22, respectively (Appendix 2, Air Quality - TDR). Given the negligible quantities of H2S contained in the normal and emergency flare gases, there is no potential for elevated ambient H2S concentrations associated with flaring.
796.1	round 1	OGC	Table 4-22	Air Quality	Will the emissions associated with emergency conditions result in smoke that has significant opacity (say above 40%)? If so, what would be the level of opacity be for an observer? In answering this question it would be fine to refer to actual experience at other LNG facilities as appropriate.	The flare systems will be designed to combust gas efficiently to minimize potential for smoke. During normal operations, the small quantity of natural gas (purge and pilot gases) that is burned continuously results in a small flame that burns without smoke. During emergency flare events or during commissioning, the gases combusted in the flare can contain refrigerants (e.g. propane) and inert gases such as nitrogen which increase the potential for smoke formation. Flare stacks can be designed with air or steam assist technology to reduce smoke formation by injecting air or steam at the flare tip to enhance mixing of the flare gases and enhance flame stability to reduce smoke formation. The most practical technology to minimize smoke formation during non-routine flaring will be evaluated and determined during the detailed design phase of the Project. At this stage of the project, it is not possible to quantify frequency of occurrence or opacity of smoke that may be emitted during non-routine flaring.
797.1	round 1	OGC	4.8 (page 51)	Air Quality	The overall SO2 estimate from total Land Based Operation is of interest: - Page 33 indicates:"SO2 emissions are calculated using the overall sulphur balance calculation that assumed fuel gas composition of 9mg/m3 (or 7ppmv) sulphur." - "When fully developed, the LNG facility will require approximately 104 million cubic metres per day(Mm3/d) (3.7 billion standard cubic feet per day [Bcf/d] or 3.9 Peta Joules per day [PJ/d]) of natural gas." http://a100.gov.bc.ca/appsdata/epic/documents/p416/d41436/1483979897905_TsBNYz5dYRrJLG6VzY2NvSID1Y9mnHZz2vBq5YYWqJnQXJQKvhvY!2064073576!1483979197562.pdf - Therefore, approximate sulphur that goes into the facility is around 340,000 tonnes per year of sulphur. - So if the total land-based SO2 releases are 692t/y, where does the rest of the sulphur go? - this should be included in the assessment somewhere.	The question incorrectly asserts that the sulphur inlet to the facility is 340,000 tonne/year. The author of the question has made a conversion error which results in the stated value being approximately 1,000 times too high. The sulphur inlet to the facility is correctly calculated as follows: Sulphur Inlet (tonnes/year) = (104,000,000 sm3/d) * (9 mg S/sm3) * (1 g/1000 mg) * (1 kg/1000 g) * (1 tonne/1000 kg) * (365 days/year) = 342 tonne S / year. All sulphur in the feed gas is removed during gas clean up and incinerated in the four thermal oxidizers. The sulphur inlet value of 342 tonne S/year is consistent with total land based SO2 emission rate of 692 tonnes/year. The assessment has correctly accounted for the full mass of the sulphur in the feed gas and SO2 emissions to the atmosphere.
798.1	round 1	EAO		Economic Conditions	Has Nexen engaged with MNBC on 5.1.c assessment?	The Metis Nation BC was engaged for the purposes of fulfilling the requirements associated with CEAA 2012 5(1)(c) requirements (assessed in Section 11.3 of the Application). The details are provided in Section 11.3 of the Application (see Sections 11.3.1, 11.3.13 , 11.7.7) and ACR #2 (see Sections 2 and 11).
799.1	round 1	EAO	6.3	Infrastructure and Services	The Application indicates that 15% of construction equipment and materials will be transported by rail; however, limited or no baseline information is provided. Please confirm that the existing rail line has the capacity to transport Project-related materials and comment on the potential cumulative effects of multiple projects in the area using the rail infrastructure.	Considering baseline information (Section 6.3.3 of the Application), Aurora LNG assumed that, at the time of writing, CN Rail would have sufficient capacity to ship an estimated 15% of its construction equipment and materials. In commencement of a contract with CN Rail to ship an estimated 15% of Project-related construction equipment and materials, Aurora LNG will require that the line chosen has capacity to meet demands. In the event CN Rail does not have capacity to meet demands at the time of negotiations, Aurora LNG will include in its' Social Management Plan (Mitigation 6.3.1) and Transportation Management Plan (Mitigation 6.3-12) measures to address potential direct Project-related effects on community level infrastructure and services.
800.1	round 1	EAO	6.3	Infrastructure and Services	The Application notes that the construction camp would include security services, recreational and entertainment amenities, potable water, wastewater collection and treatment system, fire water system, medical centre, fire-fighting equipment, and heliport for medivac transfers. Will the same amenities/services be available in the operations camp?	It is expected that the same or similar amenities/services will be available in the accommodation camp during operations.
801.1	round 1	EAO	6.2	Visual Quality	EAO understands that residents of Dodge Cove identified areas of importance during a tour of Digby Island with Nexen, including key sites where visual quality may be changed as a result of the project construction and operations. Similarly, Aboriginal Groups identified a number of key sites of interest that may experience changes to visual quality. This was affirmed during the Aboriginal workshops #4 that Nexen held, and EAO's Working Group meetings. EAO finds the application's analysis of impacts on visual quality at sites important to local communities to be insufficient. Please conduct a supplementary assessment of visual quality effects on a selection of the important sites that have been identified by Dodge Cove residents (i.e. Casey Cove, Wahl Lake, Digby Island shoreline trails) and by Aboriginal Groups (to be confirmed by Aboriginal Groups prior to your supplementary assessment). Visual changes to Casey Cove should include both MOF options, PDA clearing, and changes to views of the mudflats resulting from the dredging. Visual renderings of curent state and when construction is completed should be included. Project contributions to nighttime light glare during operations (including flare activities, reflection from cloud-cover) should be described and compared to current state for local communities Recognizing that changes to landscape are subjective, the views of those communities on the visual changes at those key sites should also be incorporated into the analysis.	Please see the technical memo "Additional Visual Quality Renderings" that will be filed with the EAO. This technical memo includes the following information:Additional "before and after" renderings of the Project including views of Casey Cove and from marine viewpoints near the Project site. Additional night time rendering from VP01An additional day and night-time rendering of the Project that includes a flare event.

802.1	round 1	EAO	6.4-24	Land and Resource Use	6.4-24 describes Dodge Cove private lands approx. 2km from the project site- this is not consistent with figure 6.4-6 [closest PDA boundary to DC]. Please clarify the shortest distance between the PDA and Dodge Cove.	Section 6.4.3 of the Application provides an approximate distance from the centre of the PDA to the nearest private lands in Dodge Cove. For clarification, the nearest PDA boundary to Dodge Cove is approximately 165 m from the nearest property line (PID 004264479) or 265 m to the nearest dwelling on that property.Within the PDA, the nearest development (i.e., the access road) isapproximately 450 m to the nearest property line (PID 007506228) or515 m from the nearest dwelling on that property. It should be noted that the PDA is the maximum predicted area of potential disturbance as defined for assessment purposes. However, the proposed infrastructure within the PDA is located closer to the middle or south end. As detailed in Figure 1.7 of the Application, the closest proposed facility (i.e., power plant) to Dodge Cove is 1,350 m and this facility is approximately 945 m to the closest property line (PID 004264479) or 1,045 m from the nearest dwelling on that property.
803.1	round 1	EAO	6.4	Land and Resource Use	Nexen considers seeking a variance or amendment to the OCP as mitigation. What exactly would be sought through variance/amendment that would reduce the adverse effects? Please describe the environmental, social, economic, health and heritage constraints to moving the access road and PDA boundary further west outside the Dodge Cove OCP and their drinking watershed boundary. If there is an opportunity to make this design change, EAO requests the proponent to discuss this with EAO and relevant Working Group members.	The PDA as presented in the Aurora LNG Application is expected to be the maximum extent of land disturbance. As such there may be portions of the PDA that may not be cleared or disturbed and could remain vegetated. This would include areas along the proposed access road corridor. The proposed access road corridor is expected to be an estimated 50m wide cleared corridor that would follow primarily level ground between the Facility site and the existing Airport ferry road. The current eastern edge of the access road portion of the PDA overlaps the western edge of the Dodge Cove OCP boundary and the Dodge Cove drinking water watershed area. The western edge of the Dodge Cove drinking water watershed is bounded by a physical height of land. The Project is proposing to construct the access road corridor on the western edge of the current proposed PDA. The access road corridor would be located west of the Dodge Cove Watershed boundary and expected to avoid clearing and disturbance within the Dodge Cove drinking water watershed area. See the "Dodge Cove Water Supply and Watershed" technical memo for more details. The technical memo will be filed with the BC EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
804.1	round 1	EAO	6.4	Land and Resource Use	The Application notes that construction and operation of the Project would constitute a restricted activity and would not be inherently consistent with the Allied Tsimshian Tribes of Lax Kw'alaams' Interim Land and Marine Resource Plan to preserve archaeological record and support cultural tourism. Aurora LNG would also affect the NOI to protect the watershed zone, component of the Dodge Cove OCP. The Application concludes that residual effects on land use planning areas would be low in magnitude as potential effects were anticipated to be restricted to the PDA . Please clarify how effects in relation to Lax Kw'alaams' Interim Land and Marine Resource Plan and the Dodge Cove OCP are restricted to the PDA and not extend beyond the PDA boundary.	Potential effects on land use planning areas includes consideration of the applicability and intent of policies identified within land use plans. Only where the Project PDA overlaps the legal boundary of a planning area is there predicted to be a potential effect as policies identified within these plans are restricted to the plan boundaries; therefore activities occurring outside the plan boundaries are not required to meet these policies. Some Project effects are predicted to extend beyond the PDA and may affect users within the adjacent planning areas (i.e., noise, visual quality, resource use, recreational use); however, these effects on land use have been assessed in Section 6.4 and in other supporting sections of the Application.
805.1	round 1	EAO	6.4.5.2	Land and Resource Use	The mitigation measure specified in the Application provides for continuing to engage with holders of affected tenures overlapped by the PDA to develop methods to reduce effects. It is not clear how this proposed mitigation will be effective. Please describe some examples of methods that could be applied to avoid or mitigate residual effects on land and resource uses? A mitigation measure proposed is for "Vegetation clearing, grubbing, grading, levelling, construction, temporary workspace or storage areas will be limited to within the boundaries of the PDA to the extent practical." Please note that those activities must be limited to the PDA.	As indicated in Mitigation No. 6.4.1, Aurora LNG will continue to engage with holders of affected tenures overlapped by the PDA. This includes communicating Project activities, locations, schedules and other Project-related information. The intent of these recurring engagements is to work with affected tenure holders to reduce Project effects where possible and to negotiate agreements to address effects as applicable. Continued engagement is believed to help foster a positive relationship with affected tenure holders. In addition, Mitigation No. 6.4.3 requires Aurora LNG, as per the BC Registered Trapper and Petroleum Industry Agreement on Notification and Compensation (2006), to compensate an affected trapline holder. Aurora LNG acknowledges that vegetation clearing, grubbing, grading, levelling, temporary workspace, storage areas, and facility construction will be limited to within the boundaries of the PDA which for the purposes of the assessment is the worst case area for land clearing. However, as the facility design continues to progress, there may be areas identified within the assessed PDA that may not be cleared.
806.1	round 1	EAO	6.4-61	Land and Resource Use	The Application concludes that "residual effects on tenured land use and private property are predicted to be negligible to high (with reference to LAA property owners) in magnitude affecting a few resource users". Please clearly describe the magnitude of effects in relation to each specific land/resource tenure and use and the duration of any medium or high magnitude effects. The Application concluded that following implementation of the described mitigation measures there was a medium likelihood that the residual effects on tenured land use and private property would not be significant because the Project is not anticipated to change or disrupt present tenured land use capability to a point where the activities cannot continue at or near current levels, or where compensation is not possible. Please provide clearer rationale to support the conclusion of 'not significant' given the finding of a high magnitude residual effect provided in the analysis for private property.	Effect Characterizations – Tenured Land Use and Private Property The assessment of tenured land use and private property considers potential effects related to planning areas, private properties, trapping, electric power line tenures and forestry. The assessment on land use planning areas characterized the magnitude of residual effects (following mitigation [see mitigation 6.4.9]) to be low given residual effects are anticipated to be restricted to the PDA and represents only a small portion of the larger planning area. For example, the PDA overlaps approximately 13% of the total Dodge Cove OCP area. For the assessment of residual effects on private properties, a range in magnitude was provided. There is one private property located within the PDA; however, this property is already owned by Nexen and IGBC. With no further mitigation required, the magnitude of residual effect was characterized as negligible. For private properties located within the LAA (an additional 56 properties), residual effects are characterized as high in magnitude. This characterization is given as the Project has the potential to adversely affect the use and enjoyment of these properties such that continued use and/or ownership may no longer desirable. High magnitude residual effects are anticipated to occur during the construction phase (approximately five to six years) and therefore short-term. Following the completion of construction activities, the magnitude of residual effects is predicted to be reduced to low for the duration of operation (approximately 25 years) and therefore long-term. This reduction in magnitude is partially due to the reduced magnitude of nuisance effects (e.g., noise). During decommissioning the magnitude of residual effects on private property is anticipated to increase to moderate with the reintroduction of additional nuisance effects. Effects are anticipated to be short-term (approximately two to five years). The assessment of potential adverse effects on trapping focused on the one registered trapline located within the PDA. Given the PDA overlaps a small portion (11%) of the trapline and in consideration of mitigation (i.e., mitigation 6.4.3 [compensate the registered trapline holder in accordance with BC Registered Trapper and Petroleum Industry Agreement on Notification and Compensation]) residual effects are characterized as low magnitude. Compensation is a legal requirement. Residual effects on electric power line tenures were characterized as negligible in magnitude as no measurable changes to these tenures is predicted from Project activities. Where existing electric power lines are not compatible with Project uses of lands overlapped by the PDA, Aurora LNG will engage with holders of affected tenures and will discuss implications of the proposed Project, develop methods to reduce effects, or negotiate agreements to address effects as necessary (mitigation 6.4.1). Residual effects on forestry will be restricted to the PDA. The PDA overlaps 694 ha of the North Coast Timber Supply Area (NCTSA). This represents a small portion (0.04%) of the NCTSA (approximately 1.8 million hectares in area) and is therefore predicted to be low in magnitude. At the time of writing there were no active forestry tenures on Digby Island. If unforeseen issues arise, Aurora LNG will engage with holders of affected tenures overlapped by the PDA and endeavour to discuss implications of the proposed Project and develop methods to reduce effects (mitigation 6.4.1). Significance Determination – Clarification As stated in Section 6.4.2.8 of the Application, a significant adverse effect is defined as one where the Project will create a change or disruption that restricts or degrades present land use capability to a point where activities cannot continue at or near current levels and where compensation is not possible. Adverse residual effects on tenured land use and private property are characterized as negligible to low in magnitude with the exception of high magnitude adverse residual effects on private properties within the LAA (for the duration of construction). As noted above, high magnitude adverse residual effects on private property relate to nuisance effects (e.g., changes in air, water and visual quality and changes in baseline noise levels) on the continued use and enjoyment and/or ownership of these properties. Noted in mitigation 6.4.1, Aurora LNG will continue to engage with affected private property owners within the LAA and endeavour to discuss implications of the proposed Project and develop methods to reduce effects. Through this mitigation measure, residual adverse effects are expected to be effectively managed such that continued use and enjoyment and/or ownership of private properties within the LAA will continue at near current levels. Where this is deemed not possible, some form of compensation (i.e., not necessarily monetary) could be one of numerous potential mechanisms that Aurora LNG could use to address the concerns of private property owners. Issues related to quality of life are addressed in Section 13.5.1. As discussed in Section 13.5.1, Aurora LNG is confident that the implementation of mitigation measures identified in Section 13.5.1.4, as well as those described in Sections 4.2, 4.4, 4.5, and 6.2 of the Application will help reduce potential adverse effects on the quality of life of Dodge Cove and other area residents. It is also recognized that effects on all quality of life attributes are difficult to accurately measure and evaluate; or effectively mitigate to the satisfaction of Dodge Cove residents and that there may be outstanding concerns from the community. Aurora LNG will continue to engage with the Dodge Cove community to identify concerns and work to reduce Project-related effects.
807.1	round 1	EAO	6.4-87	Land and Resource Use	"It is concluded in Section 12.5 that the Project will interfere with the ability to harvest resources (including fishing) in the PDA; however, the level of interference depends on the resources as there may or may not be other locations to harvest resources" Has Nexen undertaken any baseline studies to determine the current distribution of resources within the LAA/RAA? Please describe how a defensible conclusion be be made without evidence to support the availability and quality of resources in the area.	Baseline studies were undertaken for the biological VCs to determine existing conditions. As described in Section 4.6.3.1 (Methods for Vegetation and Wetland Resources VC), field studies were conducted and included creating an inventory of plant species, including rare, invasive, and traditional plant species. Fish and fish habitat surveys (see Section 4.8.3.1 Methods for Freshwater Fish and Fish Habitat) were also conducted to identify, in part, the likelihood of fish presence in streams within the LAA. Field studies were not conducted for the Land and Resources Use VC, however, results of the field surveys, including identification of harvest resources, were considered in the assessment of Land and Resource Use. In instances where specific data/information is not available for a quantitative analysis, a qualitative approach is applied based on professional judgement and experience of the assessor taking a conservative approach. For example, as noted in Section 6.4.3.4, there was limited information available on the location and intensity of non-Aboriginal vegetation and marine plant harvesting. It was therefore conservatively assumed that harvesting activities would occur throughout the PDA, LAA and RAA at regular intervals. The consideration of distribution and availability of resources assumes a reasonable worst-case approach and is therefore considered to provide a conservative indication of effects.
808.1	round 1	EAO	6.4	Land and Resource Use	Nexen had limited information on the non-Aboriginal activities of harvesting of vegetation and marine plants; however, it was conservatively assumed that these activities occurred within areas overlapped by the PDA and LAA. Residual effects on plant harvesting were anticipated to be low in magnitude. Given that the PDA will be cleared and there's no analysis of the relevant project effects on the LAA mentioned in this section, please provide clarity on how the conclusions were made on non-Aboriginal activities of harvesting of vegetation and marine plants without evidence-based analysis and the contrary input from Dodge Cove residents that they actively use the project area and which is s primary area for them.	Potential effects of Project activities on harvesting vegetation and marine plants are not anticipated to extend beyond the PDA as these activities will only occur within the PDA footprint. The PDA as presented in the Application is considered the maximum area for land disturbance activities and as project design continues, there may be opportunities identified to avoid clearing on some portions of the PDA. As noted, the consideration of harvesting of vegetation and marine plants assumes a reasonable worst-case approach and is therefore considered to provide a conservative characterization of effects. The characterization of 'low' in magnitude was provided as it is anticipated that only a relatively small portion of land (the PDA) potentially used for harvesting vegetation and marine plants will be affected by Project activities compared to the total land available for harvesting activities (i.e., the LAA and RAA). Aurora LNG recognizes that some potentially important harvesting areas within the PDA will no longer be accessible for the duration of the Project and for some period following site decommissioning and revegetation. Aurora LNG also recognizes that alternative harvesting locations within the LAA and RAA may not be as desirable as those within the PDA and/or that additional adverse effects (e.g., increased cost, increased time commitment) may be realized by harvesters with the relocation of harvesting activities to these alternative sites outside of the PDA. Aurora LNG will continue to engage with the Dodge Cove community to understand the concerns and work to identify options to potentially reduce Project-related effects.
809.1	round 1	EAO	6.4	Land and Resource Use	The CE assessment needs to be more specific, i.e. by type of resource/activity identified having a residual effect in LAA.- what is the impact of resource depletion/obstruction of activity at the RAA level, considering other existing and reasonably foreseeable projects, as well as the surrounding Crown lands on Digby that have been granted to Metlakatla and Lax Kw'alaams and that may exclude further land and resource use to non-Aboriginal communities?	Please see the technical memo "Cumulative Effects on Land and Resource Use," which will be filed with the BC EAO.
810.1	round 1	EAO	8	Human Health	The application notes that the project may be constructed in two phases, with phase two (trains 3 and 4) primarily dependent on market conditions. The application also indicates that operational staff will be accommodated onsite at the workcamp. Please conduct a human health risk assessment regarding the potential project effects on workers residing at the workforce accommodation centre located onsite that considers all criteria air contaminants (air quality), noise and vibration effects assessed in the Application during all phases of development. Please work with Health Canada, Ministry of Health and other relevant agencies to ensure this assessment is conducted in a manner that meets their requirements to support the EA.	The Human Health Technical Data Report (Appendix R of the Application) assessed the potential health risk associated with inhalation exposures to CACs at three locations within the Project fenceline associated with the worker camp (locations IF-1764, IF-1825 and IF-1855). Potential effects from noise are described in the Acoustics VC (see Section 4.4 of the Application). Potential effects of vibration related to human health are not within the scope of the Assessment and these effects were not identified in the Application Information Requirements. While vibrations can be quantified, the potential effects to people are qualitative in nature and subjective to each individual.
811.1	round 1	EAO	1.2	Proposed Project Overview	The proposed floating construction camp is a key project component that must be fully assessed. Please provide a supplemental memorandum completely describing the temporary barge construction camp (including, but not limited to # of workers housed, proposed location, anticipated maximum time employed, how waste is managed, frequency and route of transportation to/from the camp, power generation, etc.), and assess this project component for all relevant VCs, accidents and malfunctions, and Part C impacts on Aboriginal interests.	Please see the separate "Floating Camp Review" technical memo which will be filed with the EAO.
812.1	round 1	EAO	4.7.1	Wildlife Resources (Terrestrial)	Based on information from other recent EA projects, there appears to be some gaps in the proponent's baseline wildlife surveys, particularly relating to western toad and western screech owl. Please confirm with CWS whether information is adequate for the purposes of the EA.	Comment noted. Field studies for wildlife resources are considered sufficient to characterize presence and use of habitats within the PDA and LAA by both western toad and western screech-owl (kennicotti subspecies). Based on visual detections (of western toad), habitat requirements, and regional occurrence records, both species are presumed present within the LAA and have potential to interact with Project activities and infrastructure. Accordingly, the Application has considered effects to both species and includes appropriate supporting mitigation measures to characterize residual effects with a moderate or high degree of confidence.

813.1	round 1	EAO	4.4.6.4	Acoustic Environment	"the magnitude of cumulative noise will be moderate in some locations." Please clearly define and delineate on a map where moderate or high magnitude cumulative noise is expected. "The context will be resilient because the area within the RAA is already subjected to noise effects from existing residential, industrial, recreational, and commercial activities". Please describe what/who specifically is resilient? If it is the receptors of the noise, please provide evidence from the Application to demonstrate how receptors are resilient because of noise in the area. Please provide evidence how local communities have expressed their resiliency to noise.	The magnitude of cumulative noise is determined by the following classification: Negligible: No measurable change from existing conditions Low: A measurable change from existing conditions but the effect is barely perceptible Moderate: A measurable change from existing conditions and the effect is perceptible High: A measurable change from existing conditions that exceeds municipal guideline, provincial guideline and federal guidance (i.e., BC OGC PSL, and LFN threshold, Health Canada change in %HA, ANSI 12.9 standard) The magnitude classification for cumulative noise is based on results from Table 4.4-23 and Table 4.4-24 of the Application. The magnitude of cumulative noise cannot be clearly delineated on a map because the existing conditions, Project contribution, and threshold vary from location to location. However, the magnitude classification can be identified for each noise receptor as follows: Construction Phase Negligible magnitude rating receptors: R1 Low magnitude rating receptors: R3, R4, R9, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21 Moderate magnitude rating receptors: R2, R5, R6, R7, R8, R10, R11 High magnitude rating receptors: none Operation Phase Negligible magnitude rating receptors: R1, R3, R13, R19, R20, R21 Low magnitude rating receptors: R4, R5, R8, R9, R10, R11, R12, R14, R15, R16, R17, R18 Moderate magnitude rating receptors: R2, R6, R7 High magnitude rating receptors: none Please refer to the "Cumulative Noise Assessment" technical memo for additional information on the cumulative assessment of the Project. This will be filed with the BC EAO. The "Cumulative Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Resilient of noise is considered as the noise receptor's ability to assimilate the additional change in noise level. The Health Canada noise guidance provides a measurable parameter, change in the percent highly annoyed (%HA), to quantify the long term annoyance effect in an average community to a Project. The %HA considers noise effects from existing residential, industrial, recreational, and commercial activities. The Application concluded that noise effect resiliience based on predicted results meeting the Health Canada noise guidance threshold (i.e. change in %HA below 6.5%) at all receptors. The ability to assimilate or tolerate changes to noise levels may vary for specific individuals and communities. Receptor locations in the closest communities such as Dodge Cove (R2) and traditional land use areas such as Casey Point (R5) may have less resiliency to noise effects. Section 13.5.1 of the Application indicates that Dodge Cove community members felt that noise effects could decrease the quality of life for residents in the community. This indicates less tolerance to assimilate additional changes in noise levels. The resilient rating for the change in noise level in Tables 4.4-27 and 4.4-29 of the Application should be revised to "R or NR". An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
814.1	round 1	EAO	5.2.3.2	Economic Conditions	Please define "flat youth population" and how it relates to the assessment.	The expression "flat youth population" is quoted from the Prince Rupert/Port Edward Labour Supply Study (Asia Pacific Gateway Skills Table [APGST] June 2016) in the section on baseline economic conditions. It refers to a forecast undertaken by BC Stats that shows that the proportion of youth (persons aged 15 - 19) within the Skeena Queen Charlotte Regional District over the 2015 to 2030 period is neither growing or declining (Figure 8 within APGST 2016 shows a slight decline in population). The implication of this to the assessment is that the labour supply within the LAA is not growing with time, and that proponents should undertake measures to try to expand the labour force. Aurora LNG's commitment to work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation (Mitigation 5.2-5) could help to broaden the local labour force by helping individuals to acquire the skills needed to better position themselves for future employment.
815.1	round 1	EAO	5.2.3.2	Economic Conditions	Please provide an estimate for the number of local hires during operations.	Aurora LNG cannot estimate, at this point in time, how many individuals, that are currently resident within LAA communities, will be hired for Project operations positions. While Aurora LNG will seek to maximize local hiring, the number of such "local hires" will depend on the availability of qualified individuals when the project commences operations. Aurora estimates that, when the Project commences operations, the majority of the workforce will be comprised of individuals from overseas, with skills and experience operating an LNG plant. Over time, as the pool of local skilled labour grows, it is expected that the majority of operational staff will be residents of LAA communities.
816.1	round 1	EAO	4.10.5	Marine Wildlife - Marine Mammals	While the impacts of dredging and disposal at sea, and commissioning and start-up activities on marine fish and fish habitat is discussed in 4.9; EAO could not find analysis on the impact of reduced foraging opportunities on marine mammal health or behavior, resulting from changes to fish health from a) dredging and disposal at sea, and b) commissioning and start-up, including discharge to the marine environment. Please provide specific references to this information.	The potential effects on marine mammal prey (i.e., marine fish and invertebrates) resulting from dredging and disposal at sea were determined to be localized and not significant (see Section 4.9) and are therefore not expected to adversely affect marine mammal foraging opportunities (see Section 4.10.5.2). Based on experience on similar projects, and professional judgement, potential changes to water quality, and subsequently, marine mammal health, as a result of Project-related discharges during commissioning and start-up are not anticipated. The release of hydrostatic test water into the marine environment, during commissioning and start-up is not anticipated to result in measurable changes to marine fish health because water will be tested, and treated if necessary, prior to its release. As a result, it is not expected to adversely affect marine mammal foraging opportunities.
817.1	round 1	EAO	4.9.11	Marine Fish and Fish Habitat	Please confirm if pile driving, underwater blasting, dredging, disposal at sea and other marine construction activities will be limited to daylight hours througout the entire contsruction phase (i.e. no nighttime construction)? Please provide a summary table of marine construction activities and timing, including duration (i.e. # of weeks, months) and proposed schedule of activities. Please confirm if all marine construction activities will be conducted during least risk timing window (November 30 to February 15) to mitigate effects to fish. Please confirm if there are any least risk timing windows proposed to mitigate effects to marine mammals (e.g. harbour porpoise)? This info is required to inform EAO's analysis and assessment of effects on marine fish and marine mammals and potential EA Certificate conditions.	High noise disturbance activities such as impact pile driving and underwater blasting will be limited to daylight hours and whenever possible limited to 7am to 8pm if daylight extends beyond that period. However, other related activities such as drilling the pile sockets (i.e. for rock socket pile installation), drilling blast holes prior to the blasting or post-blast activities (e.g. removal of blasted materials) may occur outside of daylight hours. Underwater blasting, dredging, and disposal at sea activities will be restricted to the DFO least risk work window for Area 4 - Lower Skeena (November 30 to February 15), unless otherwise approved by DFO. Given the limited work period associated with the DFO least risk work window for Area 4 - Lower Skeena, dredging and disposal at sea activities will not be limited to daylight hours.Rock socket pile installation, impact pile driving and infilling activities will not be restricted to the DFO least risk work window. A marine construction schedule will be developed during FEED and can be provided to the EAO once complete. Due to the presence of marine mammals in the Project area year-round (e.g., harbour porpoise), no timing windows for marine mammals are proposed.
818.1	round 1	EAO	4.9.13	Marine Fish and Fish Habitat	Table 4.9-13 Area (m2) of Marine Fish Habitat Permanently Altered or Lost for each Project Activity. The total area of habitat loss identified for the MOF (Concrete Caisson option) includes 59,639 m2 loss of substrate and 4,550 m2 loss of eelgrass for marine construction/infilling; plus 1,630 m2 loss of eelgrass from dredging (6180 m2 total loss of eelgrass). In comparson, the MOF (Pile and Deck option) has a much less area of impact with no loss of substrate or eelgrass from infilling, and only 3,719 m2 loss of eelgrass from dredging. Please confirm the preferred design option for the MOF? Please provide rationale for selection of preferred option and assessment of alternatives, recognizing the Concrete Caission MOF option would require loss of 59,639m2 of habitat and greater loss of eelgrass in comparison to the Pile and Deck MOF option. Please confirm with DFO if all of the areas of habitat permanently altered; and habitat lost identified in Table 4.9-13 for the MOF Concrete Caisson Option and Pile and Deck Option may require Fisheries Act Authorization and offsetting for residual serious harm to fish, including permananent alteration or loss of soft and hard substrate? It is unclear from the Conceptual Fish Habitat Offsetting Plan how much offsetting (m2) would be required; and if the conceptual offsetting measures proposed will have suffecient area to offset the Concrete Caisson MOF design option with 59,639m2 loss of habitat. Recognizing a final offsetting plan would be developed in permitting with DFO to meet Fisheries Act Authorization requirements, clarification of serious harm to fish and offsetting requirements and the feasbility/effectivness of proposed offsetting measures is required to inform EAO's analysis and characterization of residual effects.	The preferred design option for the MOF will be selected during FEED. The evaluation process will consider geotechnical information, engineering requirements (e.g. module size), in addition to environmental considerations. Aurora LNG recognizes that any serious harm to fish must be offset pursuant to the Fisheries Act. The Conceptual Fish Habitat Offsetting Plan (Appendix V) characterizes and quantifies the anticipated serious harm to fish and introduces Aurora LNG's early concepts for habitat offsetting. Aurora LNG is confident that sufficient, effective offsets can be implemented to counterbalance the anticipated serious harm to fish. While the conceptual offsets presented in Appendix V demonstrate this capacity, Aurora LNG anticipates that the type, location, and design of offsets will be further refined and adjusted to improve their ecological function, based on feedback received during consultation with DFO and Aboriginal Groups and finalization of the plan. Aurora LNG has arranged to meet with DFO in April 2017 to discuss the characterization and quantification of serious harm to fish (as presented in the Conceptual Fish Habitat Offsetting Plan), and the offsetting requirements for the Project.
819.1	round 1	EAO	4.5 Marine Water Quality	Water Quality	Pg. 4.5-62 - Marine Water Quality - Operations - "The deep outfall at Charles Point will discharge sanitary wastewater after passing through a treatment plant; it**may** also discharge cooling water from the power station and desalination plant effluent...". This statement makes it unclear if there may be more than one outfall location? and if the cooling water and desalination water will have separate treatment plants and outfalls? Please confirm if the power station cooling water and desalination plant effluent will be discharged via the same outfall pipe used for discharge of sanitary wastewater at deep outfall at Charles Point (i.e. one outfall pipe and single point of discharge for all effuent)? Please provide additional information on the assessment of effects to marine water quality, associated with discharge of cooling water, process water and desalination effluent, including identification of potential contaminants of concern, and the effectiveness of mitigation measures (e.g. water treatment plant) proposed to meet BC and CCME water quality guidelines for the projection of aquatic life. P.g. 4.5-79 - Please confirm if the cooling water discharge at Charles Point outfall has been modelled to assess thermal discharge effects and the effectiveness of mitigation (i.e. using a diffuser at deep water outfall) to meet BC water quality guideline for alteration of water temperature in marine environments (i.e. maximum of a 1°C change from background and a maximum hourly rate change of 0.5°C) ? This information is required to support EAO's analyis and conclusions on residual effects.	Final wastewater management strategies, including outfall design, are not yet complete, and will be defined during Front End Engineering Design (FEED) and finalized during detailed design. Aurora LNG is proposing two locations where wastewater will be discharged to the marine environment: a deep outfall located off of Charles Point and a shallow marine outfall located between Fredrick Point and Miller Point. Potential contaminants of concern associated with waste discharges are listed as Measurable Parameters in Table 4.5-19 of Section 4.5.12. These parameters include temperature, organic contaminants, and salinity, which relate to cooling water, process water, and desalination effluent. Mitigation 4.5.8, Table 4.5-26, relates to waste discharges to the marine environment. Residual effects related to waste discharges are characterized under Waste Management Construction, Operations, Decommissioning section of the Characterization of Residual Effects to marine water quality. Modelling of cooling water dispersion has not been conducted. The need for such modeling will be determined based on the volume and rate of discharge, and the expected temperature of the cooling water after it is mixed in the common outfall system before discharge. This information will be obtained during Front End Engineering Design.Further details on project wastewater discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
820.1	round 1	EAO	6.5	Marine Use and Navigable Waters	The Application states that construction vessel traffic was not carried forward in the assessment of marine use because this traffic will only be present during the relatively short construction phase, and that these vessels will be smaller, more maneuverable and relatively common vessel types already present in the Project area. However, there is no description of the anticipated construction marine traffic in the Application to support this rationale. Please provide an estimate of the anticipated increase in, and routes of, marine traffic (vessel movements, % increase [if possible]) during Project construction, including that related to transporting dredge materials.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
821.1	round 1	EAO	4.2	Air Quality	In consideration of the MoE Best Achievable Technology Policy (2015) (Mitigation 4.2.10), what emission controls (BATs) are in place for the main project components and activities that emit air contaminants? Did the air quality modelling include any of these BATs? Are there best achievable technologies that have not been incorporated into the current design and which could further reduce contaminants of concern? Please describe BAT options that Nexen is considering in its more detailed design and engineering and provide as detailed description as possible to demonstrate the extent to which such BATs are likely to reduce air emissions in addition to what is presented in the application.	Aurora LNG is aware of the British Columbia Ministry of Environment Best Achievable Technology Policy and is committed to minimizing emissions consistent with this policy. For the purpose of the EA, emissions from equipment were conservatively estimated assuming that all compressors are powered by individual gas turbines and that electrical power is provided by a dedicated gas turbine driven power plant. All gas turbines, heaters and thermal oxidizers are assumed to operate at maximum rated capacity throughout the entire year (i.e., worst case emissions). Emissions of NOx were estimated assuming all gas turbines are equipped with dry low NOX emission (DLE) combustors. Aurora LNG is continuing to explore opportunities to import electricity from BC Hydro and/or electrify parts of the project to reduce emissions. However, no additional detail is available at this time. Aurora LNG has not commenced detailed engineering and is unable to provide additional detail on which best available technologies it is likely to adopt, and the potential reduction in emissions for each technology.
822.1	round 1	EAO	4.2	Air Quality	Dodge Cove residents expressed concerns that a) even if standard modelling requirements were fulfilled in the assessment, the actual air emissions may not align with modelled predictions, and b) even with an Air Quality Management Plan and monitoring and adaptive management program in place, proponent responses to air emissions issues during project construction and operations may take substantial time to implement, potentially exposing residents to exposure-related health risks. In this context, please provide clear examples, including BATs, based on Nexen's understanding of other LNG facilities, of how Nexen might practically adapt/respond to unpredicted air emissions and related health issues during operations.	For the purpose of the EA, emissions from facility equipment were conservatively estimated by assuming that all compressors are powered by individual gas turbines and that electrical power is provided by a dedicated gas turbine driven power plant. In addition, all gas turbines, heaters and thermal oxidizers are assumed to operate at maximum rated capacity throughout the entire year (i.e., worst case emissions). The emission rates for each piece of equipment are estimated using conservative emission factors and performance guarantees from gas turbine manufactures. Aurora LNG has a high degree of confidence that the emission rates and air quality concentration predictions presented in the EA are conservative (biased to over predict potential effects on air quality and human health). Aurora LNG believes the best way to minimize potential for effects on air quality is to design and build the facility to minimize emissions. Aurora LNG will adopt best available technology consistent with the British Columbia Ministry of Environment Best Achievable Technology Policy. Aurora LNG is continuing to explore opportunities to import electricity from BC Hydro and/or electrify parts of the project to reduce emissions. However, no additional detail is available at this time. Aurora LNG has not commenced detailed engineering and is unable to provide additional detail on which best available technologies it is likely to adopt and the potential reduction in emissions associated with each technology.

823.1	round 1	EAO	4.2	Air Quality	In the development of the Application Information Requirements, the Ministry of Health indicated "chronic exposure to some VOCs can have adverse health effects at very low concentrations." The Ministry of Health requested a measure of specific VOCs be included in the Application. Nexen's response to Ministry of Health concerns regarding assessment of specific VOCs was that "VOC emissions will contribute little to the ambient VOC concentrations in the airshed; therefore, an assessment of speciated VOCs will not be conducted." On page 4.2-4 of the Application, it states "Air quality assessments completed for other liquefied natural gas (LNG) projects (e.g., LNG Canada 2014) have demonstrated that the contribution of VOC emissions from LNG facilities is insubstantial." The Application indicates predicted VOC emissions to be 66.3 t/y for Base Case, 137 t/y for Project-alone Case, 203 t/y for Application Case, and 662 t/y for CEA Case. Based on these numbers provided in the Application, and discussions with Nexen, provincial and federal government agencies, it is not clear to EAO whether/why the project's contribution of VOCs compared to existing levels is "insubstantial". EAO understands there are no AQ objectives in BC for VOC emissions. Health Canada has indicated that there are health-based guidelines for VOCs, and Alberta's ambient air quality guidelines include selected VOCs. As requested by the Ministry of Health during the pre-application stage, and given the proximity of the project to human receptors, please provide a description of evidence to support the conclusion that BTEX (benzene, toluene, ethylbenzene and xylene) and styrene emissions will not pose a risk to human health for sensitive receptors for the Aurora LNG project.	Refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
824.1	round 1	Dodge Cove	1.7	Proposed Project Overview	No other alternative site locations have been listed or analysed. Section 19(1)(g)CEAA2012 lists site as a requisite for this section. Considering the location chosen poses so many potentially negative effects, alternative site options should be explored, identified and documented in this section and reasons why proponent chose Delusion Bay need to be stated.Advantages and disadvantages could be weighed by the public and stakeholders and government to determine what/if there is a better choice of location.	During development of the Aurora LNG - Digby Island Application Information Requirements (AIR), Aurora LNG was also evaluating Grassy Point as an alternative Project site. Following that internal site evaluation, the Grassy Point site was withdrawn from further consideration. That Grassy Point site was not identified as an alternative that needed to be considered in theAurora LNG - Digby IslandAlternatives Analysis. As such, the Alternatives Analysis is consistent with the requirements of the AIR.
825.1	round 1	Dodge Cove	5.2.5	Economic Conditions	**re: proponent's comment ID#168"** no residual effects on subsistence economies". DCID objects to Nexen's conclusion. The proponent has incomplete studies which they have used to quantify the significant amount of salmon, cod, halibut , crab, and shrimp, kelp, clams, etc that local residents consume throughout the year. Also, the scientific community is aware that less than 50% of habitat offsetting for marine fish is successful so where is this calculated into residual effects? As well, Nexen's conclusions as to the effects of dredging on the local marine food chain for the duration of the project and beyond is still in question.	The Application does not conclude that there will be no effect on subsistence economies. Rather it is concluded in Section 5.2.7.1 that the Project is expected to have a low effect on resource-based primary economies or subsistence economies due to limited Project interaction and application of mitigation measures. Because there is limited information available on private subsistence gathering and consumption activities, the analysis was undertaken using commercial fishing data as a proxy. The limitation of this approach is acknowledged within Section 5.2.8 (Prediction Confidence). As required under the Fisheries Act, Aurora LNG is committed to offsetting any residual serious harm to fish that results from the Project (see the Conceptual Fish Habitat Offsetting Plan, Appendix V). DFO's guidance documents provide clear direction on how to design habitat offsetting plans to ensure that the productivity of commercial, recreational, and Aboriginal (CRA) fisheries is maintained. A final habitat offsetting plan (and any resulting authorization) includes two key elements that reduce the risk of offsetting failure. First, a final fish habitat offsetting plan would include success criteria specific to the objectives of the offsetting that must be met in order for the offsets to be considered "successful". Success criteria would be stated in any Authorization provided by DFO. Should these success criteria not be met, alternative or additional offsetting will be required. Second, the final plan would also include a detailed monitoring plan, and any such monitoring requirements would also be included in the DFO Authorization. The objectives of this monitoring plan would be to collect the information required to satisfy DFO that success criteria have (or haven't) been met. Through the specification of success criteria and monitoring requirements, Aurora LNG will counterbalance any residual serious harm to fish that results from the Project. Effects of dredging activities on marine fish and fish habitats are characterized in Sections 4.9.5.2 (Assessment of Change in Habitat), 4.9.5.3 (Assessment of Change in Behaviour), 4.9.5.4 (Assessment of Change in Mortality Risk), and 4.9.5.5 (Assessment of Change in Health). Aurora LNG looks forward to receiving further information from Dodge Cove on any specific concerns pertaining to this assessment.
826.1	round 1	Dodge Cove	6.7	Summary of Potential Social Effects	re: previous comment ID#246. Proponent still fails, in our view, to adequately qualify their " not resilient to change" characterization of the community. What kind of change do they mean? Nexen has not included an overall cumulative residual effects assessment of their project on the community of Dodge Cove. We consider the negative impacts that this project would have on our community to far outway the positive. This is not progress in our minds but instead a degradation of the landscape, damaging to our health and a giant step backwards in developing truly sustainable communities and combatting climate change.	Qualified conclusions stating that residents of Dodge Cove are more likely to realize higher magnitude effects (i.e., changes) than overall LAA populations (as provided in Sections 6.2, 6.4 and 6.6) is representative of the higher level of sensitivity, or lower level of resiliency (characterized as not resilient in Section 6.4 and 6.6), of Dodge Cove with respect to Project-related effects. Cumulative effect assessments conducted in Section 6.2 (Visual Quality), 6.3 (Infrastructure and Services), 6.4 (Land and Resource Use), 6.5 (Community Health), and 6.6 (Community Health) all consider effects on residents of Dodge Cove. Noted in mitigation 6.4.1, Aurora LNG will continue to engage with affected private property owners within the LAA and endeavour to discuss implications of the proposed Project and develop methods to reduce effects. Through this mitigation measure, residual adverse effects are expected to be effectively managed such that continued use and enjoyment and/or ownership of private properties within Dodge Cove will continue at near current levels. Where this is deemed not possible, some form of compensation (i.e., not necessarily monetary) could be one of numerous potential mechanisms that Aurora LNG could use to address the concerns of private property owners. Aurora LNG will continue to consult with all of the residents of Dodge Cove to understand and attempt to address their concerns.
827.1	round 1	Dodge Cove	4.4.5.1	Acoustic Environment	On page 4.4.-22 they use a reference to a vibration code from Toronto. e.g. Thresholds for ground vibration effect related to these activities are based on the City of Toronto Construction Vibration Limit (ByLaw No. 514-2008). I would contest the idea that you can substitute a code developed for a city into a context like Dodge Cove. They are very different places.	For non-blast related construction activities, there is no available construction vibration guidance for remote locations or smaller population centers. As published codes and guidance for vibration levels in BC and Canada are limited, the assessment has taken into consideration the most applicable examples, where it makes sense to do so. The City of Toronto Construction Vibration Limit (ByLaw No. 514-2008) is therefore referenced for comparison.
828.1	round 1	Dodge Cove	4.4.5	Acoustic Environment	pg. 4.4-15 they state: " Directive 038 requires that a noise survey be conducted with a minimum Type 2 integrating sound level meter under weather conditions acceptable for noise measurements. Precipitation and high wind speed exceeding 15 km/hr are not considered acceptable weather conditions. Type 1 integrating sound level meters meeting the ANSI S1.43-1997 standard were." In other words, high wind speeds are not to be considered for noise modeling. But we know that the location of Dodge Cove vis a vis anticipated Nexen activities will make noise especially acute under certain high wind conditions. wind variables should be included in the monitoring. in the real world, you have to factor those things in. Therefore, this should be remodelled, regardless of what Directive 038 says (the directive is probably the product of an entirely different landscape anyways).	The ambient sound levels are higher during high wind and rainy weather conditions. For baseline monitoring, data collected during high wind events (exceeding 15 km/hr) and rain events is not included in the determination of baseline sound level. The noise model considered wind speed up to 5 m/s (or 18 km/hr) when the receptor is downwind of the noise source. The wind speed was based on ISO 9613-2 standard, which assumes 1 to 5 m/s downwind condition from the source to the receptor in the sound propagation calculation.
829.1	round 1	Dodge Cove	4.4.5	Acoustic Environment	On page 4.4.-37 a metric called "Percent Highly Annoyed." is discussed.The proponent writes: " For the construction and operations phases, change in %HA associated with the Project is compared to the threshold of 6.5% advised by Health Canada." I would again, contest the applicability of this metric. For instance, just a bit later in the text they conclude that " The results conclude that change in %HA at all receptors is below the limit of 6.5% during the construction phase." But how? It is clear that far more people have already been annoyed in Dodge Cove by area disturbances (e.g. helicopters). Going on the opposition to the project as stated, you could say that 98% of the people are already highly annoyed by the helicopters! It seems safe to me to reject the methodology that goes into the claim that only a few people have been/will be annoyed by the noise.	Comment noted. The assessment results are based on the method prescribed in the Health Canada Noise Guidance.
830.1	round 1	Dodge Cove	8.2	Human Health	re: revised rationale, Sec 8.2.4. The proponent still claims that " there would be no project activities that could influence surface water quality." In Table 8.2-8 there are no checkmarks in any of the boxes re: construction yet the access road (an industrial highway) to the camp would run through Dodge Cove watershed. There could be dust, diversions and potential for chemical spills. The nitrogen levels in the water from the air emissions have been calculated to exceed thresholds. Presently, Dodge Cove can depend on this watersource for drinking (boiling will presently get rid of bacteria if present) and other essential household activities. Pollutants from acidification and eutrophication cannot be boiled out of the water and would render the community's water supply unusable. Dodge Cove objects to the proponent's response regarding this valued component.	Please refer to the "Dodge Cove Water Supply and Watershed" technical memo which will be filed with the BC EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
831.1	round 1	Dodge Cove	9	Accidents or Malfunctions	9-2: "Nexen will give prompt and appropriate notification of an emergency". By what means will notification be distributed? How will Nexen contact new members of Dodge Cove? If it is a bell/signal system, how will that be trained? How often will the Dodge Cove residents be trained in Emergency Conditions? Wages given for time off work when in training? How will Dodge Cove be evacuated?	Aurora LNG will develop its Emergency Response Plan (ERP) in consultation with regulatory agencies, Aboriginal Groups and key stakeholders. The ERP will be developed during Project design and will include procedures and methods for notification depending on the event. Once the ERP is finalized, Aurora LNG will inform local regulatory agencies, relevant stakeholders, and the local community on the plans and response procedures in order to develop local awareness. When the ERP is activated, Aurora LNG will notify the relevant regulatory agencies, local authorities, potentially affected local Aboriginal Groups and communities, and stakeholders as defined within the ERP. Aurora LNG will review its ERP annually (potentially more often depending on regulatory requirements) to determine if portions need to be updated.
832.1	round 1	Dodge Cove	9.2	Accidents or Malfunctions	Why is off-shore not included in Risk Assessment?Who pays for clean up, how much, for how long is each clean up, and what is the standard of clean up for EACH scenario? Re: 9-3 Methods used for the assessment of accidents. What would be the cost of each type of clean up? Who pays for cleanup, how much, for how long is each clean up, and what is the standard of clean up for EACH scenario?	Offshore incidents are considered within Section 9.9 of the Application, under vessel grounding or collision. Specifically, vessel collisions could potentially occur in offshore areas along the proposed shipping route. In Canada, liability for emergency response and clean up costs follows the "polluter pays" principle. As such, the responsible party for a release, or their insurers, are required to cover costs resulting from emergency response and clean up. The responsible party would be Aurora LNG for a release at the marine terminal (or a release during cargo transfer where the loss is a release at the marine terminal). For a release that originates from LNG carriers, the vessel operator would be the responsible party. The costs for cleanup and duration of cleanup will depend on factors such as type of product released, volume released, location of release, type of receiving environment, environmental conditions at the time of the release, and response time by designated emergency responders. Given the number of variables that interact to influence both costs and duration, it is not practicable to provide an estimate of either by each cleanup method or incident scenario. The assessment of cleanup efforts required would follow the emergency response phase (i.e., the phase involving source control, containment, recovery or natural attenuation) after a release incident.
833.1	round 1	Dodge Cove	9.2.2	Accidents or Malfunctions	9.2.2 Risk Matrix: "Tolerable" To whom? Where are the regulations to outline what is tolerable?	Aurora LNG acknowledges that risk acceptability is subjective. Based upon existing levels of risk (e.g., risks associated with the presence of Prince Rupert Airport on Digby Island), risks that are characterized as low are expected to be generally tolerable without mitigation or in the absence of an ability to mitigate those risks.
834.1	round 1	Dodge Cove	9.4	Accidents or Malfunctions	pg.9-9 "LNG will use the ICS (Incident Command System)to develop and deploy emergency response plans." When? Will there be a publication of emergency plans for public to read and comment on? Will it include how to evacuate DC residents and pets if necessary? Re: "training and emergency response exercises are conducted on a continual basis." How continual? How will that information be conveyed to DC residents?	The Incident Command System (ICS) structure, used for the scalable organization of emergency response, will inform the content of the Emergency Response Plan (ERP), to be developed prior to operations. The ERP will be developed during Project design and will include procedures and methods for notification depending on the event. Aurora LNG will develop its ERP in consultation with regulatory agencies, Aboriginal Groups and key stakeholders. Aurora LNG intends to seek comment on the proposed safety and emergency response strategies. Once the ERP is finalized, Aurora LNG will inform local regulatory agencies, relevant stakeholders, and the local communities on the plans and response procedures in order to develop local awareness. Any requirements for training and emergency response exercises, including potential evacuation procedures, will be described in the ERP and Aurora LNG will undertake response exercises throughout Project operations. When the ERP is activated, Aurora LNG will notify the relevant regulatory agencies, local authorities, potentially affected local Aboriginal Groups and communities, and stakeholders as defined within the ERP. Aurora LNG will plan to review its ERP annually (potentially more often depending on regulatory requirements) to determine if portions need to be updated.
835.1	round 1	Dodge Cove	9.5.3	Accidents or Malfunctions	"This may result in a large-scale response that is likely within the operational capacity of local and regional emergency response services…" Says who? Where is the research or report from Prince Rupert emergency resources and who will pay for the use of? How much will be paid, how far will the money go in clean up? How much is cleaned to be considered cleaned up? Where is the risk assessment for an aircraft colliding with major fire hazard and creating a bomb? DC community is less than 1km away from site. How big is the blast area? How big of a fire could occur?	Following an aircraft impact near an airport it is reasonable to assume that emergency response services associated with the airport and response resources that may be acquired from across northern British Columbia would provide operational capacity for a suitably large-scale response. Events that may occur subsequent to an aircraft impacting the LNG facility may include on-shore fires or explosions, which are assessed in Section 9.6 and Section 9.8 of the Application. In Canada, the liability for emergency response rests with the responsible party. Unless operating an aircraft involved in animpact, Aurora LNG would not be the responsible party for an incident involving a aircraft impacting the LNG facility.
836.1	round 1	Dodge Cove	9.6	Accidents or Malfunctions	9.6.2 Preventative and response measures: "Project will be designed to present, control and suppress LNG natural gas and hydrocarbons release." What about propane tanks, gas cylinders, gas tanks for construction vehicles and maintenance vehicles? In 9-13, "heat transfer, wind speed and other physical parameters."? Which includes what? "Integral heated vaporizers will be located at least 30 m from a property line". Who is going to maintain these? Will it be visible to DC property owners?	The Emergency Response Plan described in Section 14.16 of the Application will describe the procedures to be implemented to respond to various types of incidents and emergencies, including those which may occur during the construction phase of the Project. The plan will also address potential incidents with "propane tanks, gas cylinders, gas tanks for construction vehicles and maintenance vehicles" as necessary. The integral heated vaporizers are an integral component of the proposed facility and will be located near the LNG trains as defined by the final design. The units will be operated and maintained by Aurora LNG as part of the broader facility operations and maintenance program.

837.1	round 1	Dodge Cove	9.6.3	Accidents or Malfunctions	Air quality would be effected in Dodge Cove. pg.9-13 "The effect of GHGs would be a single event of short-term duration and the contribution of GHGs to the atmosphere is irreversible." and then, 9-14 "GHG inventories are predicted to be not significant." It cannot be both ways. A fire or explosion could cause irreversible damage. Vegetation and Wetland resources "the effects to vegetation and wetland resource would be a single event and… reversible." In how many years? Not in my lifetime or my child's. Not good enough. Wildlife, fish, birds would all be affected significantly. 9-15 "freshwater fish and fish habitat could be effected short-term up to 1 month and reversible." How did this get calculated? "Because marine birds are able to tolerate changes relative to existing conditions" Where is the research on that? Most marine birds have a very fragile habitat. Potential Residual Effects on Economic Environment- "would require an investigation." Where is the investigation results?	Please note that GHGs are not considered to be criteria air contaminants and are not within the scope of the Air Quality assessment. Rather, GHG emissions are assessed separately based on other regulatory guidance that are not linked with human health. For GHG assessment methods, please reference Section 4.3 of the Application. Although the release of GHGs from a fire or explosion would be short-term, the effects are irreversible and not significant. This is not a contradiction, while a fire or explosion will result in GHG emissions, the potential effects related to GHGs are assessed as not significant based on the significance threshold described in section 4.3.2.8. Section 9.6.3 states that herbaceous and shrub-dominated vegetation communities could feasibly recover within 10 years, while mature or old forest communities would require 100-250 years to develop a structural stage and species composition comparable to existing conditions. Though the duration of this recovery is long-term (residual effect extends beyond the life of the Project), the communities could technically recover through the process of ecological resilience and therefore effects are considered reversible. As stated in section 9.6.3 of the Application, an onshore fire or explosion would affect the Freshwater Fish and Fish Habitat. The duration was calculated by defining the potential effects (loss of timber for shading, increases in water temperature, reduction of litterfall and nutrient input, reduced bank stability), and determining the course of action required to repair, replace, or rebuild the habitat, and that associated with the expected reuse of the habitat by the resident fish. The current statement in the section of "one month" is an error, and should be stated as " up to one year, or more" (see paragraph below for further detail). An errata document is being compiled that will capture these corrections and it will be filed with the BC EAO. Additional details into the expected time frame for watercourse recovery from an onshore fire or explosion are highly dependent upon the size and duration of the disturbance. Bank stability repairs could take place shortly after disturbance, and could restabilize any banks within a month; also fire is unlikely to remove root systems, which help to maintain bank stability. Water temperatures, post-incident would not stay elevated, but would stabilize, depending upon how much cover was lost. Temporary artificial cover could be installed until vegetation could be replaced or replanted. Fish use of the watercourse would resume, if no water quality or instream habitat changes occurred; however, depending upon the severity of the disturbance, it could take up to one year or more for full recovery of the system and reuse of the system by fish. The extent of effects from a fire or explosion to wildlife resources is described in Section 9.6.3 and includes potential loss or alteration of habitat and mortality of individuals with limited ability to disperse from the affected area. The magnitude and significance of such an effect to wildlife resources depends on the size and location of the event, in combination with the seasonal presence, abundance, and distribution of potentially affected species. Species with secure populations or high dispersal ability are expected to have a low potential for residual effects. Potential for residual effects are higher for species that cannot mobilize away from the accident site, or for species that specialize on habitats that are potentially affected by a fire or explosion. While most terrestrial wildlife species are expected to recover within a 10 year period (accounting for recovery of habitat and immigration or reproduction replacing lost individuals), effects may be longer for species dependent on mature or old coniferous forest (see earlier paragraph for a discussion of effects to these communities).
838.1	round 1	Dodge Cove	9.6.3	Accidents or Malfunctions	Pg. 9-16: Infrastructure and Services -"If requested by AuroraLNG, municipal and regional emergency response services may offer assistance, however, their services would be required to travel to Digby island by ferry." There are only 2 ferries to the island, one services the airport and the other is a passenger ferry to Dodge cove. No roads on Digby. Where would this ferry be? If there was a major emergency, crews and Dodge Cove would need to be evacuated. "Prompt and appropriate notification." HOW, to whom and how would Dodge Cove respond? "a single event...Short-term in duration and reversible within one month"? Or? Wouldn't that depend on the magnitude of the fire? and costs? A big enough disaster would force Dodge Cove community out of their homes. How would they be compensated for lost wages, destroyed homes, destroyed property, personal items, livelihoods (Boat houses)? Marine Use and Navigable Water- "after mitigation and response measures…" What are they? Where is the information? pg.9-17 Community Health-"For fire and explosions scenarios that do not involve loss of human life, the magnitude of residual effects are low." If Dodge Cove community homes, pump house, water dam, dock, fishing boats are destroyed, the effect will be significant. Human Health- "People may avoid exposure to smoke and particulates by remaining indoors and closing their windows." Any PPE will need to be provided. Loss of wages to Dodge Cove residents for work missed? Older people have lung issues, how would they be assisted? This is not good.	Although it is unlikely that an accidental fire at the facility site would extend beyond the boundaries of the cleared Project Development Area (PDA), the theoretical event used for this assessment is the accidental ignition of a flammable substance (e.g., natural gas, propane canister, engine fuel, or natural fuel sources such as cleared vegetation or associated slash piles) with the potential to spread beyond the cleared PDA but remaining on Digby Island. The likelihood of such an event is expected to be low, and is assessed in the context of the existing environmental conditions (i.e., wet north west coast of BC that experiences substantial rainfall, over an area known to be heavy wet muskeg, with a ver low occurrence of wildfires as summarized in Section 10.2.7) and proposed site preparation measures (i.e., the PDA will be largely cleared of vegetation including a cleared fire-break around all facilities) and Project preventative measures (onsite emergency response measures and equipment). Since Digby Island is outside of the municipal boundaries of Prince Rupert, a scenario involving an on-shore fire or explosion is expected to have limited interactions with local and regional infrastructure and services. The Project will rely on its Emergency Response Plan (ERP) and the onsite emergency response equipment to deploy suitable response measures to address the event. The ERP will include provisions for informing local residents of the situation and providing services to address the situation with support from regional jurisdictions. Details specific to evacuation of areas affected by a potential event will be developed during detailed Project design and in consultation with regulators, and applicable stakeholders.
839.1	round 1	Dodge Cove	9.7.1	Accidents or Malfunctions	p. 9-20, "fluctuations in normal operations". Please describe. Was this considered in emissions calculations?	A full facility emergency shutdown (i.e. four LNG trains) with subsequent flaring was modeled as a worst case scenario and summarized in the Air Quality Technical Data Report (See Section 5.2.3 of the Air Quality TDR in Appendix A of the Application). A fluctuation in normal operations means an interruption in the operation of a single train. The air emissions from a single train shutdown would be less than the worst case scenario modeled.
840.1	round 1	Dodge Cove	9.8.1	Accidents or Malfunctions	"*Flare emissions are not* ***expected*** *to contribute significantly to overall concentrations of SO2 within the air quality study area as flaring will* ***likely*** *only be used for excess purge gases* " (p.27 of Data Report). Words like "expect" and "likely" almost certainly indicates that there will be flaring events that will contribute to increased and most likely peak SO2 concentrations. Health assessment needs an analysis of the effects including the anticipated frequency of those episodes with concurrent NO2 emissions associated with flaring known to be detrimental to health, yet ignored by proponent.	Flare emissions are not exclusive to accident or malfunction scenarios, and intermittent flaring will occur during the operations phase of the Project (for example, undertaking maintenance on a part of the facility may require some amount of flaring). Air quality modelling for the operations phase of the Project (Air Quality Technical Data Report, Appendix A of the Application) is based on emissions from both the LNG facility and occasional flaring. The modeling results indicate that concentrations of sulphur dioxide and nitrogen dioxide will be lower than the BC ambient air quality objectives for both short term (1-hour) and long-term (annual) inhalation exposures over Dodge Cove during the operations phase. In the event of an accident or malfunction scenario requiring the shutdown of one or more LNG trains and subsequent flaring, there would be a reduction of facility emissions due to the reduced load on various gas turbine units (i.e., turbine drivers for LNG train(s), and turbine generators for power) and other associated equipment (i.e., thermal oxidizers, fired heaters) that would all run to lower operating levels while some portion of the facility gas stream is flared. The operation of the flare during an accident or malfunction scenario would need to produce more emissions than the combined facility emissions during the operations phase in the same period of time to result in a higher degree of health risk. This would not be the case, since full facility emissions during the operations phase would be greater than an accident or malfunction scenario requiring flaring.
841.1	round 1	Dodge Cove	8.1	Human Health	We understand that the final engineering plans are not yet in place and so the question becomes "how can a legitimate health impact assessment be made without a clear understanding of what is going to take place?" We are led to believe that an environmental approval certificate granted now could preempt a full assessment as many as 25 years later. Surely the proponents should be expected to apply when they can put their cards on the table and within a time frame that allows current knowledge and science to be the yardsticks.	The Application is based on conceptual design, including a conceptual layout of the Project components at full build-out. This level of design detail is appropriate and sufficient for completion of the environmental assessment and consistent with level of detail provided in many other applications at this stage in the approvals process. Although the site layout and equipment list will be further refined as the Project progresses through engineering design, the conceptual design utilized in the environmental assessment has incorporated a conservative approach that generally reflects potential "worst case" environmental interactions (e.g. footprints, effluents and emissions).
842.1	round 1	Dodge Cove	8.1	Human Health	We contend that the description of health effects is understated and therefore, unacceptable. Local residents are to accept changes in the levels of contaminants in the air they breath (increased particulate matter, doubling or tripling of NO2 or SO2) and in the food but should be assured this will not lead to significant harm to their health in the absence of credible and complete information on the very serious effects those contaminants may produce.	The assessment of human health applies multiple levels of conservatism so that potential health risks are overestimated. For example, the modeled air quality conditions are based on "worst-case" emission conditions where the project is operating with all four trains at full capacity at all times. The climate and weather conditions applied within the air quality models are based on historical conditions that would result in the worst-case air quality. The BC ambient air quality objectives are also conservative in their development. The objectives are based on the protection of health-sensitive people with existing respiratory illnesses (e.g., asthma or chronic obstructive pulmonary disease). This means that meeting or exceeding the ambient air quality objectives is protective of health-sensitive people so also protective of healthy individuals Emissions of particulate matter associated with the Project are predicted to be very low. Particulate matter emissions from the Project are expected to constitute <1 to 3% of the existing levels of particulate matter in the Dodge Cove area. There are also no chemicals currently in the marine foods that would constitute contamination, and the Project will not introduce contaminants, such as dioxins and furans, into the marine environment that could affect seafood. The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to address chemicals of concern in marine foods and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
843.1	round 1	Dodge Cove	8.1	Human Health	from HH Data Report: An example of the potential additive (or even multiplicative) effects on human health is the combined effects of increased noise (particularly at night) from the Project at all stages, with increased SO2, NOx and PM2.5 in the air and, for the small and quiet community of Dodge Cove, the presence of 2 large work camps in their backyard.How are those significant disturbances to people's lifestyles, from changes in the air they breath to the food they eat--, included in the model? How do all these disturbances affect the "threshold" for tolerance?How are the thresholds affected by the combination of exposures at once, like breathing increased PM2.5 with increased SO2?There is no validity in using a threshold for one component in isolation of the others.	The assessment of effects to human health (Human Health Technical Data Report; Appendix R of the Application) applied methods consistent with a risk assessment framework. This framework prescribes that potential effects to the biophysical environment that could affect human health are assessed independently if the effects are different in their mechanism. There is no scientifically defensible way to evaluate potential effects from some combination of changes in air quality, marine foods, noise levels, personal levels of nuisance and annoyance, or changes to lifestyle.
844.1	round 1	Dodge Cove	8.1	Human Health	A model lacks the larger context of human health and the changes that may occur in response to the complex stressors associated with the proposal. It should not be used as proof that there will be no significant human health effects as its conclusions indicate. It is merely a theoretical, simplistic and controversial tool which experience may not bear out	The assessment of human health applies multiple levels of conservatism so that potential health risks are overestimated. For example, the modeled air quality conditions are based on "worst-case" emission conditions where the project is operating four trains at full capacity at all times. The climate and weather conditions applied in the Air Quality model are based on historical conditions that would result in the worst-case air quality. The cumulative effects assessment also includes emissions from all proposed future projects, although it is understood that not all of these other future projects will be built. For example, the Prince Rupert LNG project and Canpotex project in the Port Edward area have been discontinued from consideration, but the emissions from these projects were included in the air quality model. The BC ambient air quality objectives are also conservative in their development. The objectives are based on the protection of health-sensitive people with existing respiratory illnesses (e.g., asthma or chronic obstructive pulmonary disease). This means that meeting or exceeding the ambient air quality objectives is protective of health-sensitive people and would also be protective of healthy individuals The methods used to assess health risk are based on the risk assessment framework provided by Health Canada. The United States Environmental Protection Agency, World Health Organization apply similar tools to assess health risk.
845.1	round 1	Dodge Cove	8.1	Human Health	• There is confusion in the definition of what long term effects are; on p.13 " long term residual effects continue for more than 5 yrs up to the life of the Project (25 yrs)." However in the rest of the Report, long term only means 1 yr. There is no evaluation of how risk changes after 1 yr of operation. In toxicology, it is well known that harmful effects may take decades to express themselves; exposure of asbestos is one example with cancer showing 40 yrs after exposure. This approach of 1 yr for the risk assessment, would not find any risk to a 1 yr exposure of asbestos which would be very real even at low levels.	In reference to exposure to criteria air contaminants, long-term is defined as 1-year, which is consistent with the applicable BC ambient air quality objectives. In reference to the potential Project effects, long-term is defined as 5+ years, which is consistent with the characterization of potential effects that is applied across the human health assessment. These exposure periods and characterizations of potential effects apply to non-cancerous substances. Carcinogenic substances are evaluated differently, and are not evaluated over a 1-year period. As noted in the Human Health Technical Data Report (Appendix R of the Application, Section 6.4), carcinogenic effects are defined by the Incremental Lifetime Cancer Risk (ILCR) which is defined as the incremental increase in cancer risk among a population assuming a given exposure to a carcinogenic substance over a lifetime (i.e., 85 years).
846.1	round 1	Dodge Cove	6.6.1	Community Health	1) Page 6.6-14 The World Health Organization (WHO) broadly defines health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Health includes consideration of social, economic, cultural and psychological well-being." Yet the following determinants of health are completely omitted from the Community Health section of the Application: Education and literacy, Employment and working conditions, Physical environments, Healthy Child Development, Health Services, Gender, and Culture. These omissions and the fact that very little baseline is available, fails to capture the entire impact that the CNOOC-Nexen Aurora LNG project will have on the residents of Dodge Cove, Crippen Cove, and Prince Rupert. It also demonstrates a scewed perspective,;regarding gender for example...the fact of a predominantly male workforce	The WHO definition of health is understood and cited in Section 6.6.3.1 of the Application (subsection 'Definition of Health'). Regarding the selection of social determinant of health, Section 6.6 does not completely omit education and literacy, employment and working conditions, physical environments, health child development, gender or culture. Rather, these SDOH are identified and screened in Section 6.6.3.1 of the Application (subsection 'Determinants of Health'). Screening considers coverage of topics in supporting sections of the Application as well as consideration of project mechanisms that can result in a direct, measurable effect. As noted in Table 6.6-6: Education and literacy - The SDOH education and literacy is not included in Section 6.6 of the Application. Health indicators related to existing levels of educational attainment are provided in Section 5.2 (Economic Conditions) and referenced where applicable in the assessment of residual and cumulative effects in Section 6.6. Employment and working conditions - The SDOH employment and working conditions is not included in Section 6.6 of the Application. Information on current conditions and changes in employment are provided in Section 5.2 (Economic Conditions) of the Application. Health indicators associated with employment are referenced in the assessment of select SDOH, where applicable. Physical environments - The SDOH physical environments is not included in Section 6.6 of the Application; however, health indicators associated with country food consumption are captured in Section 6.6 under the measurable parameters 'volume of foods harvested' and 'harvested foods consumption'. Related sections of the Application that consider measurable parameters associated with physical environments include: Air Quality (see Section 4.2), Greenhouse Gases (see Section 4.3), Acoustic Environment (see Section 4.4), Water Quality (see Section 4.5), Visual Quality (see Section 6.2, Human Health (see Section 8.2) and Accidents or Malfunctions (see Section 9.0). Healthy child development - The SDOH healthy child development is not included in Section 6.6 of the Application. The assessment of the SDOH social support networks considers changes in household dynamics while health indicators related to employment and income and demand on childcare are assessed in sections 5.2 (Economic Conditions) and 6.3 (Infrastructure and Services) of the Application. Health services - The SDOH health services is not included in Section 6.6 of the Application. Health indicators related to health services are provided in Section 6.3 (Infrastructure and Services) and referenced where applicable in Section 6.6. Gender - The SDOH gender is not included in Section 6.6 of the Application. Aurora LNG is an equal opportunity employer and will not discriminate against workers based on their gender. Assessment of gender is outside the scope of environmental assessment. Culture - The SDOH culture is not included in Section 6.6 of the Application. While the Project could affect other SDOH that in-turn affect measures of culture, it is not possible to isolate Project effects on culture from larger societal influences. Assessment of culture is outside the scope of environmental assessment.

847.1	round 1	Dodge Cove	6.6.1	Community Health	6.6.5.3 The statements that air quality, noise, and freshwater acidification and eutrophication will NOT effect Dodge Cove and Crippen Cove residents does not present accurate long-term health effects of the thousands of tons of pollutants that would be released into our air, water, and soil annually.	The assessment of human health (Section 8.2 of the Application) and the Human Health Technical Data Report (Appendix R of the Application) indicates that the potential health risk to residents of Dodge Cove and more distant communities is not significant. Specifically: 1. Air Quality - The concentrations of sulphur dioxide, nitrogen dioxide and particulate matter at Dodge Cove and other populated areas in the study area do not exceed any of the short-term (1-hour) or long-term (annual) BC ambient air quality objectives. This comparison is highly conservative, applying the "worst case" air modelling conditions with regulatory objectives that are conservatively derived (i.e., protective of health-sensitive people). 2. Noise - The levels of noise were below the threshold for "percent highly annoyed" based on Health Canada/Oil and Gas Commission's guidelines for assessing noise-related annoyance levels. 3. Drinking water - There has been a misinterpretation regarding water quality effects. Drinking water pH has no implications on health, which is also stated in the Canadian Drinking Water Guidelines (http://www.hc-sc.gc.ca/ewh-semt/consult/_2015/ph/draft-ebauche-eng.php#a8). The assessment of acidification is based on protection of aquatic life because aquatic life may be sensitive to changes in pH. The assessment of eutrophication is based on nitrogen loading only. Refer to the "Additional Information about Eutrophication and Acidification in Freshwater" technical memo which will be filed with the BC EAO. This technical memo states that nitrogen loading in freshwater systems is only one factor among many factors required for eutrophication to actually occur. In local freshwater systems, including local freshwater lakes and streams, phosphate is the limiting nutrient. The nitrogen is already relatively abundant in the water systems and the addition of nutrient nitrogen does not lead to eutrophication without adding phosphate. Algae and plant growth would be limited because there is insufficient phosphate in the water, and the Project does not add phosphates into the environment. Furthermore, nitrate in the Dodge Cove drinking water is expected to increase to approximately 0.7 mg/L, which is well below the Canadian Drinking Water Guideline of 45 mg/L. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting.
848.1	round 1	Dodge Cove	1.2	Proposed Project Overview	re: desalination plant, 1-28 (Figure 1-2). "Based on preliminary design, it is estimated that there will be approximately 500 m3/d of cooling tower blowdown. The temperature of wastewater discharged through the deep water marine outfall will be determined during FEED, and will meet regulatory guidelines, outside of a small mixing zone, for the protection of aquatic life." How can an accurate assessment be done without finalized design? Temperature of wastewater could affect marine environment and is a concern. What is the small mixing area and why is it not part of the analyses?	Cooling tower blowdown water will meet CCME and BC regulatory water quality guidelines, outside of the mixing zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The exact size of the mixing zone is not yet known but under the Fisheries Act, waste discharges within and outside the mixing zone, cannot be acutely toxic to fish. The effect of cooling tower blowdown waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on waste discharges and associated regulations are provided in the "Discharges to the Marine Environment" technicalmemo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
849.1	round 1	Dodge Cove	1.2	Proposed Project Overview	How many FEED design components of this project have yet to be finalized? How does this affect our ability to accurately assess its impacts?	Front end engineering design (FEED) is a stage of design conducted after completion of conceptual design. The Application is based on conceptual design, including a conceptual layout of the Project components at full build-out. This level of design detail is appropriate and sufficient for completion of the environmental assessment and consistent with level of detail provided in many other applications at this stage in the approvals process. Although the site layout and equipment list will be further refined as the Project progresses through FEED, the conceptual design utilized in the environmental assessment has incorporated a conservative approach that generally reflects potential "worst case" environmental interactions (e.g. footprints, effluents and emissions).
850.1	round 1	Dodge Cove	9	Accidents or Malfunctions	Nowhere in this section nor anywhere else in this application has Nexen described the worst-case, compound safety risks of locating Aurora LNG within close proximity to community or to the entrance of a busy port, What would be the worst-case scenario for this location? Why does the Society of International Gas Terminal and Tanker Operators Standards best practices for LNG industry state,"Port designers should be directed to construct jetties handling hazardous cargoes in remote areas where other ships do not pose a collision risk and where any gas escape cannot effect local populations?	The worst-case scenarios have been assessed in the Accidents or Malfunctions section (Section 9.0 of the Application) and these consider safety risks through the assessment of potential effects on human health. This includes the assessment of potential on-shore fires or explosions or vessel-to-vessel collision (Section 9.9). During detailed design, Aurora LNG will also perform additional fire and explosion analysis and produce a quantitative risk analysis for the facility. As stated in Section 9.8.2. of the Application, 'the Project will comply with Canadian Standards Association Z276-15 code, as per the LNG Facility Regulation' which includes 'prescribed setbacks from occupied areas to protect the public based on modelled heat transfer from a Project-induced fire and dispersion of an unignited vapor cloud.' Control zones, described in Section 6.5.2.5 and shown in Figure 6.5-2 of the Application, are 500 m diameter zones surrounding the berths of the marine terminal that other marine traffic will be required to avoid during loading. This avoidance zone is a precaution for safety and security.
851.1	round 1	Dodge Cove	1.2, 4.4 and 8.12	Human Health	fig.1-2, distance of power plant to nearest residents property in Dodge Cove is not calculated. For the effects of acoustics on human health this needs to be addressed. The level of constant noise 24hr/day all year long, to the nearest residents and to the wildlife and to quality of life should be addressed. A comparative description of the noise levels of the generators required to power anliqwuification facility of this magnitude needs to be put into perspective in order for the public and stakeholders to fully comprehend the effects of the project.	The power plant (measured from the closest exhaust stack) is approximately 1 km from the nearest receptor in Dodge Cove, based on the conceptual site layout. Noise emissions from the power plant are included in the assessment. Table 5-9 in the Acoustic Environment Technical Data Report (Appendix C of the Application) summarizes the sound power levels from different areas of the LNG facility during the full build out phase.
852.1	round 1	Dodge Cove	9 and 13	Accidents or Malfunctions	At no time in all our consultations with Nexen have they ever explained the worst-case scenario, or even what exactly are the real dangers and how they would respond in the case of an emergency. Saying they will put an emergency plan in place if they get the permit is not sufficient. The public and stakeholders need to understand the real and potential dangers of having an LNG export facility of this magnitude so close to where they live and work and travel. Why has Nexen avoided/evaded answering this question question?	Safety is a top priority for Aurora LNG and safety of our neighbours is paramount. LNG is non-explosive, non-toxic, non-corrosive and does not mix with water or soil. LNG facilities have multiple layers of protection, including:highly trained certified operatorsspill containment systemsfire protection systemsmultiple gas, flame, smoke and low- and high-temperature detectors and alarmsautomatic and manual shut-down systemsvideo surveillance systems If LNG escapes into the atmosphere, it simply converts back to natural gas and mixes safely with the airAurora LNG will undertake a facility risk assessment to evaluate potential accidents and malfunctions and the appropriate safeguards and control and response methods during FEED. An Emergency Response Plan will be developed and approved as required by the Liquefied Natural Gas Facility Regulations under the OGC (Section 8) prior to receiving the permit to allow operation of the facility.
853.1	round 1	Dodge Cove	1.2 and 9	Accidents or Malfunctions	In the United States, their Code of Federal Regulations requires a class 1 impounding system whenever an LNG storage tank is located within 20,000 feet from the nearest runway serving large aircraft. The Prince Rupert Airport on Digby Island's runway is less than 15,000 feet from Aurora LNG's storage tanks. This seems like an important calculation of distance yet is not indicated on the map of project description, fig.1-2. Has Nexen considered this and what, if any regulations are in place in Canada regarding this aspect of siting and safety? Is there anything comparable to a class 1 impounding system in Canada?	Aurora LNG is in on-going discussions with Transport Canada and NAV Canada on project design criteria in relation to proximity to the Prince Rupert Airport.Final Project design standards will be developed in collaboration with Transport Canada and NAV Canada and in consideration of Canadian aviation regulations to reduce the potential effects from proposed Project activities on the Prince Rupert Airport Preliminary measures are summarized in Section 9.5.2 of the Application and will be developed further in consultation with Transport Canada and NAV Canada .
854.1	round 1	Dodge Cove	18	Aboriginal Consultation	While acknowledging in all sections the uncertainty of predicting effects, we are surprised by the repeated conclusions that they will be insignificant and that unproven mitigation measures will eliminate any “significant” risk. We do not believe that the assessment of the likely and potential effects of the proposed project on human health is adequate or that the biases in favour of the proponent in the process itself are sufficiently taken into account.	With regards to human health related to air quality, the air quality model predictions are based on a "worst-case" emissions scenario as determined by provincial and federal regulators who approved the detailed air quality modelling plan. The model results under this scenario show concentrations of criteria air contaminants below the BC ambient air quality objectives in populated areas over Dodge Cove, Prince Rupert, Port Edward, and more distal populated areas. The BC ambient air quality objectives are conservative in nature, developed for the protection of health-sensitive individuals with pre-existing respiratory or other health conditions. The comparison of modeled results to the BC ambient air quality objectives is a "screening" step to indicate whether a more detailed assessment may be needed. If the worst case air quality modelling results are below conservatively developed air quality objectives over populated areas, there would be no predicted significant effects to health-sensitive individuals with pre-existing respiratory conditions. Healthy individuals would experience a lesser degree of health risk.
855.1	round 1	Dodge Cove	3.2.1	Assessment Methods	Very vague on how Traditional Ecological Knowledge was collected. There are a number of accepted methods for doing this so if the report is going to claim this was done specific methods should be given so this can be assessed.	Sections 4.11.2.2 and 4.11.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how the information was incorporated into the assessment. Table 4.11-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for marine birds. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds, including identified species and areas of importance for harvesting by Aboriginal Groups; these details are also described in Appendix Q. Species identified therein are discussed throughout Sections 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure.
856.1	round 1	Dodge Cove	4.1	Marine Wildlife - Marine Birds	4.1-Field Studies; Shoreline stations were only surveyed twice, a single round in July and a single round in November . It would have been more thorough to repeat surveys several times during each time period. Surveys should also have been done in the spring and early fall to capture shoreline and near-shore use during spring and fall migration, late winter and breeding seasons.	Shoreline stationary counts were undertaken during seasonal periods where construction and operation activities for the Project may interact with sensitive breeding and migration periods for various marine bird species. Results from shoreline stationary counts are presented alongside multi-season vessel-based surveys for the Project to provide additional information on species presence, abundance, richness and distribution within the LAA during overwintering, spring and fall migration, and breeding periods (section 4.2.2 of Appendix Q). To facilitate discussion on findings and characterization of residual Project effects, Appendix Q also puts these results in context with data collected within the RAA to better represent patterns in marine bird use of the area.
857.1	round 1	Dodge Cove	4.1.3	Marine Wildlife - Marine Birds	4.1.3 Findings + 4.2.3.Findings: reporting the listed species as a percentage of the total abundance is misleading: for rare species even a few individuals can be important, and the impression of their occurrence is diluted by the abundance of other non-listed species (pg. 9 – 4.1.3 and pg. 10 – 4.2.3)	Reporting species (including species of management concern) as the percentage of total observations does not preclude the assessment from identifying that the presence of those species may be important if the mechanism for interaction with the Project may be stronger than for other, more commonly occurring species. For example, Section 4.11.5.3 of the Application discusses effects of lighting infrastructure on marine birds, noting from literature that effects to species within the family Alcidae and the order Procellariiformes are more susceptible to light-induced mortality than other species. Although petrels and shearwaters are uncommon within the LAA (see Appendices 1 , 2, and 3 of Appendix Q), the Application still identifies this mechanism for interaction with the Project.
858.1	round 1	Dodge Cove	5.1.2	Wildlife Resources (Terrestrial)	5.1.2 Methods (Field Studies): Mammal transect surveys were only done twice (July 2014 and May 2015). This does not seem very thorough as it covers only a very brief snapshot of time and does not give any insight into occupancy and habitat use in seasons other than late spring and summer. Additionally, few details are given about the timing of surveys or conditions during them. Methods are cited, but more details should be given to allow these surveys to be evaluated.	Wildlife transect surveys were completed to provide a record of occurrence and patterns in habitat use within the PDA and LAA. The methods in Section 5.1.2 of Appendix J provide a detailed account of how surveys were completed and are consistent with the level of detail provided in the associated Resource Inventory Stantards Committee standards. The timing of wildlife transect surveys is consistent with periods recommended by applicable Resource Inventory Standards Committee standards and provides replicated survey effort across similar habitat types in the PDA and LAA. The surveys are useful for verifying the presence of wildlife resources, and are considered in combination with the habitat and seasonal life history requirements of individual species.
859.1	round 1	Dodge Cove	5.1.2	Wildlife Resources (Terrestrial)	Little Brown Myotis was listed as a species of concern and was detected during surveys for other species (i.e., marbled murrelet) so it is surprising that no specific surveys targeting bats were completed. This could have been done acoustically using bat detectors or by capturing them using harp nets (Hourigan et al. 2008). In addition to giving a much better picture of occupancy by little brown bats it would also potentially have identified other species of bats that use the area.	Incidental information on bat occurrence was collected concurrently during marbled murrelet dawn audiovisual surveys in July 2015. Recordings of bat vocalizations indicated the potential presence of little brown myotis within the PDA and LAA. To improve understanding of bat species presence and occurrence, and to support the development of the Bat Management Plan, additional information on seasonal activity patterns for bats has been prepared as a technical memo entitled "Aurora LNG Project Bat Monitoring Program" and it will be filed with the BC EAO.
860.1	round 1	Dodge Cove	4.7	Wildlife Resources (Terrestrial)	5.4.There was only one survey of raptor nests (July 3, 2014) to determine locations and status (active/inactive), follow up surveys in subsequent years should have been completed.	Raptor nests were recorded through aerial surveys completed in 2014 and as incidental records during all field programs (2014-2016). Aurora LNG continues to monitor activity at known nest locations (e.g., Section 5.4.3 of the Wildlife Resources [Terrestrial] Technical Data Report). To prevent disturbance or destruction of nests, as per mitigation measure 4.7.17, vegetation clearing will occur outside of restricted activity periods for raptors. In accordance with mitigation measure 4.7.18, if clearing or disturbance is required during raptor breeding periods, surveys will be conducted in advance to identify potential occurence of additional nests, and to monitor the status of activity at known nest locations. No-clearing and no-disturbance setbacks will be established around active nests. The Wildlife Management Plan will include mitigation measures that would be put in practice should a new eagle (or other protected raptor) nest be identified.
861.1	round 1	Dodge Cove	5.6	Wildlife Resources (Terrestrial)	5.6 No attempt appears to have been made to survey for Sandhill Crane, which while not technically marsh birds, are likely to use the muskeg habitat on Digby Island for breeding. Coastal boreal bogs are the known to be the preferred breeding habitat for this species within the Pacific Flyway (Birds of North America Account: Tacha et al. 2014). Stopover habitat, which is known to be important for this species (Tacha et al. 2014) should also have been considered.	Field surveys for wildlife resources employed several survey methods appropriate for detecting sandhill cranes, including observation stations (i.e., breeding bird surveys), aerial surveys, and ground transects. Each survey approach provided coverage of coastal bog habitat within the LAA to document presence and abundance of bog-associated species, including sandhill crane. The timing of surveys also coincided with the period in which sandhill cranes are potentially present within the LAA (i.e., during migration or breeding). Although no sandhill cranes were observed during formal surveys, auditory and visual records of sandhill crane are reported in Appendix J (see Section 5.8.3). The assessment also discusses habitats that are important for supporting sandhill crane (see Section 4.1.3 of Appendix J).
862.1	round 1	Dodge Cove	Appendix Q	Marine Wildlife - Marine Birds	None of the studies in the Terrestrial or Marine Technical reports seem to address use by migratory birds. In a 3 -day period in October, 2017; sightings of over 3000 migrating birds; very large flocks of geese, swans and cranes were sighted flying over Digby Island by local residents.	The assessment for Wildlife Resources (Terrestrial) and Marine Birds acknowledges that habitats within the PDA and LAA provide seasonal life requisites for migratory birds, including foraging, breeding, roosting, and staging during migration. Seasonal timing of supporting field studies were scheduled to coincide with important patterns in seasonal use in accordance with Resource Inventory Standards Committee Standards. For marine birds, this included seasonal shore and vessel-based surveys during migratory periods to capture migration and staging events for species of geese, swan, ducks, and shorebirds. Results of those studies are described in Appendix J and Q and included records of notable concentrations of red-necked phalarope and surf scoter that were observed during July 2014 and April 2015 surveys, respectively (e.g., Section 4.3 and Table 4-1 of Appendix Q). Results of field studies are put into context with regional datasets (e.g., BC Breeding Bird Atlas, BC Coastal Waterbird Surveys) that also capture seasonal abundances of migratory birds. Collectively, these data are used to help characterize Project effects to migratory birds in Sections 4.7 and 4.11, recognizing that migratory periods can increase the potential for interaction with Project activities and infrastructure.
863.1	round 1	Dodge Cove	4.7	Wildlife Resources (Terrestrial)	No description of assessment of the Great Blue Heron colony. Given that this is a species that is provincially listed (blue listed – Species of Special Concern), and is known to be sensitive to disturbance (Birds of North America Account: Butler et al. 2011), this seems like an omission. An additional consideration, not addressed in the report, is that any chemical pollutants released into the marine environment are likely to bio-accumulate in piscivorous species such as blue herons. Bio-accumulation of chemicals is a documented problem for this species (Butler et al. - 2011).	A description of the great blue heron rookery is provided in Appendix J (see Sections 4.1.3 and 5.8.3). Aurora LNG acknowledges that herons are known to be sensitive to distubance. Sections 4.7.5.2, 4.7.5.3 and 4.7.5.4 of the Application describe how Project effects could result in direct or indirect effects to breeding, staging, and foraging herons. Please refer to Section 9 (Accidents and Malfunctions) for a discussion of the potential effects of a hazardous material release (both on-shore and in the marine environment) on wildlife resources.

864.1	round 1	Dodge Cove	8.2.2	Human Health	The misnamed Health Assessment (which is only really a risk assessment) should include a psycho-social assessment (stress, family breakdowns, violence, addictions, alcohol and drug abuse, depression, and suicide) and a a socio-economic impact assessment which a report from Northern Health[1] considers an essential tool to identify and evaluate the effects of projects on the health and well-being of people in their communities https://northernhealth.ca/Portals/0/Your_Health/Programs/Public Health/OfficeHealthResourceDevelopment/SummaryofCommunityToolkits.pdf.	The scope of the Human Health valued component was determined in collaboration with provincial and federal regulatory agencies including the Ministry of Health. The assessment of human health looks at the health effects due to changes in the biophysical environment, and does not assess other aspects of health (e.g., health infrastructure and services, socioeconomic determinants of health, drug addictions, alcohol and drug abuse), as directed by provincial regulators. Section 6.6 of the Application provides an assessment of potential effects on Community Health. The assessment of Community Health includes assessment of potential change in community health and wellness. Measurable parameters for this potential effect are: occurrence-rates for medical and mental health incidents; and income and social status, social support networks, social environments, personal health practices and coping skills.
865.1	round 1	Dodge Cove	8.2.2	Human Health	The human health risk assessment of the Aurora LNG plant proposal on Digby Island falls short of what its titles implies: 1) The human health effects are not adequately described. 2)The methodology is questionable taking into consideration toxic exposures on only 2 population groups with 3 parameters relying on a threshold theory which is largely discredited. 3) There is no demonstration that this approach has been validated for similar projects. 3) There are serious inaccuracies like omitting the carcinogenicity of dioxins. 4) The conclusions are not supported by the available evidence. 4) The authors' qualifications are questionable. 5) The effects of accidents and malfunctions on human health are very serious and largely downplayed. 6) The ethics of the project with respect to its impact on the health of affected people has not been considered.	The Human Health assessment applies the methods consistent with a risk assessment framework as outlined by provincial and federal regulators. These methods have been applied in other LNG projects in the province including Pacific Northwest LNG, LNG Canada (Kitimat), Woodfibre LNG (Squamish) and in mining projects across Canada. In regards to the carcinogenicity of dioxins, some international jurisdictions consider a subset of dioxins and furans to be carcinogenic, while others do not. In Canada, dioxins and furans are not recognized as carcinogenic and Health Canada does not provide oral or inhalation cancer slope factors for dioxins and furans. http://publications.gc.ca/collections/collection_2012/sc-hc/H128-1-11-638-eng.pdf (page 12)
866.1	round 1	Dodge Cove	13.5.1	Public Consultation	Carols description of our community and quality of life: See attached letter on quality of life	Aurora LNG acknowledges the Dodge Cove Community Impact Statement prepared by N. Carol Brown.
867.1	round 1	Dodge Cove	13.5.1.3	Public Consultation	re: Discussion of Potential Project Interactions with Quality of Life: Reviewing this part of the section describes much of what our community values.But Then again, the "Mitigation Measures"; another attempt by the proponent to re- assure us and the public by such comments as, " Aurora LNG will develop and implement a community grievance process for addressing issues related to the Project (mitigation 6.4-8) and \or "Workers will be prohibited from storing firearms or fishing gear onsite (includes camps) (mitigation 6.4-5)..." In other words, Nexen is going to act as fish and game wardens to prevent their workers from fishing and hunting in areas that Dodge Cove residents will no longer have access to anyways and which will most likely be devoid of any fish or game once construction and operation of one of the largest LNG export terminals in North America is built on this small island and over the community's OCP?	Aurora LNG recognizes that effects on all quality of life attributes may be difficult to accurately measure and evaluate; or to mitigate to the satisfaction of Dodge Cove residents. Aurora LNG will continue to consult with Dodge Cove residents to identify and help reduce Project-related adverse effects on their quality of life and sense of community.
868.1	round 1	Dodge Cove	13.5.1.4	Public Consultation	" Aurora LNG believes that the implementation of mitigation measures identified in Section 13.5.1.4, as well as those described in Sections 4.2, 4.4, 4.5, and 6.2 will help reduce potential adverse effects on the quality of life of Dodge Cove and other area residents. However, given the relatively small size of thecommunity and its proximity to the PDA, changes to the perceived quality of life and community identity for Dodge Cove residents (access to preferred recreational sites and natural areas, visual quality at key viewpoints, and sense of privacy) is still anticipated." The author has failed to include human health which is the very foundation of quality of life and community health. By fragmenting the analysis, the Aurora assessment looks far more complete than it actually is and it systematically underestimates the project's s likely effects on this long established community and its culture.	Potential effects of the Project are addressed in two sections of the Application. Section 6.6 (Community Health) addresses potential changes to community health and wellness, and potential changes in harvested foods. Section 8 (Human Health) addresses potential changes to human health from changes in air quality, surface water quality, and harvested food quality.
869.1	round 1	Dodge Cove	6.5.5.2	Community Health	6.6.5.2. If construction is to occur continuously, 7 days a week, with two shift rotations each day (for approx. 5 years) where is the studies on how this will affect community health? What is the exact number of "10% of construction management workforce to be hired from the LAA"? Is that 1 person, 10 people, what? If 95% of the 5000 man work camp is to be fly-in/fly-out workers, that will be 4750 men flown in and out on a two-rotational basis. How will the increase in flight traffic over Digby Island effect the communities there, how many planes is that, what would the increase in noise and air emissions from those planes alone be, or the traffic noise and air emissions from transporting those workers by bus to the workcamp directly behind Dodge Cove homes?	The assessment of community health in Section 6.6.5.3 of the Application used a conservative approach for the assessment of potential effects on community health, assuming the use of peak workforce estimates. The use of peak workforce estimates overstates the potential for adverse effects on health status and social determinants of health. As detailed in Section 6.6.5.3, adverse effects are predicted to be moderate in magnitude within the LAA, except for Dodge Cove and Crippen Cove residents and vulnerable populations, who are predicted to experience high magnitude effects. Residual effects during Project operations will be low to moderate in magnitude (low for the overall population and moderate for vulnerable populations and residents of Dodge Cove and Crippen Cove) because of the relatively small operational workforce (less than 5% of the LAA's population), and because the majority of operational workers are expected to be either existing residents or in-migrants, who will eventually be integrated into the LAA communities. Estimate - Construction Workforce Composition During Phase 1 of construction, the workforce is predicted to peak at approximately 5,000 workers. Of the 5,000 workers, 85% (4,250) will be skilled trades and labourers and 15% (750) will be persons' in management/supervisory roles. Approximately 5% of the peak construction workforce is expected to be hired locally (250 workers). Approximately 10% of the peak construction workforce in management/supervisory roles is expected to be hired from within the LAA (75 workers). Hiring estimates regarding the number of LAA management/supervisory personnel accounts for both current residents as well and in-migrating workers. Increased Air Traffic Described in Section 6.3.5.4 of the Application, based on a peak workforce estimate of 5,000 persons during Phase 1 construction, annual enplaning/deplaning associated with the Project is estimated at 260,000 passengers per year (MMM Group 2016). This estimate is based on 625 enplaning and 625 deplaning passengers per week (total of 1,250 passengers per four-day week (Tuesday to Friday), 52 weeks per year from 2021 to 2025 (MMM Group 2016). Aurora LNG is currently considering numerous air lift strategies with varying aircraft fleet mixtures to meet Project demand and therefore the number of aircraft movements are not finalized. However, conservative estimates currently show up to 16 additional aircraft movements per day, four planes inbound and outbound twice a day (MMM Group 2016). To mitigate effects, a Transportation Plan (mitigation 6.3.12; also see Section 14.12.3 of the Application) will be developed and implemented to describe transportation plans for air traffic in the Prince Rupert area and on Digby Island. The Transportation Plan will describe transportation policies and mitigation measures that will be implemented, monitored, and measured for effectiveness. Based on finalized workforce air lift strategies developed by Aurora LNG, infrastructure improvements to the Prince Rupert Airport may be required. To reduce Project effects on the Prince Rupert Airport and as part of the Social Management Plan (mitigation 6.3.1; also see Section 14.12), Aurora LNG will engage in on-going communication and collaboration with the airport authority to understand changes in demand and develop strategies to decrease the magnitude of effect the Project has on capital and operational costs of the airport. Air Quality and Acoustic Environment Effects on Air Quality (see Section 4.2) and Acoustic Environment (see Section 4.4) from land and marine-based construction (including mobile equipment such as pick-up trucks). Sections 4.2 and 4.4 do not include consideration of aircraft related effects on air quality or acoustic environment.
870.1	round 1	Dodge Cove	13.5.1	Public Consultation	can kids play safely on the beach at Marine Bay? (Casey Cove) Is it safe for my child to play in our yard, or walk down to visit her friends on her own, or ride her bike through the community? Do we know all our neighbours and stop and talk to them on the road/trail/dock, do people help each other and watch out for each other. Can we enjoy being outdoors, in our yard or on trails, can we hear natural sounds, the animals and birds, can we interact with the animals and birds, can we harvest our traditional foods where we traditionally harvest? Do we need to have stressful meetings all the time to deal with outside pressures and influences, or can we just enjoy interacting with our neighbours in a stress-free manner including social and spiritual gatherings.Are long-term residents moving away? Can we sleep at night? Stress/noise levels. Do we have privacy? Quiet? Access to traditional lands/waters that we have always had. Can small businesses operate as they have always done	Aurora LNG acknowledges your concerns and would like to reassure you that safety is our top priority. The predicted noise impacts range from negligible at Crippen Cove to moderate at Dodge Cove, and all meet Health Canada's noise guidance for "percent highly annoyed" as well as BC OGC's guideline on low frequency noise concerns. Based on the results of the assessment, the project is not anticipated to change or disrupt present land use capability to a point where activities cannot continue at or near current levels. Aurora LNG plans to work with community organizations to identify the appropriate enhancement and development of recreational areas on Digby Island, such as trails and picnic areas, to address removal and/or degradation of recreational areas potentially caused by the project. Our studies predict a number of beneficial effects on community health and wellness as a result of the project. This includes increased family income, which can lead to improved health status and practices, coping skills and social support networks. Aurora LNG is committed to being a vibrant member of the community and we strive to have a positive impact in the communities where we work.
871.1	round 1	Dodge Cove	6.6.5, 6.3 and 4.2.5	Community Health	6.6.5.2. If construction is to occur continuously, 7 days a week, with two shift rotations each day (for approx. 5 years) where is the studies on how this will affect community health? What is the exact number of "10% of construction management workforce to be hired from the LAA"? Is that 1 person, 10 people? If 95% of the 5000man work camp is to be fly-in/fly-out workers, that will be 4750 men flown in and out on a two-rotational basis. How will the increase in flight traffic over Digby Island effect the communities there, the airport and probable expansion required? how many planes is that, what would the increase in noise and air emissions from those planes alone be, or the traffic noise and air emissions from transporting those workers by bus to the workcamp directly behind Dodge Cove homes?	Please see the responses to comment 526.
872.1	round 1	Dodge Cove	6.6.6	Community Health	Summary Page 6.6-110 "The Project's contribution to a cumulative change in harvested foods will be low in magnitude and primarily occur within the LAA" "due to the relatively small size of affected harvesting areas relative to that available within the RAA, effects occur within a socio-economic context that is resilient to change" Saying that the changes will be mostly in the LAA, and comparing the size to the entire RAA is not an appropriate measurement.	Assessment Boundaries For the assessment of change in harvested foods, as noted in Table 6.6-3 of the Application:The LAA reflects the spatial extent to which Project-related physical works and activities could affect the availability of harvested foods. The LAA for the assessment of change harvested foods considers the use of areas overlapped by the LAA for Land and Resource Use (see Section 6.4) and Marine Use and Navigable Waters (see Section 6.5) by persons within LAA communities.RAA captures an area that establishes context for the determination of significance of Project specific effects as well as encompasses the spatial extent where cumulative effects are most likely to occur. The RAA for the assessment of change harvested foods considers the use of areas overlapped by the RAA for Land and Resource Use (see Section 6.4) and Marine Use and Navigable Waters (see Section 6.5) by persons' within LAA and RAA communities. With respect to socio-economic context, resiliency is determined at the LAA level for Project-related effects and at the RAA level for cumulative effects. Project residual effects (i.e., those occurring within the LAA) are not characterized in the context of socio-economic resiliency of the RAA. For clarification, resiliency characterizations at the LAA and RAA for change in harvested foods are summarized below. Project Residual Effects (within the LAA) - Change in Harvested Foods From Section 6.6.5.4 of the Application, Project residual adverse effects on terrestrial, freshwater and marine harvesting will extend to the LAA. However, the greatest magnitude effects are expected to occur within areas overlapped by the PDA. Effects occurring within the LAA do so within a resilient socio-economic context because alternative areas of hunting, trapping, fishing and gathering exist within the LAA. As noted in Section 6.6.5.4, despite the potential availability of alternative harvesting locations within the LAA, it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields). Cumulative Residual Effects (within the RAA) – Change in Harvested Foods From Section 6.6.6.4 of the Application, adverse cumulative effects on harvested foods (considering residual effects from the Project and other projects and physical activities identified as having an interaction in Table 6.6-23) will extend through the RAA. Because of the large size of the RAA where cumulative effects on change in harvested foods will occur and because of the availability and abundance of terrestrial and marine country food species available for harvesting within the RAA, cumulative effects occur within a socio-economic context that is resilient to change. As noted above, despite the potential availability of alternative harvesting locations within the RAA, it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields).
873.1	round 1	MOE	Project Description 1.2.5.1	Air Quality	Will the Hydrocarbon liquids system have any emissions to atmosphere or will it be a closed system? This should include vents and fugitive sources such as tank roofs or shipping.	Facility equipment associated with natural gas liquids (NGL) will be a closed system. Boil off gas will be recovered during storage and loading processes and re-injected into the fuel and feed gas systems. Piping, vessels, pumps and tanks will be designed to minimize potential for fugitive hydrocarbons by using best practices such as the Best Management Practice Report published by the Canadian Association of Petroleum Producers Management for Fugitive Emissions at Upstream Oil and Gas Facilities (January 2007). The design strategy to minimize fugitive emissions for each valve, seal, pump, and tank in hydrocarbon service will be determined during detailed design. In addition, Aurora LNG will implement a Directed Inspection & Maintenance (DI&M) Program to routinely inspect and repair leaking components (Table 4.3-12, Mitigation No. 4.3.5).

874.1	round 1	MOE	1.2.5.1.	Proposed Project Overview	Could the Proponent provide a facility wide mass balance for the Natural Gas usage? Please see the Aurora LNG Memo MoE_Emission Inventory for more detailed comments.	A detailed facility wide hydrocarbon balance will not be available until completion of front end engineering design (FEED). However, the natural gas consumption rate for each emission source is detailed in the emission tables for each emission source in Section 4 (Appendix 2 of the Air Quality - TDR: Appendix A of the Application). The gas consumption for each of the Project emission sources is summarized as follows: 1. 16 compressor gas turbine drivers with each gas turbine burning 14,817 sm3/h of boil off gas. 2. 6 gas turbine generators with each gas turbine burning 11,653 sm3/h of pipeline specification natural gas. 3. 2 camp power generators with each gas turbine burning 3,851 sm3/h of pipeline specification natural gas. 4. 4 heaters with each heater burning 12,628 sm3/h of boil off gas. 5. 4 thermal oxidizers with each oxidizer burning 3,112 sm3/h of boil off gas in addition to the acid gas. 6. 3 flare stacks that each burn 349 sm3/h of pipeline specification natural gas for purge and pilot gas purposes. The total fuel gas usage for the Project emission sources is 378,700 sm3/h of which 79% is boil off gas and 21% is pipeline specification natural gas. In total, approximately 9.1 million cubic metres of gas per day is consumed in Project combustion equipment.
875.1	round 1	MOE	1.2.5.1	Proposed Project Overview	Could the Proponent provide a facility wide mass balance for Sulphur (S) throughout the plant? The AQ TDR assumed a maximum S of 9 mg/m3 in the inlet gas, is this the Maximum S specification? What would a normal or average S inlet concentration be, including some indication of variability of S over the life of the facility? Please see the Aurora LNG Memo MoE_Emission Inventory for more detailed comments.	A detailed facility wide sulphur mass balance will not be available until completion of front end engineering design (FEED). All of the inlet sulphur to the facility is discharged to the atmosphere via primarily the four thermal oxidizer stacks with a much smaller quantity emitted by combustion sources that burn pipeline specification natural gas. There are no sulphur emissions from combustion sources that burn boil off gas and there is no sulphur in the produced LNG. For the purpose of the EA, the sulphur mass balance consists of: Sulphur Input to the Facility (tonnes/year) = (104,000,000 sm3/d) * (9 mg S/sm3) * (1 g/1000 mg) * (1 kg/1000 g) * (1 tonne/1000 kg) * (365 days/year) = 342 tonne S / year. Sulphur Outputs to the atmosphere are summarized in Table 11 (Air Quality - TDR: Appendix A of the Application) and consist of 692 tonne SO2/year. Expressed on an elemental sulphur basis, this is equal to 346 tonne S / year discharged to the atmosphere. The slight difference between sulphur inlet and sulphur discharged to atmosphere is associated with rounding errors.
876.1	round 1	MOE	1.2.5.1	Proposed Project Overview	Operation Power - if a wet cooling tower is being considered then the proponent must provide an estimate of PM emissions.	For the purpose of the EA, it was conservatively assumed that the Project will include a combined cycle Power Plant to generate electricity. A combined cycle Power Plant uses both gas turbines and steam turbines to generate electricity to improve efficiency. As a result of the steam turbine cycle, it is necessary to reject heat to condense steam into water. A wet cooling tower is considered as one of the design options for rejecting heat from the Power Plant along with air cooling. At this stage of the Project, the overall design basis of the Power Plant itself has not yet been determined. For instance, Aurora LNG is continuing to explore options to import electricity from BC Hydro. It is not possible to estimate particulate emissions from a wet cooling tower at this time. To estimate particulate emissions, detailed estimates of the cooling water circulating rate, drift rate and cooling water quality (concentration of dissolved minerals in cooling water) are required. This information will not be available until completion of front end engineering and design. If a wet cooling tower is included as part of the Power Plant design, the wet cooling tower will use high efficiency drift eliminators to minimize water droplet emissions and minimize the potential for particulate emissions.
877.1	round 1	MOE	Air Quality Screening 4.2.2.4	Air Quality	The Proponent should be aware that Federal Government is reviewing the SO2 and NO2 AAQOs and that by the time this project gets to the permitting stage new AAQOs may be proclaimed, the Statutory Decision Maker will take those new AAQOs into account in his/her decision.	Aurora LNG is aware of the recent changes to provincial and federal air quality objectives and standards and the potential for future changes to the standards and objectives. Specifically, Aurora LNG is aware of the recent change to the British Columbia ambient air quality objectives for SO2 and NO2 and is aware of recently finalized Canadian Ambient Air Quality Standards (CAAQS) for SO2 as well as the proposed CAAQS for NO2. Aurora LNG will design the Project consistent with the British Columbia MOE BAT policy to minimize emissions and potential for effects on ambient air quality.
878.1	round 1	MOE	4.2.3.2	Air Quality	Could the Proponent review at the WG meeting how the baseline monitoring and the baseline modelling results interact with the 4 assessment scenarios?	The EA presents air quality model predictions for a “Base Case” which represent maximum anticipated pollutant concentrations associated with existing/approved emission sources in the study area. The ambient air quality concentrations (i.e. measurements) that are presented and discussed and which we refer to as ‘baseline’ are based upon the best available air quality measurements considered representative of site conditions. The selection of the monitoring stations and period of data were discussed with and approved by the BC MOE as part of the final Model Plan. As ambient monitoring data is only available at select locations and for select time periods. The “baseline” data (i.e. the ambient air quality measurements) provides an incomplete picture of the Base Case. However, ambient monitoring and plume dispersion modelling are complementary techniques that can be combined to predict Base Case pollutant concentrations. The Base Case concentration predictions presented in the EA represent the sum of the maximum predicted pollutant concentrations generated by the CALPUFF model and the “baseline” (or ambient air quality measurements). The baseline ambient measurements are added to the model predictions to account for emission sources not modelled such as motor vehicles, space heating, biogenic emissions, and emission sources located outside the study area (i.e. long range transport). Consistent with the BC MOE Dispersion Model Guideline, the 98th percentile measured values were added to the model predictions.
879.1	round 1	MOE	4.2.5.2	Air Quality	Mitigation 4.2.1 - the AQ TDR assumed that construction engines would be Tier 3 and use UL S diesel. Will the Proponent commit to this?	The Sulphur in Diesel Fuel Regulations (SOR/2002-254) require the use of low sulphur diesel fuel (i.e. containing less than 15 mg S/L). Low sulphur diesel is the only commercially available source of diesel available and the use of low sulphur diesel is required by the Regulation. Aurora LNG will use low sulphur diesel. The Off-Road Compression-Ignition Engine Emission Regulations (SOR/2011-261, SOR/2005-32) establish emission limits for offroad diesel equipment that will be used during construction. Emission standards for off-road engines vary with model year and engine size. Prior to 1996, off-road engines were not regulated (referred to as Tier 0). The subsequent Tier 1, 2, 3 and 4 engine standards were phased in starting in 1996, 2001, 2006, and 2008, respectively (with some variations in the years depending on engine size). Aurora LNG has not yet started detailed construction planning, has not yet selected construction contractors, and has not determined the availability of Tier 3 compliant heavy duty construction equipment from local construction contractors. Aurora LNG can not commit to using all Tier 3 engines in the construction fleet. Based upon the anticipated construction period for the Project and the typical lifetime of heavy duty construction equipment, it is anticipated that the construction fleet would consist of primarily Tier 4 compliant construction vehicles (i.e. better than Tier 3) but may also contain some Tier 3 or Tier 2 compliant engines for select specialized equipment. The composition of the fleet will not be known until the construction contractor is selected. Aurora LNG will use construction vehicles that comply with the Regulations and will consider vehicle emissions as one of many criteria in its selection of construction contractors.
880.1	round 1	MOE	4.2.5.2	Air Quality	Mitigation 4.2.6 - will the Proponent commit to a ban on open burning of vegetative debris on the site?	Aurora LNG will commit to minimizing open burning to the maximum practical extent by following the Open Burning Smoke Control Regulation. Specifically, Aurora LNG will explore all possible options to reduce, reuse or recycle as much of the material as possible; burn only non-salvageable vegetative matter such as tree stumps, roots, shrubs, branches, etc.; burn only on the same site from which the material was gathered and not include material from offsite; do not burn prohibited materials, or substances that normally emit dense smoke or noxious odours; burn the material more than 100 metres from a neighbouring residence or business and more than 500 metres from a hospital, continuing care facility, or school that is in session; ensure that smoke from open burning does not pose a hazard at airports or highways by significantly reducing visibility. Aurora LNG will only undertake open burning when the venting index and forecast is good; will ensure satisfactory control and feeding of the fire; make sure adequate equipment and staff are available to ensure the regulatory limits are met; and follow any additional restrictions as outlined in the Regulation. Aurora LNG will also investigate options for burning during FEED (e.g., Air Curtain burners), and as part of the land clearing procurement process, with the intent to minimize any effects from open burning.
881.1	round 1	MOE	4.2.5.2	Air Quality	Mitigation 4.2.10 - .13 - Mitigation Mechanisms will be through the MoE/BC OGC permits and regulations and not via industry standards and project design.	Aurora LNG agrees that mitigation includes MOE and OGC permits and regulations. However, the use of industry best practices and adoption of best available technology during project design are also important aspects of Project mitigation and overall environmental effects management.
882.1	round 1	MOE	AQ TDR 5.1	Air Quality	Table 8 - could you expand the list to include all the “YES” items in Table 7 Existing Projects… Also, why is there no shipping emissions at the Ridley Is terminal? Separate the Marine point sources as well. Is there separate mainline Rail emissions?	It is not necessary to expand the table as the detailed emission estimates for the Existing Projects are provided in Appendix 2 (Air Quality - TDR: Appendix A of the Application). Emission rates for the Fairview Terminal, the PRG Terminal and the mainline rail are provided in Tables 2-1, 2-2 and 2-3, respectively (Appendix 2, Air Quality - TDR). For all of the existing marine vessel emissions, the emission data was extracted from the Environment Canada (EC) National Marine Emission Inventory Tool (MEIT) database. This includes the marine vessels that are both in transit and at berth at all of the existing terminals. It is not possible to attribute the individual vessels in the MEIT inventory to each specific facility.
883.1	round 1	MOE	5.1	Air Quality	At the WG meeting could the proponent review the marine emission inventory work (i.e. point and line source development and integration)? And describe how it is used in each modelling assessment.	The EAO hosted a meeting on April 19, 2017 with Aurora LNG and members of the Working Group to discuss topics on Air Quality. During this meeting time was taken to describe how the marine inventory database was translated into model ready inputs.
884.1	round 1	MOE	6.3.4.1.	Air Quality	At the WG meeting could the proponent review the objective and method in the Attribution analysis?	The EAO hosted a meeting on April 19, 2017 with Aurora LNG and members of the Working Group. During this meeting time was taken to discuss various topics identified by MoE and other members of the Working Group.
885.1	round 1	MOE	AQ TDR Appendix 2 4.1	Air Quality	Compressor Drivers: description says source of fuel will be Boil Off Gas (BOG). Most other facilities use inlet gas. Can the proponent verify this? Trent 60 has a 25ppm NOx value, do you feel this is best technology? 4 drivers / train – do all run at once or is some backup?	The compressor gas turbine drivers will be fueled with boil off gas. For the purpose of the EA, it was assumed that the 16 compressor gas turbine drivers are Trent 60 gas turbines. The exact make and model of turbine will not be finalized until detailed engineering. However, the Trent 60 gas turbine used in the EA will be representative of emissions expected from a variety of gas turbines of the same capacity. The turbines are equipped with dry low NOX emission (DLE) combustors. DLE technology represents best available technology for the gas turbine power generators.
886.1	round 1	MOE	4.2	Air Quality	Power Turbines – LM6000 PF has a 15ppm NOx value. Will all 6 run at once?	For the purpose of the EA, it was assumed that the 6 power generators are General Electric LM6000 PF gas turbines. The exact make and model of turbine will not be finalized until detailed engineering. However, the LM6000 PF gas turbine used in the EA will be representative of emissions expected from a variety of gas turbines of the same capacity. The turbines are equipped with dry low NOX emission (DLE) combustors. DLE technology represents best available technology for compression gas turbine drivers. Yes, it is assumed that all 6 turbines would operate simultaneously to meet peak electrical demand.
887.1	round 1	MOE	4.2	Air Quality	Camp power turbines – MARS 100 has a calculated NOx value of 35ppm, is this acceptable? Are these are permanent?	For the purpose of the EA, it was assumed that the 2 camp gas turbine generators are Mars 100 gas turbines. The exact make and model of turbine will not be finalized until detailed engineering. However, the Mars 100 gas turbine used in the EA will be representative of emissions expected from a variety of gas turbines of the same capacity. The turbines are equipped with dry low NOX emission (DLE) combustors. DLE technology represents best available technology for the gas turbine generators.
888.1	round 1	MOE	4.3	Air Quality	Heaters: fuel source is BOG? BOG for the heaters and compressor turbines, is that realistic? NOx value is 65ppm	The four heaters will be fueled with boil off gas. For the purpose of the EA, the estimates of NOX emissions were conservatively based on CCME (1998) National Emission Guidelines for Commercial/Industrial Boilers and Heaters with an exhaust emission limit of 40 g NOx /GJ of heat input on a high heat value basis (HHV). The exact make and model of heater will not be finalized until detailed engineering and manufacturer specific emission guarantees are not available. Aurora LNG notes that the heaters will need to meet Environment Canada’s Multi Sector Air Pollutants Regulations (MSAPR) which were recently adopted. The MSAPR will limit NOx emissions to 16 to 19 g/GJ heat input HHV (depending on if the final design of the heater will include air pre-heat). The MSAPR will require the use of low NOx burner technology and is representative of best available technology for gas fired heaters.
889.1	round 1	MOE	4.5	Air Quality	Flares – why is the HP flare composition 100% propane (Table 4-21)?	The flare composition is assumed to be 100% propane since the evaluated scenario consists of non-routine flaring of the propane refrigerant.

890.1	round 1	MOE	4.5.2	Air Quality	Ground Flares – If the proponent continues to consider the use of ground flares, the assessment of this source will have to be re-done. The BC Dispersion Modelling guidelines did not consider the use of ground flares in the general topic of flares, thus the guidance is not applicable. The proponent should contact the author to setup a meeting to discuss how to handle this source. The proponent should supply detailed diagrams of the ground flare equipment and how it operates.	The design basis of the flare systems for the Project have not yet been determined. Both elevated and ground flares are under consideration. The advantages of a ground flare are that a ground flare can obscure the flame from the surroundings and provide smokeless operation over a wide range of flare rates and gas composition when near populated or environmentally sensitive areas. It is also useful for areas with height limitations due to aircraft flight patternsand in limiting flaring noise. Ground flares are equipped with staged headers and multiple flare tips to ensure efficient smokeless combustion across a wide range of flare loads. One header is always open while the remaining headers are activated depending on flare load. This sequencing approach keeps the flare burners (tips) in an operating range that ensures proper mixing with air for complete and smokeless combustion. A ground flare system can include hundreds of individual flare tips. For the purpose of the EA, the ground flare system was modeled as a single point source using stack parameters calculated using the methods for calculating pseudo stack parameters from flare in the British Columbia Air Quality Dispersion Modelling Guideline. The pseudo stack calculation is based upon the assumption that 55% of the heat energy released is emitted in the form of radiation and that 45% of the energy remains within the exhaust products in the form of heat. The use of the 55% radiation heat loss assumption is noted to be a very conservative assumption. Other regulatory agencies in Canada such as the Alberta Energy Regulator recommend assuming 25% radiation loss which results in significantly more energy available for plume rise and dispersion. Modelling the flare as a single point source is also conservative as it concentrates the plume whereas an actual ground flare system disperses the emissions over a large array of flare tips resulting in enhanced mixing and initial horizontal dispersion. While the modelling approach does not account for aerodynamic downwash caused by ground flare radiation fencing, the flare modelling was intentionally simplistic as there are many design uncertainties at this stage of the project. Despite the simplifications, the flare modelling does provide an indication of potential effects on air quality. Maximum predicted pollutant concentrations are more than 20 times lower than the air quality standards. Application of more complex modelling techniques will not change the conclusion in the EA that maximum predicted pollutant concentrations associated with emergency flaring will be well below the air quality standards. Aurora LNG agrees that if a ground-flare is selected for the project, more complex modelling techniques will be required. These could include using time-varying buoyant area source modelling techniques or applying computation fluid dynamics to ensure the ground flare system is designed to minimize effects on air quality and ensure worker safety from the thermal plume during adverse wind conditions.
891.1	round 1	MOE	4.7	Air Quality	LNG Carriers – LNG carriers using Marine Gas Oil (MGO)? is there not enough ship BOG for the ship to use as fuel?	LNG carriers can be designed to use a variety of onboard fuels for propulsion potentially including bunker fuel, marine gas oil, and or boil off gas. Many LNG carriers will use boil off gas while in transit on the open ocean where vessel agitation will maintain the supply of boil off gas. Due to the large supply of boil off gas, some of the very largest LNG carriers are configured to only use bunker fuel or marine gas oil as fuel and will recompress all of the boil off gas back to LNG. However, as the LNG carrier slows and or moves into a port, the vessels will switch its fuel supply to marine gas oil as the boil off gas supply becomes more uncertain with slowing vessel agitation. The air quality assessment conservatively assumed that the LNG vessel is powered by diesel engines using marine gas oil as it approaches or remains in port.
892.1	round 1	MOE	Appendix 3 7.5	Air Quality	Precip – the 2 spot comparisons are about 25-30% low compared to measurements. How do you think this result impacts the spatial pattern shown in Figure 7-9? How do you think this impacts deposition results?	Table 7.2 shows that precipitation at Prince Rupert Airport and Prince Rupert Mont Circle are under-predicted by 25% and 30% respectively. Differences between weather model forecasts and measurements of precipitation totals of 25% and 30% are common and within the range of acceptable model performance. The WRF model precipitation data is preferred over single station measurement data as it more realistically accounts for spatial variation in precipitation rates, particularly increased precipitation rates at high elevation. As the magnitude of the differences between predicted and measured precipitation fall within the range of acceptable model prediction uncertainty associated with the dispersion and deposition modelling, the model and measured differences in precipitation rate (i.e. spot comparisons) are not anticipated to have any meaningful effect on the spatial pattern shown in Figure 7-9.
893.1	round 1	MOE	Appendix 4	Air Quality	Can the proponent provide project-alone isopleth maps for SO2, NO2, CO for 1-hr max and annual concentrations for the land and the marine based emissions on separate graphs?	The approved Application Information Requirements (AIR): Section 4.2.3) notes that air quality modeling will be completed for a Base Case, Project Case, Application Case and Future Case (CEA). The final MOE approved Detailed Model Plan (Appendix 1, Air Quality - TDR) similarly states that dispersion model results will be presented for the Base Case, Project Case, Application Case and Future Case (CEA). The MOE approved Detailed Modelling Plan did not require separate modelling cases for land-based emissions versus marine-based emissions and did not require a full set of isopleth maps for these two new "sub-Project cases". The Application as presented meets the requirements of the AIR and Detailed Modelling Plan.
894.1	round 1	MOE	Appendix 4	Air Quality	Could the proponent provide a project-alone NOx isopleth maps for 1-hr max and annual concentrations for the land and the marine based emissions on separate graphs?	The approved Application Information Requirements (AIR): Section 4.2.3) notes that air quality modeling will be completed for a Base Case, Project Case, Application Case and Future Case (CEA). The final MOE approved Detailed Model Plan (Appendix 1, Air Quality - TDR) similarly states that dispersion model results will be presented for the Base Case, Project Case, Application Case and Future Case (CEA). The MOE approved Detailed Modelling Plan did not require separate modelling cases for land-based emissions versus marine-based emissions and did not require a full set of isopleth maps for these two new "sub-Project cases". The Application as presented meets the requirements of the AIR and Detailed Modelling Plan.
895.1	round 1	MOE	Appendix 4	Air Quality	Could the proponent extract the date and time and surface site meteorological conditions for the project alone 1-hr max for SO2, NO2, and CO?	A summary of the date, time and meteorological conditions associated with the maximum 1-hour (100th percentile) SO2, NO2 and CO concentrations for the Project Alone Case is summarized as follows: 1. The maximum predicted 1-hour SO2 concentration is predicted to occur September 17, 2012 at 11:00. The wind speed was 1 m/s. The wind direction was 193 deg (from the south). The temperature was 11 deg C. The atmosphere was moderately unstable (PGT class 2) and the mixing height was 229 m. 2. The maximum predicted 1-hour NO2 concentration is predicted to occur September 17, 2012 at 14:00. The wind speed was 0.8 m/s. The wind direction was 176 deg (from the south). The temperature was 12 deg C. The atmosphere was slightly unstable (PGT class 3) and the mixing height was 146 m. 3. The maximum predicted 1-hour CO concentration is predicted to occur May 22, 2013 at 22:00. The wind speed was 3.5 m/s. The wind direction was 153 deg (from the south-southeast). The temperature was 9 deg C. The atmosphere was slightly stable (PGT class 5) and the mixing height was 312 m.
896.1	round 1	MOH	8.2.1	Human Health	A brief summary of findings from Accidents or Malfunctions section that are relevant to health should be provided.	Section 9 of the Application discusses Accidents or Malfunctions. Table 9.3-1 provides a summary of potential interactions of accidents or malfunctions with each VC including human health.
897.1	round 1	MOH	8.2.2	Human Health	At the AIR stage, MOH asked that VOCs be assessed in the HHRA. There is no mention of VOCs in the health assessment and no rationale for their exclusion is provided. The proponent should disclose predicted ambient concentrations for select VOCs (i.e., those that can be harmful to human health) and discuss the implications for human health. Note that the absence of AAQOs for VOCs in BC do not preclude the proponent from assessing VOCs in the HHRA, just as the absence of BC tissue guidelines did not preclude the health assessment of chemicals in marine country foods. As per standard risk assessment practice, the proponent could draw on AAQOs from other jurisdictions (e.g., Alberta has AAQOs for some VOCs) or compare estimated exposure levels to toxicological reference values published by Health Canada. Comment also applies to section 2, p.3 of Human Health TDR.	Refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
898.1	round 1	MOH	8.2.2	Human Health	If the Proponent "is considering the option of waste management using an onsite incinerator" (p. 1-28 of the Application), this should be included in the assessment of human health with a consideration of all potential chemical hazards and exposure pathways. This comment also applies to section 4 of the Human Health TDR.	See Section 6.3.5.2 of the Application for additional information on solid waste management. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. Aurora LNG is considering the use of an incinerator for potential food wastes from the worker accommodation. Aurora LNG intends to limit the size of the incinerator to below the BC MOE defined threshold of 400kg/hr and to limit the incinerated waste streams to organic food wastes. The incinerator, if utilized, will help to limit potential food waste odors that could attract wildlife or other pests. Please see the "Assessment of Work Camp Waste Incineration" technical memo which will be filed with the BC EAO.
899.1	round 1	MOH	8.2.2.5.4	Human Health	See memo ID: MOH_COPCscreening	Aurora LNG stands by the methods used to screen chemicals of potential concern to apply to marine traditional foods. Aurora LNG acknowledges that during the AIR development in 2014, the MOH indicated that the use of CCME sediment quality guidelines as a screening tool for food pathways is not appropriate. A request was made at that time for MOH to suggest alternative screening methods because the proponent recognized that no environmental guidelines would be entirely applicable. Ministry of Health declined to provide alternative screening methods that would be acceptable. Aurora LNG had considered applying the following methods as screening tools: - Canadian Food Inspection Agency tissue residue limits for dioxins and furans. - BC Contaminated Sites Regulations Soil Quality Guidelines for the Protection of Human Health (residential land). However, if these screening methods were applied, copper, dioxins and furans would be screened out of the assessment because the concentration of dioxins and furans were below the CFIA tissue residue limit, and the concentrations of copper, dioxins and furans in the sediment are below the BC CSR soil quality guidelines defining them as contaminants. Therefore, in order to be consistent with the methods used in other LNG projects that propose dredging, the CCME sediment quality guidelines were applied.
900.1	round 1	MOH	8.2.3.1	Human Health	See memo ID: MOH_AirQuality	Please see the "Response to Ministry of Health Memo on Aurora LNG Human Health Risk Assessment" technical memo, which will be filed with the BC EAO.
901.1	round 1	MOH	8.2.3.2.3	Human Health	See memo ID: MOH_ConsumptionRates	Refer to the document "Supplemental Information for Traditional Marine Foods", which will be submitted to the EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting. An errata document will be submitted to the BC EAO which will include the correct description of the consumption rate applied.
902.1	round 1	MOH	8.2.3.2.4.2	Human Health	This section describes the tissue sampling results for the PNW LNG project. Note that the concentrations of PCDD/Fs found in crab meat by Aurora LNG are more than twice the concentrations found in the PNW LNG EA, which resulted in an EA condition requiring that the proponent develop a monitoring program for marine country foods. Given these findings, it unclear why the proponent for Aurora LNG concluded that monitoring would not be required for this project. Same comment applies to section 8.2.9 (Follow-up and Monitoring) and 3.2.3.2 of TDR.	In tissue samples of horse clams and 5 of 10 Dungeness crab meat samples, there were no detectable traces of dioxins and furans. In the remaining 5 Dungeness crab samples, most dioxin and furan congeners were undetectable. It would not be accurate to say that the concentrations of PCDD/Fs found in crab meat by Aurora LNG are more than twice the concentrations found in the PNW LNG EA. Rather, it would be more accurate to state that the detection limits for dioxins and furans were twice as high than those for the PNW LNG EA. The variation in detection limits for each sample and chemical congener is the result of the high degree of sensitivity associated with measuring concentrations of dioxins and furans to the picogram scale (i.e., 1 trillionth of a gram). One picogram is equivalent to 0.000,000,000,001 gram. At such miniscule concentrations, even slight variations may result in seemingly large differences. A change in the detection limit from 0.000,000,000,001 g-TEQ/g to 0.000,000,000,002 g-TEQ/g may be interpreted as "doubling" the concentration. Aurora LNG acknowledges that the laboratory data for Dungeness crabs and crab hepatopancreas were not appended to the Human Health Technical Data Report, and Ministry of Health would not have had the information available to reach this conclusion independently. The laboratory data has been included a technical memo (Supplemental Information for Traditional Marine Foods) and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

903.1	round 1	MOH	8.2.3.2.4.4	Human Health	MOH disagrees with the proponent's dismissal of the risk of PCDD/Fs in food as merely a perception of risk in the community and the suggestion that the derivation of PCDD/F guidelines is arbitrary rather than evidence-based. Same comment applies to section 3.2.3.4 of Human Health TDR.	Section 3.2.3.4 of the Human Health TDR does not dismiss the potential risks of dioxins and furans (PCDD/F) in food as merely a perception of risk. This section and the preceding sections provide evidence from reports published by Fisheries and Oceans Canada that levels of PCDD/Fs in the sediment and marine biota have declined by over 99% of historical highs. The proponent rejects the Ministry of Health's statement that sediments in the proposed dredge area are contaminated with dioxins and furans (PCDD/F) as in comment #910.1. PCDD/Fs are produced by both natural and man-made processes and atmospheric transfer and deposition reaches most environments. Sediments along the Pacific coast may contain traces of PCDD/Fs, but the levels found in the proposed dredge footprint do not indicate a level that would constitute contamination. The proponent requests that Ministry of Health justify their continued position that the sediments in Delusion Bay, Casey Cove and Frederick Point are contaminated with PCDD/Fs. Such statements give the public a sense of food insecurity regarding their local seafood harvest, which has been reflected in comments by the public that repeat such claims of contamination without evidence. Consider the following: 1. The maximum concentration of PCDD/F in the sediment was 2.86 picograms per gram of sediment, based on mammalian toxic equivalency (pg-TEQ/g). 2. The BC Contaminated Sites Regulations for PCDD/Fs in sediment for marine and estuarine waters are: - Sensitive Contaminated Site - 130 pg-TEQ/g - Typical Contaminated Site - 260 pg-TEQ/g http://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/policies-and-standards/sed_criteria_tech_app.pdf 3. When sediments are disposed on land, they are managed as soils. The BC Contaminated Sites Regulations for PCDD/Fs in soil are: - Agricultral/Parkland/Residential Land - 350 pg-TEQ/g - Commercial Land Use - 1,000 pg-TEQ/g - Industrial Land Use - 70,000 pg-TEQ/g http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/375_96_07 4. The BC Contaminated Sites Regulations - Schedule 7 for soil relocation to non-agricultural land for PCDD/Fs are: - 350 pg-TEQ/g http://www.bclaws.ca/civix/document/id/loo78/loo78/375_96_09 5. The Canadian Food Inspection Agency dioxin limit for all fish products is 20 parts per trillion (ppt), measured as TEQ. In comparison, the dioxin concentrations in sampled marine foods were: - Dungeness crab meat - 0.273 ppt - Dungeness crab hepatopancreas - 1.4 ppt - Clam - 0.811 ppt http://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/text-texte/fish_man_standardsmethods_appendix3_1406403090196_eng.pdf
904.1	round 1	MOH	8.2.4	Human Health	See memo ID: MOH_Eutrophication_DrinkingWater. Same comment applies to section 4.1.3 (p.16) of Health TDR.	Refer to the technical memorandums, "Additional Information about Eutrophication and Acidification in Freshwater" and "Dodge Cove Water Supply and Watershed" which will be filed with the BC EAO. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
905.1	round 1	MOH	8.2.4	Human Health	The health implications of the predicted acidification to drinking water sources remain unclear. The proponent dismisses the change in acidity because the drinking water guideline for pH is operational, not health-based, and does not indicate whether the operational guideline will be achieved. This is relevant to human health because changes in pH can reduce the effectiveness of water treatment and/or contribute to the leaching of contaminants (e.g., copper, lead and other metals) from susceptible pipes. These potential effects can increase the risk to human health. Same comment applies to section 4.1.3 (p.16) of Health TDR.	Refer to the "Dodge Cove Water Supply and Watershed" technical memo, which will be filed with the BC EAO. The "Dodge Cove Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting.
906.1	round 1	MOH	8.2.4	Human Health	The discussion pertaining to drinking water focuses on the Dodge Cove drinking water reservoir with no mention of other sources, such as the Metlakatla drinking water source. The Proponent should discuss all potentially affected water supply systems when outlining Project interactions with human health. Same comment applies to section 4.1.3 (p.16) of Health TDR.	The discussion of drinking water focuses on the Dodge Cove reservoir because this water sources is in close proximity to the Project. The Metlakatla drinking water supply (Tsook Lake) is over 10 kilometers north of the Project. While Tsook Lake is within the air quality modelling domain to evaluate dispersion of potential acidifying emissions such as sulphur dioxide and nitrogen dioxide, the assessment of water quality did not identify potential water quality changes associated with health-related factors.
907.1	round 1	MOH	8.2.5.1.3	Human Health	There are incorrect statements in this section regarding the consumption rates applied in the HHRA for country foods. See memo ID: MOH_ConsumptionRates for more information.	An errata document will be submitted to the BC EAO which will include the correct description of the consumption rate applied.
908.1	round 1	MOH	8.2.5.1.3	Human Health	This section states that the 95% upper confidence limit of the mean for each food type was used in the HHRA. Note that Health Canada HHRA guidance for country foods states that the use of the 95% UCLM is only appropriate "where sample size is deemed sufficient and the collected samples are considered representative of the tissue levels affected by the site of interest" (p.12). The application of the 95% UCLM is not appropriate in this case since the estimated tissue concentration for crab, for example, are based on only 10 crabs sampled across 3 different sites (Frederick Point, Delusion Bay and Casey Cove) and it is not evident that these sample are representative of COPC concentrations in marine tissue for each of the 3 sites. In this case, Health Canada recommends using the maximum or 95th percentile to estimate COPC concentrations in tissue. The proponent should also provide a map indicating where the biota for the tissue samples were harvested (their spatial distribution). Same comment applies to section 3.3.3 (p.10) of Human Health TDR.	Comment noted. The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
909.1	round 1	MOH	8.2.5.1.3	Human Health	This section states that because "Health Canada estimates that 90% of a person's exposure to PCDD/Fs comes from the diet," "applying a benchmark of 0.2 for the ingestion of marine foods is conservative, since this pathway is likely to account for most of a person's exposure to PCDD/Fs." This statement is not entirely correct as it ignores the contribution of background exposure through other foods, such as those purchased at the grocery store, which can make up a significant proportion of a person's exposure to PCDD/Fs. Therefore, the marine foods pathway may only represent a small component of one's exposure through food, i.e., it would not account for most of a person's exposure to PCDD/Fs. This should be acknowledged by the proponent as the current characterization of risk is misleading.	Aurora LNG acknowledges that 90% of a person's exposure to dioxins and furans may come from their diet, which could encompass all types of foods. Therefore, the application of a benchmark hazard quotient of 0.2 may not necessarily protect marine food consumers that harvest near the dredge footprint.
910.1	round 1	MOH	8.2.5.3.1.1	Human Health	This section states that contaminated sediment that does not meet the regulatory criteria for disposal at sea will be disposed on a non-agricultural site industrial land within the PDA. The proponent should indicate where this site will be located and whether there will be implications for human health.	Aurora LNG is committed to managing sediments disposed on land in a manner that does not adversely affect human health and the environment. Sediment quality data for sediments that will be disposed of within the project fenceline does not support the statement that sediments are contaminated. Sediments that are proposed for storage on land cannot be disposed at sea because the proposed disposal site, Brown Passage, is classified as a "dispersive site", while Disposal at Sea guidelines apply to "non-dispersive sites". The precise location of the sediments storage area within the Project Description Area will be confirmed at a later date, pending additional site investigative studies.
911.1	round 1	MOH	8.2.5.3.1.2	Human Health	There is no discussion or acknowledgement in this section of the existing body of research demonstrating the effects of dredging on the uptake of COPCs in marine tissue. For example, there is research indicating that dredging can lead to increased COPC concentrations in marine tissue and remain elevated after dredging is complete. This section goes on to state that "once dredging is complete, benthic marine life in the dredge footprint would be exposed to lower concentrations of PCDD/F and PAH in the sediment" with no evidence to support this statement and no discussion of the potential effects during dredging (construction or maintenance dredging). Given that the potential for dredging to increase COPC uptake in marine country foods is the primary concern that this HHRA was supposed to address, the research on the effects of dredging on marine food quality should be acknowledged and described (with references). Same comment for section 8.2.5.3.3 (no evidence provided to support statements regarding "negligible" or "reversible" risks to human health from dredging) and throughout the Human Health TDR (particularly section 6.3.3.2)	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting. With regards to the characterization of potential effects: 1. "Negligible" refers to the potential health risks being less than the applicable significance threshold. 2. "Reversible" and "Irreversible" for the characterization of potential health effects refers to whether the health effect is permanent (e.g., carcinogenic effects) or temporary (e.g., non-carcinogenic effects).
912.1	round 1	MOH	8.2.5.3.2	Human Health	What mitigations measures will be applied during dredging to minimize dispersion of sediment?	Mitigation measures for dredging are described in the Water Quality assessment (Section 4.5 of the Application), Table 4.5-26 (Mitigation Measures Proposed to Avoid or Reduce Change in Physical or Chemical Composition of Marine Waters).
913.1	round 1	MOH	Executive Summary, Health TDR	Human Health	Sentence cut off on p. i.	An errata document has been created that includes a response to this comment and it will be filed with the BC EAO.
914.1	round 1	MOH	Executive Summary, Health TDR	Human Health	See memo ID: MOH_ConsumptionRates regarding use of the term "95th percentile average."	Refer to the document "Supplemental Information for Traditional Marine Foods", which will be submitted to the EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
915.1	round 1	MOH	Section 2, p.3, Health TDR	Human Health	Page 3 states that the HHRA involved the comparison of metals in drinking water to drinking water quality guidelines; however, there is no indication the HHRA report that concentrations of metals were measured in drinking water. Please clarify.	Refer to Section 8.2.3.2.2 of the Application and Section 3.3.4 of Appendix R of the Application. These sections describe the existing conditions for human health from surface water quality. Publicly available water quality monitoring reports which included metal analysis were acquired from the municipalities of Prince Rupert and Port Edward.
916.1	round 1	MOH	3.2.3, Health TDR	Human Health	The TDR should present a map to show areas of active harvesting as well as harvesting bans in relation to the dredge area as it is unclear whether or how they overlap.	Active harvesting areas are dynamic in nature and subject to continuous change. The proponent conservatively assumes that all marine areas are subject to marine food harvesting including those areas subject to bans. Some members of the public have indicated that they continue to harvest marine foods in areas or during periods where bans are in place. Currently, a sanitary and shellfish biotoxin harvesting ban applies to most of the region encompassing Management Area 4 (as defined by Fisheries and Oceans Canada). This shellfish ban includes regions near Prince Rupert, Port Edward and Digby Island including the proposed dredge area. There are no other harvesting bans in the vicinity of the Project dredge footprint.
917.1	round 1	MOH	3.3.1, Health TDR	Human Health	This section states that the base case for the air quality assessment was modelled while elsewhere in the application it states that base case also accounted for background air quality using data from monitoring stations. Please clarify the methods used to characterize base case.	The Base Case includes both modeled and air quality monitoring data. The modeled component of the Base Case scenario includes point source emissions from existing sources listed in the Emissions Inventory. See Section 2.3.1 (Baseline Emissions) in Appendix 2 (Emissions Inventory) of the Air Quality TDR (Appendix A of the Application). A proportion of the monitored concentrations of criteria air contaminants is added to the modeled component to account for the contribution of emissions from sources that are not included in the dispersion modelling (e.g., non-point sources). See Section 3.3 (Background Air Quality) in Appendix 2 (Emissions Inventory) of the Air Quality TDR (Appendix A of the Application).
918.1	round 1	MOH	4.2, Health TDR	Human Health	This section explains that human receptor locations were "places that human receptors are reasonably expected to be present for the long-term" and suggests that shorter durations of exposure are not of importance, therefore excluding recreational and other areas from the human receptor locations. This narrow criteria for the selection of human receptor locations is concerning to MOH since chemicals of concern, such as SO2, NO2 and PM2.5, are known to have adverse health effects over short-term exposures, hence the need for 1-hour or 24-hour objectives. All human receptor locations, whether associated with short or long-term exposure to airborne contaminants, should be considered in the health assessment for air quality. See memo ID: MOH_AirQuality. Same comment for section 5.3.4 of TDR which states that "the comparatively small increases in the CR for annual NO2 suggests that there is little change in health risk from long-term exposure to NO2."	Among the 1,905 land-based grid points identified in the human health chapter of the Application, the sub-set of 29 grid points representing human receptor locations (i.e., populated areas) were selected to represent each region (e.g., Prince Rupert, Port Edward, Dodge Cove). However, the full range of data (concentrations and coordinates) was provided in Appendix 1 and illustrated in isopleth maps in the Human Health Technical Data Report (Appendix R of the Application). Appendix 1 and the isopleth maps provide the same level of information for unpopulated regions such as recreational sites. The Ministry of Health may have incorrectly interpreted that the discussion of the 29 human receptor locations among the 1,905 grid points assessed suggests that other locations are less important. A risk assessment is an evaluation of risk to a population, rather than a transient individual in a non-populated area, so the discussion of potential risks in those populated areas is a reasonable approach. Although SO2, NO2 and PM2.5 may technically have adverse short-term health effects at any concentration, the concentrations of these substances are below the BC ambient air quality objectives which are applied as screening thresholds. Since the concentrations of SO2, NO2 and PM2.5 are below the screening threshold, a detailed assessment is not triggered.
919.1	round 1	MOH	Table 1, Health TDR	Human Health	It is apparent from the tables in Appendix 1 of the Health TDR that there are gridpoints where predicted concentrations of NO2 are approaching or exceeding the ambient air quality objective; however, these gridpoints are not discussed (or even mentioned) in the health assessment. Please indicate where MOH can find the locations for these gridpoints so their proximity to human receptors can be determined. Also, section 5.3.3.3 (p.26) states that "the CRs are all below the acceptable health risk threshold of 1.0," which is misleading as this statement only applies to the subset of gridpoints selected by the proponent. See Memo ID: MOH_AirQuality	Refer to the document titled, "Maximum Points of Impingement (MPOI) for 1-hour Nitrogen Dioxide Concentrations", which will be filed with the BC EAO.

920.1	round 1	MOH	5.1.1, Health TDR	Human Health	Note that the 1-hour SO2 AAQO has been updated. The application should consider how the predicted COPC concentrations in air compare with the updated BC AAQO as well as the new federal SO2 CAAQS. The application should also acknowledge that the federal NO2 CAAQS are set to change and should discuss the project's ability to meet more stringent standards that may be in place by the time the project is operating. See Memo ID: MOH_AirQuality	The new Canadian Ambient Air Quality Standards (CAAQS) apply to new air management decisions beginning January 1st, 2017. The Environmental Assessment for the Project was submitted before this date and the assessment applied the objectives that were agreed upon and applicable at that time. However, a comparison of the new CAAQS relative to the modelled concentrations in the Cumulative Effects Assessment Case (CEA Case) indicates that the health risk would still be less than the significance threshold at the human receptor locations on Digby Island, Prince Rupert, Port Edward and Metlakatla Village. For example, the new CAAQS for 1-hour SO2 is 183 ug/m3. The BC ambient air quality objective for 1-hour SO2 in the Application was 200 ug/m3, which was subsequently revised to the interim BC ambient air quality objective of 196 ug/m3 in December 2016. In comparison, in Table 5 of the Human Health Technical Data Report (Appendix R of the Application) indicates that the range of 99th percentile 1-hour SO2 concentration among the human receptor locations would be 18.0 ug/m3 (at Georgetown Mills), 57.4 ug/m3 (at Dodge Cove), 38.9 ug/m3 (at Metlakatla Village), 44.7 ug/m3 (at Port Edward), 40.0 ug/m3 (at Prince Rupert), and 73.4 ug/m3 (at the worker camp within the PDA). The modelled concentrations are below the BC ambient air quality objective and the new CAAQS. This would result in the same conclusion regarding health risk (i.e., no significant changes in human health from air quality). When the new CAAQS is applied for annual SO2 concentrations, the same conclusion would be found.
921.1	round 1	MOH	5.3.3.2, Health TDR	Human Health	The Proponent states that "the highest increase in CRs between Base Case and Application Case are for 1-hour NO2 in Dodge Cove … and Port Edward" (p. 26, TDR). There is also a large increase in CRs between Base Case and Application Case for all three grid points selected for the Work Camp (IF-1764, IF-1825, and IF-1855). This increase is comparable to the increase predicted in Dodge Cove and Port Edwards, and should be acknowledged.	Comment noted. Aurora LNG acknowledges the changes in CRs are similar in magnitude at the proposed worker camp and at Dodge Cove and Port Edward. The CRs are below the significance threshold and there would be no change in the assessment conclusions.
922.1	round 1	MOH	5.4.3, Health TDR	Human Health	Since the AIR stage, MOH has asked the proponent to considered the combined health effects of airborne contaminants such as SO2 and NO2 that can interact to adversely effect respiratory health. It is concerning to MOH that the proponent continues to deny this request and that p.36 of the TDR incorrectly states that "there is no guidance provided by provincial, federal or international regulatory agencies on acceptable methods to evaluate health risks from exposure to multiple chemicals." As MOH has indicated to the proponent, Health Canada's HHRA guidance indicates that "For simultaneous exposure to other multiple COPCs, determined to have similar target tissues and mechanisms of action as identified in consultation with Health Canada, noncancer HQs should be assumed to be additive, and should be summed for those substances." MOH has asked the proponent to sum the CRs for SO2 and NO2 to recognize the combined effects of these pollutants. At a minimum, MOH expects the proponent to acknowledge that the combined effects from respiratory irritants can be additive and discuss the potential effect of multiple pollutants on human health.	While it is recognized that the Ministry of Health has on several occasions requested that SO2 and NO2 concentrations be summed when assessing potential human health risks, it is noted that the Prince Rupert Airshed Study and the Supplementary Report to that study that were commissioned by the BC Ministry of Environment, do not sum exposures to SO2 and NO2 in the assessment of potential health concerns. While SO2, NO2 and PM2.5 are considered in the Prince Rupert Airshed study, these criteria air contaminants are assessed individually. While these criteria air contaminants all target the lungs through inhalation, their mechanism of action is not the same. In the absence of a defined and standard protocol for assessing combined exposures to chemicals that do not act through the same biological mechanism of action, the summation of exposures and the calculation of combined risk estimates is not scientifically defensible.
923.1	round 1	MOH	6.2.3, Health TDR	Human Health	MOH recognizes the technical limitations of analyzing COPC levels in a small amount of hepatopancreas tissue but it is concerning that there is no data available on the level of PAHs in crab hepatopancreas. Increasing the small sample size of 10 crabs across 3 sites would have enabled analysis for PAH levels in hepatopancreas while also providing a more representative sample of COPC concentrations in marine tissue.	Aurora LNG acknowledges that the absence of PAH analysis in crab hepatopancreas may be an information gap. However, the dredge footprint for the Project is located in relatively undisturbed waters that are distant from industrial sites and discharge/effluent pipes. In other LNG projects in the Prince Rupert area (e.g., Pacific Northwest LNG which is closer to industrial sites), the Application for these projects did not include PAHs in tissue samples because PAHs were largely undetectable in the sediment. https://www.ceaa-acee.gc.ca/050/documents/p80032/100809E.pdf PAHs were largely below the detection limit in sediment samples collected in the dredge footprint. Several samples contained individual PAHs that resulted in concentrations above the interim sediment quality guidelines, but the trend of sediments containing undetectable traces of PAHs is consistently noted in the region.
924.1	round 1	MOH	6.2.3, Health TDR	Human Health	It is unclear whether tissue concentration data provided is in dry weight or wet weight. This should be specified.	The tissue concentrations were reported as wet weight. This update, including laboratory results for food tissue samples, has been included in the document titled "Supplemental Information for Traditional Marine Foods", in Attachment 3. This document will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
925.1	round 1	MOH	6.3.2.3, Health TDR	Human Health	The Proponent states that "adults may consume 3.60 kg of whole crab per week and the crab hepatopancreas of 45 crabs per week without exposure levels of PCDD/F or copper above the significance threshold." This statement is not correct about the amount of hepatopancreas an adult can consume. First, assuming the average hepatopancreas is 25 g (based on the Proponent's own estimate, p.39 of TDR) and the RMWIs from Table 12, the max weekly intake for adults would actually be: hepatopancreas from about 7 crab for PCDD/Fs (180g/25g) and 10 crabs for copper (250g/25g). Secondly, it is inconsistent to state the risk in terms of number crab for the hepatopancreas, but not for crab meat. Some consumers may prefer to think of risk in terms of number of crab. The 3.6 kg of whole crab equates to 900 grams of crab tissue as per Table 12. Assuming the average crab yields 250 g of crab meat (based on the Proponent's own estimate, p.39 of TDR), an adult can consume the meat of 3.6 crabs (900g/250g) per week to remain below the exposure limit for PCDD/Fs. Presented in this way, it will be easier to communicate the RMWIs to consumers. In fact, it becomes apparent that under current consumption rates (as per Health Canada's recommended consumption rates and the FNFNES study), consumers may already be exceeding the exposure limit for PCDD/Fs.	An errata document will be submitted to the BC EAO which will include the correct description of the consumption rate applied.
926.1	round 1	MOH	6.4, Health TDR	Human Health	The Proponent should acknowledge that a pipeline for the Project will be built and operating in the future, and could impact the cumulative effects assessment of the project for air quality (e.g., air quality during construction and operations), and marine country foods (e.g., dredging).	In accordance with the Section 11 Order (as amended), the scope of the Project for the purpose of the environmental assessment does not include transportation of natural gas to the LNG facility, which is anticipated to be provided by a third party owned pipeline. The third-party pipeline provider is yet to be determined. As outlined in section 3.7.1 of the AIR, the cumulative effects assessment considers the past, present and reasonably foreseeable future projects and activities listed in the Project and Activities Inclusion list, which was finalized within three weeks of submitting the final AIR on November 23, 2015.
927.1	round 1	MOH	Appendix 3, Health TDR	Human Health	Note that Appendix 3 of the TDR only provides the laboratory results for clam tissue. There are no laboratory data results for crab tissue or hepatopancreas. Lab results for crab must be provided.	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
928.1	round 1	MOE	1.2.5.3	Proposed Project Overview	Soil Storage Area: pg. 1.25, Characterization of materials to be stored in the soils storage area is required. In particular, potentially PAG materials (or dredged materials, Appendix R, pg. ii) need to be analysed and information about quality and quantity included. Any proposed runoff or discharge will require analysis to determine if it is a 'waste' under the Environmental Management Act. In the event it is, a waste discharge authorization will be required in the form of a permit. See the Aurora LNG Memo MoE_Effluent Assessment for more information. Also, the Contaminated Site Regulation must be followed, with respect to moving, storing and managing contaminated materials.	The proponent is committed to managing sediments stored on land in a manner that protects human health and the environment. The chemical composition of dredged sediments was characterized in the Water Quality VC (Section 4.5.13.3 of the Application). Chemicals that were analyzed in the sediment (e.g., dioxins, furans, metals, polycyclic aromatic hydrocarbons) are all below the applicable BC Contaminated Site Regulations for those substances.
929.1	round 1	MOE	1.2.5.3	Proposed Project Overview	Water Supply: pg. 1-25 , 1.26. Effluent produced by the desalination water supply system requires characterization. The discharged effluent is considered a waste and requires a waste discharge authorization in the form of a permit. See Aurora LNG Memo MoE_Effluent Assessment for more information.	Aurora LNG will apply for all permits required for discharges to the marine environment, and will conduct effluent characterization as required under such permits. Requirements for permits will be determined based on final waste management strategies, which will be defined during Front End Engineering Design. Further details on Project waste discharges and associated regulations are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
930.1	round 1	MOE	1.2.5.3	Proposed Project Overview	Pg. 1-26 1.2.5.3, Wastewater Management, Construction: In the event stormwater settling ponds, sediment traps or other treatment works are needed, or stormwater originates from a construction or process areas, discharge requires an authorization (permit) under the Environmental Management Act (EMA). Discharge of sanitary sewage (municipal wastewater) requires registration under the Municipal Wastewater Regulation. Separate registrations are required for the discharge from the floating camp and from the on-land camp if the outfall locations are different. If incineration of sewage sludge is proposed, an air discharge permit is required. Information on these waste sources must be presented in the application for analysis. Pg. 1-27, Operations: Detailed information about wastewater including contaminants of potential concern (COPC's) generated by activities related to the project must be included in the Application for analysis as waste discharge authorizations are required under EMA. In particular, information about COPC types and amounts as well as characteristics of the potentially impacted receiving environment must be included. Please see Aurora LNG Memo MoE_Effluent Assessment for more detailed comments.	As stated in Section 4.5.15.3 of the Application (Characterization of Residual Effects – Waste Management), waste water outfall designs and locations will comply with federal and provincial legislation designed to protect water quality. Sanitary wastewater will meet effluent permit requirements, including dechlorination of any chlorinated wastewater. Mitigation 4.5.8, Table 4.5-26 also states that waste discharges to the marine environment will comply with the Fisheries Act, Canadian Environmental Protection Act, Canada Shipping Act 2001, and the BC Environmental Management Act (Waste Discharge Regulation). Specific details on waste volumes and contaminant concentrations are not yet available and will be determined during Front End Engineering Design. However, Aurora LNG is legally obliged to abide by all waste discharge regulations designed to protect the marine environment. Environmental effects from waste discharge are therefore predicted to be not significant. Further details on waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
931.1	round 1	MOE	1.6	Proposed Project Overview	1.6, Applicable Authorizations, Table 1-23, Authorization Table. Waste released into the environment is authorized by permits, regulation and codes of practice under the *Environmental Management Act (EMA)* and the Waste Discharge Regulation. Authorization to discharge sewage falls under the Environmental Management Act, Municipal Wastewater Regulation. Waste discharge from the proposed concrete batch plant must adhere to the Code of Practice for the Concrete and Concrete Products Industry. The Sewerage System Regulation falls under the Public Health Act, not the Environmental Management Act. The application should be updated to include this information. The Ministry of Environment issues waste discharge authorizations at the pre-construction phase, until the Oil and Gas Activity Act is triggered, at which time the BC Oil and Gas Commission administers EMA. An air discharge permit is required for the proposed waste disposal via incineration for the sewage sludge and camp waste as well as for power generation of the 2x11.5MW generators as these exceed the >5MW threshold for air discharge authorization lower limit.	Table 1-23 in Section 1.6 (Applicable Authorizations) of the Application was updated during Screening to address similar and related comments from MOE. For example, edits were made to Table 1-23 indicating that the Sewerage System Regulation falls under the Public Health Act. This comment provides additional details related to applicable authorizations.
932.1	round 1	MOE	1.2.5.3	Proposed Project Overview	Storage of oily waste from natural gas pre-treatment or other project activities (Pg. 1-28) may trigger the Hazardous Waste Regulation (HWR). In the event registration is required under the HWR, a qualified professional from BC must ensure all requirements of the registration are met.	Comment noted.
933.1	round 1	MOE	1.2.5.3	Proposed Project Overview	Pg. 1-28, Solid Waste Management System: If use of a regional landfill is proposed, an assessment of the capacity of the receiving facility and the willingness to accept waste volumes resulting from the construction, operation and decommissioning of the facility should be included. The use of an incinerator as a waste disposal option for a 5000 person camp as well as sewage sludge could have a significant environmental impact. A detailed analysis of the environmental impacts related to waste disposal by incineration must be prepared and presented for assessment. For detailed comments, please see Aurora LNG Memo MoE_Solid Waste Assessment.	See Section 6.3.5.2 of the Application for additional information on solid waste management. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. Water treatment sludge from the desalination plant will be disposed of by a 3rd party. Aurora LNG is considering the use of an incinerator for potential food wastes from the worker accommodation. Aurora LNG intends to limit the size of the incinerator to below the BC MOE defined 400 kg/hr threshold and to limit the waste streams to organic food wastes. The incinerator, if utilized, will help to limit potential food waste odors that could attract wildlife or other pests. Please see the "Assessment of Work Camp Waste Incineration" technical memo which will be filed with the BC EAO.
934.1	round 1	MOE	3.5	Assessment Methods	Pg. 3-13, 3.5, Project Interactions: Table 3-2, Waste management (waste collection and treatment) Since incineration of sludge is proposed and is being investigated, the potential interaction with Air Quality should not be reclassified as 'potential interactions that may cause an effect' rather than 'not applicable'. Subsequently, the Application should address the impact of the proposed discharge on the environment as well as cumulative impacts from this activity. In addiction, project activities related to camp incineration, sludge incineration, power generation, stormwater management, and dredging should be included here.	See Section 6.3.5.2 of the Application for additional information on solid waste management. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. Water treatment sludge from the desalination plant will be disposed of by a 3rd party. Aurora LNG is considering the use of an incinerator for potential food wastes from the worker accommodation. Aurora LNG intends to limit the size of the incinerator to below the BC MOE defined threshold of 400kg/hr and to limit the incinerated waste streams to organic food wastes. The incinerator, if utilized, will help to limit potential food waste odors that could attract wildlife or other pests. Please see the "Assessment of Work Camp Waste Incineration" technical memo which will be filed with the BC EAO.
935.1	round 1	MOE	3.7.1	Assessment Methods	3.7.1, Project and Physical Activities Inclusion List, Table 3-4, p. 3-17, waste discharge from local businesses and small industries in the local project area are missing. These need to be identified and included in Table 3-4. Information on existing waste discharges authorized under EMA can be found in iMapbc here: http://maps.gov.bc.ca/ess/sv/imapbc/	In general, small and non-point source discharges, as well as other small projects and activities, are not explicitly carried in EA Inclusion Lists for the purpose of cumulative effects assessments. Existing discharges (e.g., sewer outfalls, air emissions from small industry, stormwater runoff) are typically captured within the baseline conditions included for all VCs, which also contributes to the cumulative effects assessment.
936.1	round 1	MOE	6.3.2.1	Infrastructure and Services	Detailed information on waste discharges from all existing activities in the local and regional project areas needs to be included for the cumulative assessment work. For example, permits 18350, 2498, 11412, and 2615 are effluent discharge permits with discharge points between Digby Island and Prince Rupert. The municipal sewage plant discharge should be directly addressed for cumulative effects assessments. Please see Aurora LNG Memo MoE_Effluent Assessment for more detailed comments.	See response to comment #935.1.

937.1	round 1	MOE	Appendix M	Marine Fish and Fish Habitat	The effect of freshwater in the creeks especially during the winter months of high rainfall has not been considered in the hydrodynamic study. At times of heavy rainfall, it would be expected that the incoming water could result in changes to seawater and sediment movement near shore. It should also include whether there is a change once several of the creeks are filled in during construction.	The hydrodynamic modelling included freshwater discharges from the Skeena River but did not include inputs from small creeks on Digby Island, as these are considered to be either too small to influence local oceanographic conditions relevant to the modelling or are not located in areas where they can influence conditions at the locations of the LNG jetty and MOF. The largest creek relevant to the hydrodynamic modelling enters at the head of Delusion Bay (an unnamed creek, referred to as J creek). With the estuary located more than 2 km away from Berth 1 and Berth 2, stream flows from J Creek are not expected to influence oceanographic conditions used in modelling. The mean annual discharge from J Creek measured in 2015 was 0.145 m^3/s (see Appendix T of the Application: Hydrology Technical Data Report), which is a low influence compared to tidal fluctuations in Delusion Bay. The creek that enters Casey Cove drains a much smaller watershed area than J creek, and flows are not expected to influence the modelling parameters used to assess changes in sediment dynamics associated with the presence of the MOF in Casey Cove. The suspended sediment predictions are modeled as increases over baseline, so localized inputs from small creeks are recognized as part of background conditions.
938.1	round 1	MOE	Appendix G	Marine Fish and Fish Habitat	Patterns of heavy rainfall have the potential to transport sediment during dredging activities as a result of heavier stream discharge events. The potential for this needs to be evaluated.	The majority of watercourses discharging in the vicinity of the MOF dredge site in Casey Cove, and Berth 1 and 2 off Frederick Point, are small watercourses(mean channel widths of less than 2 m). Of the four watercourses draining into Casey Cove, the largest has an average channel width of 2 m, and a total length of approximately 600 m. These watercourses would have limited influence on sediment distribution on Casey Cove, in comparison to tidal movements that were incorporated into the model. The nearest watercourse discharge to the marine berth dredging sites is approximately 500 m away from Berth 1, and has a average channel width of 1.8 m. Several small watercourses (mean channel widths of less than 2 m), drain into Delusion Bay. A larger watercourse, with an 8 m channel width, drains into the head of Delusion Bay. However, this outflow is approximately 2.5 km from the nearest dredge site. As with Casey Cove, the watercourses discharging in the vicinity of the marine berths would have limited influence on sediment distribution in comparison to tidal movements.
939.1	round 1	MOE	Appendix F	Water Quality	Infilling of freshwater streams that discharge directly to the marine environment can cause changes the water quality of the marine environment both physically (temp, salinity, TSS) as well as chemically (pH, nutrients). This could cause a change in species diversity within the marine environment. The lack of freshwater inputs in the coves, especially Delusion Bay, needs to be evaluated.	Project construction will require infilling of some watercourses; mainly small, short drainages. However, the majority of the water conveyed by these watercourses will continue to discharge to the same bays, but will be conveyed through overland flow or constructed drainages. The quality and quantity of water discharged through these alternative means, is expected to be similar to that which was discharged by the watercourses. Water leaving the facility site will be tested, and treated if necessary, to meet regulatory requirements prior to release. Changes to the water quality in marine environment are therefore expected to be minor.
940.1	round 1	MOE	Appendix G	Marine Fish and Fish Habitat	The dredge modelling was conservative overall; however, the sediment settling velocities were higher than those provided in the BC WQGs TSS document and those used in Appendix M (Hydrodynamic study) so this part is less conservative.	BC WQ guidelines (Newcombe 1996) provide only a range of values and there is no single value of settling velocity for each particle size. In WQG, values of "velocity of settling particle" are:silt: up to 3 mm/s (coarse silt) clay: less than 0.011 mm/s The values range because those values are derived from empirical functions for spherical particles, based on parameters such as particle density, density of fluid, particle diameter, kinematic fluid viscosity, and theoretical constants. The USACE values used in the assessment are:silt: 3 mm/s clay: 0.61 mm/s We recognise that these are relatively larger (for clay) or at the upper limit (for silt) compared with BC WQG values. However, Smith and Friedrichs (2011) observed that cohesive sediments, such as clay and silt, have increased settling velocities within a dredge plume. This is attributed to their cohesive nature and must be accounted for when representing sediment transport in estuarine and coastal systems. Dependent on the presence of clay and organic material, silt is generally classed as cohesive particles (Burt and Allison, 2010). Cohesive sediment is commonly transported in a flocculated or aggregated form (Droppo and Ongley, 1992), with correspondingly larger settling velocities compared to the individual particle settling rates provided by the BC WQG. Although the USACE velocities are less conservative than the WQG values, they still don't take cohesiveness into account. However, the approach remains conservative given we are still using the settling velocities for individual particles, compared with natural processes likely to be occurring for cohesive sediments. The aim is to balance a conservative approach with as near to realistic as possible. References: Burt TP, Allison RJ (eds), 2010. Sediment cascades: an integrated approach. Wiley, Chichester, 471p. Droppo, I.G. and Ongley, E.D., 1992. The state of suspended sediment in the freshwater fluvial environment: a method of analysis. Water Research, 26(1), pp.65-72. Newcombe 1996. Channel suspended sediment and fisheries: A concise guide. British Columbia Ministry of Environment, Lands and Parks, Habitat Protection Branch, Victoria, BC. Smith, S.J. and Friedrichs, C.T., 2011. Size and settling velocities of cohesive flocs and suspended sediment aggregates in a trailing suction hopper dredge plume. Continental Shelf Research, 31(10), pp.S50-S63.
941.1	round 1	MOE	Part A.01	Proposed Project Overview	Page I-25 discusses the potential for PAG based on assessments. Are these ABA analyses? The geology information and soils did not seem to be provided in an Appendix or anywhere in the main document. This information is critical to the evaluation of the project and should be included in the application. If significant amounts of PAG material are present at the site, what is the plan for addressing storage and surface runoff? Please see Aurora LNG Memo MoE_Effluent Assessment for more detailed comments.	Preliminary soil investigations indicated that potentially acid generating (PAG) material may be excavated during site preparation and grading. However, laboratory testing for PAG has not yet occurred. The need for more detailed assessment of acid rock drainage and metal leaching (ARD-ML) will be assessed, and conducted if necessary, in the pre-construction phase, during Front End Engineering Design. If PAG materials are identified, a management plan will be developed to manage acid generation. The soils storage area will be designed and sited to manage surface water runoff. Site runoff will be tested and treated if necessary to meet any discharge permit requirements.
942.1	round 1	MOE	Part A.01	Proposed Project Overview	Page I-27 During the operation phase, stormwater runoff from the roads and non-process areas will drain into a ditch system and subsequently discharge to vegetated areas and natural drainages (ephemeral waterbodies and ongoing streams). Unless demonstrated to always be below BCWQGs or equivalent to background levels, this water will require a permit under EMA. Please see Aurora LNG Memo MoE_Effluent Assessment for more detailed comments.	Aurora LNG will apply for all permits required for discharges to the marine and freshwater environments. Site stormwater management designs will consider the need to capture and potentially test water before discharge. Requirements for permits will be determined based on final water and waste management strategies, which will be defined during Front End Engineering Design. Further details on waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
943.1	round 1	MOE	Part A.01	Proposed Project Overview	Page I-28 states that solid waste will be recycled (scrap metal, paper containers, etc.). Please expand on this. Will it be transported to a nearby recycling facility? Will it be processed on site? Other solid waste is to be taken to the Prince Rupert landfill. I gather that the waste is considered industrial and cannot be taken there, What is the alternative plan? If another private landfill site is considered, it needs to be confirmed that the volume of waste can be accommodated. Please refer to the Aurora LNG Memo MoE_Solid Waste Assessment for detailed comments.	See Section 6.3.5.2 of the Application for additional information on solid waste management. Information provided in Section 6.3.5.2 identifies potential sources of hazardous and non-hazardous waste and notes that incremental waste from the Project as well as that from in-migrating workers and their families would increase demand for local waste management services. Potential adverse effects on the capacity of public land fills and recycling facilities is noted as a result of this predicted increased demand. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. With respect to potential use of private landfills, through contractual agreements, waste facilities selected to receive Project-generated waste will be expected to have sufficient capacity to meet the Project demands and have all of the necessary regulatory permits to accept the specific waste materials. Detailed information on the potential quantity of hazardous and non-hazardous waste, as requested in the referenced memo, is not available at this time. Additional detail on potential private landfills will become available following the front end engineering and design (FEED). The level of detail and analysis provided in Section 6.3 of the Application is consistent with that provided in other applications of similar scope in northern BC.
944.1	round 1	MOE	Part A.01	Proposed Project Overview	Page I-28 states that water treatment sludge from the desalination plant will be disposed of by a 3rd party but then it states that a waste incinerator is being considered. Has this been included in the air dispersion model? Please refer to the Aurora LNG Memo MoE_Solid Waste Assessment for detailed comments.	See Section 6.3.5.2 of the Application for additional information on solid waste management. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. Water treatment sludge from the desalination plant will be disposed of by a 3rd party. Aurora LNG is considering the use of an incinerator for potential food wastes from the worker accommodation. Aurora LNG intends to limit the size of the incinerator to below the BC MOE defined threshold of 400kg/hr and to limit the waste streams to organic food wastes. The incinerator, if utilized, will help to limit potential food waste odors that could attract wildlife or other pests. Please see the "Assessment of Work Camp Waste Incineration" technical memo which will be filed with the BC EAO.
945.1	round 1	MOE	Part A.01	Proposed Project Overview	Page I-32 the Temporary buildings list includes a concrete batch plant. How will this be managed to prevent impacts to the terrestrial, freshwater, and marine environment from dust and surface runoff as well as waste water and solids from concrete production. Please see Aurora LNG Memo MoE_Effluent Assessment for more detailed comments.	As noted in mitigation measure 4.8.9 (Section 4.8.5 of the Application, Table 4.8-15), onsite concrete works will be contained so that no untreated concrete water runoff or wash-water will enter the nearby freshwater or marine environment. Equipment to contain and neutralize the pH will be kept onsite at all times during these works.
946.1	round 1	MOE	Part A.01	Proposed Project Overview	Appendix states that the dredging model is based on a single clamshell dredger (with 3% loss as per the USACE) with a short period of overlap of two dredgers at one point. Page I-35 lists several dredging methods that are anticipated to be applied. If the dredging method or number of dredgers changes, the model should be rerun with those specifications.	Comment noted. The need to re-run the model will be evaluated if the number of dredgers, or the dredging method to be employed changes.
947.1	round 1	MOE	Part A.01	Proposed Project Overview	The pioneer facilities and initial load dock are located near the MOF site. How will barge traffic and other boat traffic going to the site be managed to not further stir sediments during dredging operations.	The sheltered waters of Casey Cove may be a suitable area for silt curtain deployment. These curtains would contain the majority of suspended sediment within the dredge site, and limiting potential for propeller wash to further mobilize the suspended sediment. So, further dispersion of sediments disturbed during dredging by boats around the MOF should be limited. Modelling was used to predict the spatial and temporal extent of sediment dispersion resulting from the dredging, and the assessment concluded that the dredging effect to water quality and marine life would not be significant. In comparison to dredging activity, the vessel traffic accessing the pioneer facilities is predicted to limited and have minimal effect on marine water quality. Vessels are expected to spend minutes at a time travelling near the dredge area and the vessels should have no direct contact with the ocean bottom. Effects to marine water quality from boat traffic acting in conjunction with dredging, are therefore predicted to be minimal.
948.1	round 1	MOE	Part B.04.09	Marine Fish and Fish Habitat	The assessment states that there will be no long-term effect anticipated for the disposal of sediments at Brown Passage as it has been previously used for disposal. The current sediment quality is discussed but there is no information in the assessment discussing the current habitat condition at the disposal site, what organisms are utilizing the area and whether an additional 2.5 meters of sediment will result in an impact to the use of this area by marine life. The focus of the evaluation is on the CRA fish species only which will rarely have direct contact with the disposed sediments but rather than suspended sediments during disposal. Other non-CRA species will be living on the sea bottom and many of which may be buried during the disposal. Please see Aurora LNG Memo MoE_Marine Water Quality for more detailed comments.	Potential effects of the disposal of dredgeate on benthic habitats at the Brown Passage disposal at sea site are assessed in Section 4.9.5.2 of the Marine Fish and Fish Habitat VC (see page 4.9-52). This assessment considered effects to deep-water soft sediment habitats; however, it did not consider potential effects to glass sponges (Hexactinellida), which are known to occur in this area. For a discussion and characterization of potential effects to glass sponges, please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea"which will be filed with the BC EAO. The potential for injury or mortality of marine fish and invertebrates due to disposal of dredgeate at Brown Passage are assessed in Section 4.9.5.4 of the Marine Fish and Fish Habitat VC (see pages 4.9-87 to 4.9-88). Finally, the potential effects to marine fish health from exposure to elevated TSS concentrations during disposal at sea are assessed in Section 4.9.5.5 (see pages 4.9-103 to 4.9-104).
949.1	round 1	MOE	Part B.04.09	Marine Fish and Fish Habitat	The effects to eelgrass from increased turbidity during dredging and propeller wash are not discussed in the environment assessment. Suspended sediment is discussed as it pertains to deposition and burial of eelgrass but the problems with limited light as a result of suspended material during dredging and from ship traffic has not been evaluated. As a plant, eelgrass relies on a particular quantity of light throughout the day, this has not considered and is a critical missing piece of determining the environmental impact of construction and operation to the marine ecosystem. Please see Aurora LNG Memo MoE_Marine Water Quality for more detailed comments.	It is unlikely that eelgrass will be adversely affected as a result of TSS-driven reductions in light penetration -- and, hence, reduced photosynthesis -- for three reasons. First, TSS plumes will occur only during dredging activity (falling almost immediately once dredging stops), which is restricted to the DFO least risk timing window of November 30 to February 15th. During these winter months, eelgrass production is at its annual minimum due to reduced light availability and temperature (Nelson and Waaland, 1997). Second, concentrations of TSS plumes outside the immediate dredge area are expected to be less than 25 mg/L and will move continuously with the tide. Third, water quality monitoring will be implemented to meet water quality guidelines at specific distances from the dredging activity, allowing for adjustments to be made to limit the spatial extent of TSS plumes. Consequently, the temporary, localized increases in TSS concentrations during dredging are not expected to adversely effect eelgrass beds in the area. Regarding propeller wash, any instances of elevated TSS are expected to be of short duration and localized within the MOF or LNG Jetty dredge pockets; therefore, no spatial overlap with eelgrass beds is anticipated. Reference: Nelson, T.A. and J.R. Waaland. 1997. Seasonality of eelgrass, epiphyte, and grazer biomass and productivity in subtidal eelgrass meadows subjected to moderate tidal amplitude. Aquatic Biology 56: 51-74.
950.1	round 1	MOE	Appendix F	Water Quality	The method detection levels of PAHs in appendix 6 for several samples appeared to be greater than the CCME ISQGs which means that it cannot be determined if there is any PAH present in the sample.	The method detection limits were marginally above the CCME Interim Sediment Quality Guidelines (ISQG) for the following PAHs: fluorene, naphthalene, and anthracene. The ISQG for these PAHs range from 0.0212 to 0.0469 mgh/kg, and the detection limit achieved was typically 0.05 mg/kg. These are the detection limits provided by ALS Environmental, and commonly used for disposal at sea assessments. However, the CCME ISQG are conservative, typically based on sensitive organisms and employing an up to ten-fold safety factor. The CCME Probable Effects Level (PEL) represent concentrations at which effects to biota are likely to occur. The detection limits achieved for the sediment data were well below the PEL. In addition, sediment detection limits were below the Disposal at Sea screening criterion of 2.5 mg/kg total PAH.
951.1	round 1	MOE		Accidents or Malfunctions	A sediment study by Ross et al. 2011 found that the PCDD/F TEQ was lower at and near the Brown Passage disposal site (previously used by other companies) than a reference site 6km NE. However, there were 56 samples collected at or near Brown Passage and only 3 at the reference site. Additionally, no information was provided on why the reference site had a higher TEQ or how the reference site was chosen.	The objective of the study by Ross et al. was to characterize sediment at Disposal at Sea (DAS) sites. Therefore the majority of effort in that study was directed to sediment sampling at the DAS sites, rather than the reference site. The Ross et al. report states that samples were collected within the disposal site, at nearby stations, and at a more distant reference site. The report does not state specific criteria for reference site selection, however, the primary consideration appears to be distance from the DAS site. Establishing the reason for the higher TEQ at the reference site was beyond the scope of the Ross et al. study, and would be difficult to determine given the many confounding factors (e.g., long history and broad spatial scale of industrial activity in the area, influence of ocean currents and tides on contaminant movement). Sediment chemistry at the proposed Project dredge sites (local assessment area) was characterized extensively . Determining the fate of contaminants in other parts of Prince Rupert Harbour is not a requirements of the Project's Application Information Requirements.
952.1	round 1	MOE		Water Quality	For further detailed comments, please refer to: Aurora LNG Memo MoE_Marine Water Quality.	Please see "Marine Water and Sediment Quality, and Potential Effects to Marine Fish and Fish Habitat" technical memo, which will be filed with the EAO. Any changes to the Application, as outlined in the technical memo, have been captured in an errata document and will be filed with the EAO.
953.1	round 1	MOE	Part B 04.05 Water Quality Final	Water Quality	Ecological changes owing to predicted nutrient nitrogen critical load exceedances in Lake 05 and Lake 11 remain an important uncertainty that are not addressed this application.	Please see the "Additional Information about Eutrophication and Acidification in Freshwater" technical memo for a detailed response. This technical memo will be filed with the BC EAO. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting.

954.1	round 1	MOE	Appendix A Air Quality Final	Air Quality	Figures 5-64 to 5-67 require additional isopleths showing 4 kg N/ha/yr, 3 kg N/ha/yr, and 2 kg N/ha/yr. It is not clear why only the 5 kg/ha/yr isopleth is shown, given that it was not used as an assessment threshold.	Figures 5-64 to 5-67 have been revised to include isopleths for the 4, 3, and 2 kg N/ha/y thresholds. A technical memorandum, "Revised Isopleth Figures" has been created that will capture these corrections and it will be filed with the BC EAO. The "Revised Isopleth Figures" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
955.1	round 1	MOE	Appendix D Soils Final	Soils	Two important assumptions render this critical loads of acidity assessment less conservative than the Prince Rupert Airshed Study (PRAS): a higher estimate of base cation (BCdep) deposition (5.52 meq/m2/yr in Aurora and 2.1 meq/m2/yr in PRAS), and the omission of a base cation uptake (BCu) value (0 meq/m2/yr in Aurora and 26.9 meq/m2/yr in PRAS). The Aurora Application used the Port Edward NADP wet chemistry data set to estimate BCdep while the PRAS used a combination of the Prince Rupert and Lakelse Lake NADP stations to account for potential emissions from the coal and grain terminals in Port Edward. While we recognize that forest harvesting is a minor component of the RAA (a small abound of harvesting on the Tsimshian Peninsula), we would like more information about how sensitive the assessment is to these two assumptions. How does the critical load exceedance map change with lower BCdep and higher BCu?	The assumptions for the critical loads of acidity assessment are outlined in the regulatory approved work plan titled, Acidification/Eutrophication Effects Assessment Work Plan (Nexen Energy ULC. July 2016). The Prince Rupert Airshed Study covered a much larger study area where different assumptions may apply for the Simple Mass Balance Model specifically for base cation inputs and base cation uptake. For base cation inputs, the Port Edward station was used as it was the most applicable station to the study area and measures wet deposition of cations. Lakelse Lake is much further inland relative to this study area. For base cation uptake, the amount of timber harvest determines the cation uptake value. Within the soil assessment area, there are no cutblocks and the timber volumes and types indicate non-merchantable timber based on the TCULL shapefile of the Terrain Resource Information Management (TRIM) vector data (20140612) and vegetation mapping. Large areas of Digby Island have Organic soils which often do not support merchantable timber. With no notable tree harvesting in the soil assessment area, the base cation uptake was assumed to be zero. The critical load exceedances for soil acidity would increase with lower base cation input and greater base cation uptake. The water chemistry would result in minimal reduction of critical loads and the plant uptake would lead to greater reduction of critical loads.
956.1	round 1	MOE	Appendix D Soils Final	Soils	Page 20 states that no soils were mapped as weathered bedrock. Why were colluvial soils on Mount Hayes not mapped as weathered bedrock?	For the surficial material mapping that formed the basis of defining the soil parent material, the Terrain Classification System for British Columbia (Howes and Kenk, 1988) was followed. The material mapped as colluvium on Mount Hayes is on sloped terrain and has been moved by gravity. Weathered bedrock is defined as "Bedrock decomposed in situ by processes of mechanical and/or chemical weathering:" versus colluvium defined as "Materials that have reached their present positions as a result of direct, gravity-induced movement involving no agent of transportation such as water or ice, although moving material may have contained water and/or ice."
957.1	round 1	MOE	Appendix D Soils Final	Soils	Figure 7 appears erroneous. The area of predicted exceedance for the Application Case should be larger than the Project Alone Case.	Comment noted. An errata figure 7 has been created that captures the correction. The errata document will be filed with the BC EAO.
958.1	round 1	MOE	Part B 04.06 Vegetation and Wetland Resources Final	Vegetation and Wetland Resources	An assessment of predicted changes in terrestrial ecosystems owing to critical load exceedances is necessary with reference to the scientific literature. Further explanation is necessary to support the conclusion that the terrestrial exceedances predicted in this assessment, particularly for nitrogen, are not significant; and how this significance determination is consistent with the CCME keeping clean areas clean principle.	See Section 3.1.4 of Appendix I of the Application, which describes the range of predicted changes in terrestrial ecosystems that may occur within areas modeled to exceed the critical loads for soil acidification or soil eutrophication. Relevant scientific literature is cited throughout section 3.1.4 discussing such predicted changes, and is cited in section 3.3 of Appendix I as well. Section 4.6.5.3 of the Application states that the Vegetation and Wetland Resources TDR (Appendix I of the Application) describes predicted changes for each ecological community that may be affected by the Project emissions (see section 3.1.4 of Appendix I). Therefore, the requested assessment of predicted changes in terrestrial ecosystems owing to critical load exceedances is included in the Application. Significance thresholds for residual effects are based on criteria set forth in Table 4.6-6 and are informed by effects characterization definitions in Table 4.6-5. Data presented in Table 8 and 9 of Appendix I and Section 4.6.5.3 and 4.6.6.4 of the Application pertaining to the areas of ecological communities of interest located within the modeled areas of exceedance for acidification and eutrophication (for both the Application Case and Cumulative Case), support the conclusions that the spatial extent of ecological communities of interest in the region outside the modelled areas of exceedance are sufficient to sustain each community without active management (i.e., an effect of low magnitude). These data support the conclusion that residual effects on ecological communities of interest due to acidification or eutrophication would not interfere with the sustainable persistence of these communities within the RAA, and therefore, are not significant. The CCME (2013) 'Keeping Clean Areas Clean' principle was not a criterion for determining the significance of effects on vegetation and wetland resources due to acidification or eutrophication. The CCME (2013) 'Keeping Clean Areas Clean' principle was not cited as a standard or guideline to be followed in the Acidification/Eutrophication Effects Assessment Work Plan for this Project, nor was this source cited as a standard or guideline to be followed in in the Application Information Requirements for the Project. Pollution prevention measures that support the CCME (2013) 'Keeping Clean Areas Clean' principle are provided in Table 4.2-10 in Section 4.2 of the Application. References cited: CCME. 2013. 2010-2011 Progress Report on the Canada-Wide Acid Rain Strategy for Post-2000. Canadian Council of Ministers of the Environment. PN 1490. ISSN: 1911-1541 PDF.
959.1	round 1	MOE		Air Quality	For detailed comments on sulphur and nitrogen critical loads, please refer to: Aurora LNG Memo MoE_ Critical Load Assessment.	Please see the "Additional Information about Eutrophication and Acidification in Freshwater" technical memo for a detailed response. This technical memo will be filed with the BC EAO. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting.
960.1	round 1	MOTI	6.3.5.3	Infrastructure and Services	Proponent should undertake a more detailed Traffic Impact Assessment that considers traffic impacts and safety impacts of the Project (including a sensitivity analysis) on existing land-based transportation infrastructure, e.g. Highway 16 in the Prince Rupert area and between Prince Rupert and Terrace; and any potential new land-based transportation infrastructure required for the Project. This identification should include consideration of pipeline and other relevant exclusion zones relative to road infrastructure, road access requirements, and how the Proponent proposes to transport workers, supplies and equipment to and from the site, and to and from Terrace and Prince Rupert airports. MOTI Would like to see a Traffic Impact Assessment included as a condition to Aurora's EA Certificate	The assessment of change in transportation infrastructure and services aligns with requirements outlined in the AIR. The completion of a traffic impact assessment was not a requirement. As noted during AIR screening (response to BC MOTI comment 456) a traffic impact assessment (TIA) will be undertaken as part of the front-end-engineering and design (FEED) phase for the project, prior to construction.
961.1	round 1	Metlakatla First Nation	1.2.5	Proposed Project Overview	Though it is understood a third party will be building the pipeline, for purposes of assesing the project, information regarding the location of pipeline landfall and location of gas receiving infrastructure, such a meter station, is required to determine the potential impacts of all components of Aurora's facility. Additional information is required to ensure reviewers have a fulsome understanding of project componenents and their potential impacts.	In accordance with the Section 11 Order (as amended), the scope of the Project for the purpose of the environmental assessment does not include transportation of natural gas to the LNG facility, which is anticipated to be provided by a third party owned pipeline. The third-party pipeline provider is yet to be determined.
962.1	round 1	Metlakatla First Nation	1.2.5.4	Proposed Project Overview	The application identifies the need for a temporary floating camp or an open camp during intial construction of the main camp. Metlakatla considers this requirement part of the project and thus should be described and treated as a project component, with full assessment of its potential impacts.	Please see the technical memo titled "Floating Camp Review" which will be filed with the EAO.
963.1	round 1	Metlakatla First Nation	1.2..5	Proposed Project Overview	Though waste streams are described to be discharged through marine deep water outfalls, no further information is available as to the construction, location and potential impacts of this outfall. A deep water outfall is identified as project component in the legend of Figure 1-2, but does not appear to be indicated on the map. Further information on the construction, location and operations (including temperature of discharge) for the outfalls is required to understand the potential impacts of the project.	Based on preliminary engineering and design, the proposed location of the deep water outfall is immediately south of Charles Point. The location of this outfall is identified on Figure 1-2 of the Project Overview Chapter. Preliminary details about construction of the deep water outfall are provided in Section 4.9.5.2 of the Marine Fish and Fish Habitat VC (Section 4.9). The outfall pipe is expected to be approximately 230 m in length and will run due east from a location off of Charles Point to a depth of -30 m CD. It is assumed that the intertidal section of this outfall pipe (~100 m) will be trenched and buried, the shallow subtidal section (from 0 to -5 m CD) will be covered with coarse ballast material and/or articulated concrete ballast mats, and the remaining subtidal section will be laid on the seafloor. Potential effects to marine fish and fish habitat associated with installation of the deep water outfall are assessed under the 'change in habitat effect' (due to habitat alterations, Section 4.9.5.2), the 'change in mortality risk' effect (due to potential burial of marine organisms, Section 4.9.5.4), and the 'change in health' effect (due to potential to cause elevated total suspended sediment levels). Potential effects to marine fish and fish habitat associated with operation of the deep water outfall are assessed under the 'change in mortality risk' effect (due to potential impingement and entrainment of marine fish, Section 4.9.5.4), the 'change in behavior effect' (due to the physical presence of the pipe, Section 4.9.5.3), and the 'change in health' (due to exposure to effluent discharge, that may result in health effects). Potential effects to marine water quality associated with the discharge of waste water from the Charles Point outfall are assessed under Section 4.5.15.3 (Water Quality VC).
964.1	round 1	Metlakatla First Nation	1.7.1	Proposed Project Overview	More information or a description of what a "1000MW combined cycle natural gas plan with an electric drive liquefaction process' is/entails. Without this information it is very hard to understand table 1-24 or understand the proponent's rationale for choosing the 250MW combined or Simple Cycle Natural Gas Plant over the other option. Readers will not understand how the proponent came to the conclusion they came to without having a better understanding of the power options and what they are/entail.	Table 1-24 of the Application evaluates three potential facility power options. The scenarios were evaluated based on technical, economic, environmental and safety criteria. The three scenarios include: Scenario #1-A total of 24 MTPA liquefaction capacity using electric motor driven refrigerant compressors ("E-LNG"). This concept would include the sourcing of all of the 1000 MW of electrical power required to operate the complete facility from either an Independent Power Provider (IPP) or BC Hydro . Scenario #2-A total of 24 MTPA liquefaction capacity using electric motor driven refrigerant compressors ("E-LNG"). This concept would include the installation of an onsite gas turbine generation (GTG) power plant that would supply the 1000 MW required for the facility. The GTG is currently proposed to be a combined cycle power plant. Scenario #3-current preferred scenario- A total of 24 MTPA liquefaction capacity using a combination of gas turbine driven (GTD) refrigerant compressors on the LNG trains plus the installation of an onsite 250 MW gas turbine generation (GTG) power plant to provide electrical power to the balance of the facility. The onsite GTG would supply facility ancillary electrical needs (i.e., powering everything else except the LNG trains). The GTG has been studied as either simple cycle or combined cycle and is currently planned to be a combined cycle power plant. The Project is continuing to study options to source the facility electrical power requirements from either an Independent Power Provider (IPP) or BC Hydro. Sourcing electrical power from elsewhere would help to reduce the Aurora LNG facility air, GHG, and acoustic emissions. The facility requires the selected power source to be highly reliable and provide sufficient redundancy to avoid power fluctuations (i.e., brown outs) or complete power failures. A power fluctuation could cause some or all of the facility to partially or completely shutdown with associated flaring. A complete power failure would cause the entire facility to have an emergency shutdown with associated flaring. Early discussions held with BC Hydro indicate that the existing electrical infrastructure in Prince Rupert area is unlikely to support some or all of the power requirements of the Project. Based on this information, the project has selected Scenario #3 as the preferred scenario for the review of the Application. Scenario #3 allows Aurora LNG to design in and manage the facility power reliability and redundancy to avoid power fluctuations or power failures. Aurora LNG will continue discussions with BC Hydro and other potential power providers to further evaluate these other options as the Project moves through the regulatory review and into more detailed design.
965.1	round 1	Metlakatla First Nation	1.7.1	Proposed Project Overview	The application indicates that a tranmission line from the BC Hydro grid will be required to be built to Digby Island. Please include the details of potential locations and cooridors on Digby of the tranmission line. Impacts associated with transmission line construction need to be included in the assessment of impacts for a number of VCs in the application.	As noted in section 1.7.1.1 of the Application, BC Hydro will be evaluating the feasibility of providing additional power from its existing hydro grid to Digby Island, which is expected to require infrastructure upgrades potentially including the installation of a new transmission line to the island. Engagement to date with BC Hydro has indicated that it is unlikely that the existing BC hydro grid can supply some or all of the power needed to produce LNG and or operate Project infrastructure, and the feasibility of this alternative power option is subject to the results of BC Hydro's own internal evaluation. As such, the BC hydro transmission line is not in the scope of the Project, as defined in the Section 11 Order (as amended) and is therefore not included in the assessment.
966.1	round 1	Metlakatla First Nation	1.7.5	Proposed Project Overview	MSS provided feedback early on during pre-application that alternatives for DAS need to be examined and alternative locations for DAS need to be identified (other than Brown's Passage). Nexen identifies that they are considering on-land disposal as opposed to DAS but as of right now, there is no comfort that DAS will not be needed. From their application, it looks like Nexen did look south of Frederick point as a potential alternative however ECCC indicated it was not suitable. Metlakatla has major concerns with respect to the usage of Brown's Passage as a disposal site and requires a fulsome and transparent alternatives assessment, beginning with a constraints mapping exercise which includes First Nation interests, to identify potential sites for further investigation and consultation.	The EAO hosted a meeting on April 28, 2017 with Aurora LNG and members of the Working Group to discuss DAS and potential alternative sites. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
967.1	round 1	Metlakatla First Nation	3.6.6	Assessment Methods	The proponent describes thresholds as "the limits of an acceptable change in measurable parameter or state" (p.3-17). This establishes a reasonable expectation that the threshold should be indicated by a numerical or detailed qualitative value that can be used as a metric for establishing significance. In many cases throughout the application, however, the threshold provided is insufficiently defined to allow a clear statement about predicted effects being below or above the threshold, leaving determination of significance in the realm of opinion. Specific examples of this concern with threshold establishment are identified in relation to specific VC assessments, below.	Consistent with EAO guidelines (2013), the Application uses both quantitative and qualitative thresholds in the determination of significance. Per Section 3.6.6 of the AIR and Section 3.6.6 of the Application, threshold criteria were developed for each potential effect. Where thresholds were not set by guidelines, management standards or regulations, a qualitative threshold was developed to present the limits of an acceptable change. Other factors used to derive thresholds for significance include resource management objectives, community standards, scientific literature or ecological processes (e.g., desired states for fish or wildlife habitats or populations) and professional judgement. Reference: Environmental Assessment Office (EAO) 2013. Guideline for the Selection of Valued Components and Assessment of Potential Effects. Available at: http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf
968.1	round 1	Metlakatla First Nation	Table 3-4	Assessment Methods	Please indicate which of these projects will supply gas to the Aurora Project.	As outlined in Section 1.2.7 of the Application, the natural gas supply for the Project (also known as feed gas) will be sourced from within the Western Canadian Sedimentary Basin including the Horn River and the Liard and Cordova basins, as well as from market hubs. Natural gas will be delivered to the Project via a third party-owned pipeline which is yet to be determined and, consistent with the Section 11 Order and the final Application Information Requirements for the Project, not within the scope of this Project assessment.
969.1	round 1	Metlakatla First Nation	4.2.2.2	Air Quality	Rationale for exclusion of ozone due in part to thick cloud cover is not sufficient to preclude it from the air quality assessment, especially under a climate change scenario. Ozone should be included in the air quality assessment, especially given its potential impact on vegetation	Early in the EA process it was determined that the addition of precursor emissions from the Project is unlikely to alter the existing concentrations of ozone meaningfully. Consistent with the final Application Information Requirements (AIR), secondary ozone formation was therefore not pursued for the air quality assessment. None of the LNG assessments performed in BC has considered secondary ozone formation. It is not an issue associated with LNG facilities located in rural/remote regions.

970.1	round 1	Metlakatla First Nation	4.2.2.4	Air Quality	Primary pollutants expected from the construction phase include coarse particulate matter such as TSP and PM10. TSP should also be included as a substance of concern.	Measures are proposed to reduce, avoid, or mitigate coarse fugitive particulate emissions from construction. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as limiting vehicle speed, and dust suppression. Coarse particulate matter emissions are easily managed in this setting, and are generally not an issue. The assessment focuses instead on fine particulate matter (PM2.5) from combustion sources.
971.1	round 1	Metlakatla First Nation	4.2.4	Air Quality	Burning of biomass during land clearing is not identified as a project interaction. Can Aurora confirm that no burning activities will occur as part of the construction activities? If burning is to occur, it needs to be included as a project interaction.	Measures are proposed to reduce, avoid, or mitigate emissions from the burning of biomass. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as salvaging timber, avoiding biomass burning, and reducing or postponing biomass burning consistent with the Open Burning Smoke Control Regulation (BC Reg. 145/93 and BC Reg. 41/2016 amendments). Air curtain burners are an effective technology and will be considered during the FEED process as part of the land clearing procurement process.
972.1	round 1	Metlakatla First Nation	4.2.4	Air Quality	Exclusion of possible venting sources in the air quality assessment is not discussed. Exclusion of venting sources requires a rationale.	Facility equipment associated with natural gas liquids (NGL) will be a closed system. There will not be any significant continuous venting of hydrocarbon emissions. Boil off gas will be recovered during storage and loading processes and re-injected into the fuel and feed gas systems. Piping, vessels, pumps and tanks will be designed to minimize potential for fugitive hydrocarbons by using best practices such as the Best Management Practice Report published by the Canadian Association of Petroleum Producers Management for Fugitive Emissions at Upstream Oil and Gas Facilities (January 2007). The design strategy to minimize fugitive emissions for each valve, seal, pump, and tank in hydrocarbon service will be determined during detailed design. Aurora LNG will also implement a Directed Inspection & Maintenance (DI&M) Program to routinely inspect and repair leaking components (Table 4.3-12, Mitigation No. 4.3.5)
973.1	round 1	Metlakatla First Nation	4.2.5.2	Air Quality	Aurora has not provided a description of potential effects from shipping traffic along the shipping route. Marine-based emission sources only include maneuvering and berthing activities by LNG carriers and tugs.	The approved Application Information Requirements (AIR: Sect 4.2.2) notes that air quality will be assessed through dispersion modeling to determine the potential effects of Project marine vessels on air quality for activities near the LNG facility. This includes the LNG and support vessels when maneuvering and at berth. The AIR notes that potential effects from shipping traffic associated with Project vessels are excluded from the dispersion modelling assessment based on experience with recent projects. More specifically, the Kitimat LNG project was approved and the dispersion modelling completed for the EA only assessed vessels at berth. The LNG Canada project dispersion modelling assessed vessels at berth and shipping traffic and that assessment clearly demonstrated that effects on air quality associated with marine shipping were not significant. The BC MOE approved the final Detailed Model Plan (Appendix 1, Air Quality - TDR) which excluded modelling of Project LNG vessels when underway.
974.1	round 1	Metlakatla First Nation	4.2.2.5	Air Quality	Sensitive receptors identified during the First Nations consultation process in addition to community receptors should be identified and provided on a figure.	Figure 3-2 from Appendix 4 (Air Quality Technical Data Report) has been revised to more clearly show the sensitive receptors identified during First Nation consultation and included in the air quality and human health risk assessments. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
975.1	round 1	Metlakatla First Nation	4.2	Air Quality	Regardless of regultory requirements, a change in air quality from current conditions is of great concern to Metlakatla members. Further consultation, information sharing, explanation, and additional analysis is required to improve accuracy of findings of air quality impacts as well as to effectively translate and communicate these findings to Metlakatla membership and leadership.	Aurora LNG welcomes any opportunity to continue to consult with Metlakatla members and share information or provide further explanation on analysis undertaken.
976.1	round 1	Metlakatla First Nation	4.3.5.2	Greenhouse Gases	The proponent has indicated that a GHG Management Plan will be prepared. The GHG Management Plan should be prepared sufficiently to include mitigations that can support the application's conclusions as part of the application and address all project phases	As per CEA Agency (2003) guidance, a project that has been determined to have a high magnitude of GHG emissions should prepare a GHG Management Plan. The Aurora LNG has committed to developing a GHG Management Plan (Mitigation 4.3.6) upon Project approval. In Section 4.3.5.2 of the Application, "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislation and will contain continuous assessment of monitoring and management requirements applicable to the mitigation listed in Table 4.3-12 (i.e., requirements of a fugitive emission survey program). The management plan will also contain a Best Achievable Technology analysis." This Plan will consider all phases of the project
977.1	round 1	Metlakatla First Nation	4.3.5.2	Greenhouse Gases	The proponent states that the management plan will contain a Best Achievable Technology analysis. Given the proponents experience, an analysis would be expected as part of the application, which can be updated during each phase of the project.	A GHG Management Plan will be prepared to assess monitoring and management requirements applicable to all phases of the Project. The Plan will include discussion that aligns with guidance from the BC Ministry of the Environment on " Best Achievable Technology" (BC MOE 2015) and guidance from the Ministry of Natural Gas Development (MNGD) entitled "Best Available Techniques Economically Achievable" (MNGD 2014). British Columbia Ministry of Environment (BC MOE). 2015. Ministry of Environment FactSheet – Waste Discharges. Best Achievable Technology. Ministry of Natural Gas Development(MNGD). 2014. Best Available Techniques Economically Achievable Guideline.
978.1	round 1	Metlakatla First Nation	4.3.2.4	Greenhouse Gases	Greenhouse gases assessment does not assess whether the emissions from project will affect climate change and how potential changes in climate may affect infrastructure associated with the project as laid out by the Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment (FPTCCCEA) 2003 federal guidance document.	As outlined in the AIR, the GHG assessment does not include an evalulation of Project impacts on climate change. CEA Agency (2003) guidance states GHG assessments cannot address the significance of a single project's potential effect on climate change. As identified in Section 4.3.1 of the Application, the effect of climate change on the Project are addressed in the Effects of the Environment on the Proposed Project (Section 10.0)
979.1	round 1	Metlakatla First Nation	4.3.2.5	Greenhouse Gases	The assessment should describe the historical climate trends and the future climate projections across spatial boundaries.	Historical climate trends can be found in the Air Quality TDR (Appendix A of the Application). Future climate projections can be found in Section 10.2.8 of the Application.
980.1	round 1	Metlakatla First Nation	4.3.2.8	Greenhouse Gases	While the contribution of an individual project to climate change may not be easily measured, Project GHG emissions on climate change should be included and adequately assessed as a potential residual effect.	As outlined in the AIR, the GHG assessment evaluates the direct emissions from the Project. Climate change is studied at the global scale; its relation to global GHGs is evaluated by international bodies such as the Intergovernmental Panel on Climate Change (IPCC). The study of climate change is outside the scope of this assessment. IPCC conclusions applicable to this assessment are identified in Section 4.3.6 of the Application.
981.1	round 1	Metlakatla First Nation	4.3.4	Greenhouse Gases	Burning of biomass will result in GHG emissions. If burning is to occur, it needs to be included as a physical activity. If burning is not to be included, a commitment is required that it will not occur as part of construction or operations activities	Mitigation 4.2.5 states the Project will "Avoid burning of biomass." The construction GHG inventory conservatively includes burning of biomass to account for debris, stumps, and unused portions of the salvaged timber. However, the Project intends to avoid the burning of biomass.
982.1	round 1	Metlakatla First Nation	4.3.4	Greenhouse Gases	Vehicle traffic is not listed as an activity under Operations and needs to be assessed as a potential effect.	As per the WCI quantification methods used by the Greenhouse Gas Industrial Reporting and Control Act: Reporting Regulation, mobile equipment at facilities that are required to report GHG emissions include: -on-site transportation or movement of substances, materials or products, and -other mobile equipment such as tractors, mobile cranes, log transfer equipment, mining machinery, graders, backhoes and bulldozers, and other industrial equipment. These types of operations do not apply to the Project. The WCI quantification methods further states that on-road vehicles are not included. On-road vehicles would be the only types of vehicle traffic during Project operation.
983.1	round 1	Metlakatla First Nation	4.3.4	Greenhouse Gases	Given the duration of operations, how can waste management (including collection and treatment) not be considered to require GHGs and result in potential effects? Please include a description of waste management during the Project life-cycle on GHGs.	As indicated in the Application, it is not anticipated that waste management will contribute to GHGs in a substantial manner. Aurora LNG intends to avoid open burning of accumulated waste during construction and operation of the Project. These activities will be managed through a Solid Waste Management Plan. Activities in support of waste management at the site, such as handling and transport, will not be large GHG sources. Further, as per WCI guidance, the mobile equipment used for handling waste is not required to be reported to the BC GHG Industrial Reporting Regulation (refer to WCI.280 in guidance document). For a more detailed discussion on waste management, see Section 6.3.5.2 of the Application.
984.1	round 1	Metlakatla First Nation	4.3.10	Greenhouse Gases	Proponent already determined that GHG emissions during operations are considered to have a high magnitude and indicate that a detailed GHG Management Plan will be completed upon project approval. Given the magnitude, a management plan should be completed as part of the application.	As per CEA Agency (2003) guidance, a project that has been determined to have a high magnitude of GHG emissions should prepare a GHG Management Plan. The Aurora LNG has committed to developing a GHG Management Plan (Mitigation 4.3.6) upon Project approval.
985.1	round 1	Metlakatla First Nation	Table 4.4-3 and Figure 4.4-1	Acoustic Environment	Port Edward does not appear to be included in the RAA. Given the projects proposed for Ridley and Lelu Islands and the potential for cumulative effects on Metlakatla members living in Port Edward, it should be included in the RAA and effects should be assessed.	Please refer to the technical memo "Cumulative Noise Assessment" for the cumulative noise assessment at two additional Port Edward receptors. The technical memo will be filed with the BC EAO. The "Cumulative Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
986.1	round 1	Metlakatla First Nation	Figure 4.4-1 and Table 4.4-4	Acoustic Environment	While the prevailing wind in the Prince Rupert region is from the south-east year round, winds in winter are considerably higher, suggesting that noise may be travel farther in winter. Please indicate how data from summer only stations (M1, in particular) have been used and the model ling based on it corrected to account for higher winter noise carriage. Please indicate where (which sections) winter predictions are presented in the relevant TDRs.	The ambient sound levels are higher during high wind and rainy weather conditions. For baseline monitoring, data collected during high wind events (exceeding 15 km/hr) and rain events is not included in the determination of baseline sound level. If the wind is higher during the winter period, the ambient sound level collected at receptor M1 during the summer season is likely to be lower. This is considered a conservative approach as the use of a lower ambient sound level (i.e. during summer and excluding high wind and rain events) will result in a higher predicted impact from the Project noise effect in the assessment. The noise model considered wind speed up to 5 m/s (or 18 km/hr) when the receptor is downwind of the noise source. The wind speed was based on ISO 9613-2 standard, which assumes 1 to 5 m/s downwind condition from the source to the receptor in the sound propagation calculation.
987.1	round 1	Metlakatla First Nation	4.4.3	Acoustic Environment	the Application notes that "the acoustic environment is characterized primarily by sounds from nature, such as those originating from birds, insects, wind-generated noise..." Noting that natural and anthropogenic noises can have similar noise levels but be perceived differently, how is the addition of anthropogenic noise distinguished as an effect? If distinguished through the metric of "annoyance" (%HA), have annoyance levels been disaggregated by receptor community to address the potential for first nations communities to be more highly annoyed by additional anthropogenic noise? If not, what is the rationale for not doing so? Failure to do so prevents a complete assessment of effects on TU.	Natural and anthropogenic noise effects may be perceived differently. The %HA metric does not separate the sound quality between anthropogenic noise and sounds from nature. While First Nations communities have indicated that anthropogenic noise may have different effects, the effects are in part, perceptually based values, which vary from one person to another. Also, there is no available literature that quantifies the potential annoyance of First Nations communities due to the difference in sound quality between anthropogenic noise and sounds from nature. In addition to sounds from nature, the acoustic environment is also influenced by noise effects from marine traffic (Section 4.4.3, page 4.4-13 of Application).
988.1	round 1	Metlakatla First Nation	4.4.4	Acoustic Environment	Environmental Assessment of LNG facilities in Australia indicate the potential for low frequency noise (LFN) and vibration to be generated from vehicles used during construction, and from both facility and vessel activity during operations. What is the rationale for excluding these from consideration and assessment, particularly given the proximity of flare stacks (which contribute LFN in the form of pressure waves) to Delusion Bay? Delusion Bay is presently home to large populations of birds which are known to be sensitive to LFN/vibration.	LFN analysis results during both construction and operation phases are included in Section 4.4.5.2 of the Application. The LFN analysis for Year 1 construction, Year 5 construction, and operations phase are presented in Table 4.4-17, Table 4.4-18, and Table 4.4-19 of the Application, respectively. The results are presented for both the daytime and nighttime period.
989.1	round 1	Metlakatla First Nation	Table 4.4-19	Acoustic Environment	dBA weighted noise is used because it is considered a better tool for measuring injury to human hearing in workplace exposure. dBC is a better metric for capturing LFN, particularly at night when sleep may be disturbed by LFN, experiences as hum or vibration. Some literature (e.g. Berglund and Lindvall, 1995, WHO) indicates that 30dB should be considered the maximum nighttime noise limit where significant portions of noise are derived from LFN. Given exceedances of OGC limits for dBC-dBA, what is the rationale for using the ANSI guidance rather than a more conservative value?	The BC OGC Noise Guideline uses a cautionary limit (e.g., 20 dB) on the difference between the C-weighted and the A-weighted levels. When the actual difference exceeds the cautionary limit, further evaluation is recommended. Under the BC OGC noise guideline, the evaluation considers low frequency tones. If no low frequency tonality is present, potential adverse LFN effects are deemed as acceptable even if the cautionary limit is exceeded. In order to identify tonal component at a receptor, the sound pressure level must be in one-third octave band center frequency. This low frequency tonality is commonly identified from measurements instead of prediction modelling because equipment noise emission information in one-third octave band center frequency is typically not available from the manufacturer. When there is no available information to confirm the low frequency tonality, the ANSI 12.9 standard is used in addition to the BC OGC Noise Guideline to assess potential LFN effects. Low frequency noise effect is addressed in the technical memo "Low Frequency Noise Assessment ". The "Low Frequency Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. The sleep disturbance effect is address in the technical memo "Sleep Disturbance and Speech Interference" based on the WHO noise guidance. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. An errata document and the technical memos will capture these corrections and provide additional information, and they will be filed with the BC EAO.

990.1	round 1	Metlakatla First Nation	Table 4.4-20, 4.4-21, and 4.4-22	Acoustic Environment	Please provide additional columns for each of these tables that indicate Ld(dBC) and Ln(dBC) for Existing, Year 1 Construction, Year 5 Construction, and Operations time periods to allow a better understanding of nighttime effects on sleeping in sensitive areas including Metlakatla Village and Kinahan Islands (where sleeping campers may be present)	The sleep disturbance effect is addressed in the "Sleep Disturbance and Speech Interference" technical memo based on the WHO noise guidance. The WHO noise guidance uses A-weighting decibel sound level for sleep disturbance threshold. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Existing Ld and Ln in C-weighting decibel is not available from the monitoring program. Prediction C-weighting decibel results for Year 1 Construction, Year 5 Construction, and Operation phases are presented in Table 4.4-17, Table 4.4-18, and Table 4.4-19 of the Application. The C-weighting decibel results were used to assess low frequency noise effect. Additional information on low frequency noise effect is also provided in the"Low Frequency Noise Assessment' technical memo. The technical memos will be filed with the BC EAO. The "Low Frequency Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
991.1	round 1	Metlakatla First Nation	4.4.5.3	Acoustic Environment	The Application states that "no mitigation is proposed during the operations phase as negligible effects are expected". The absence of data regarding dBC at night suggests that this statement cannot be fully supported. LFN and vibration remain a concern for the community and, at a minimum, an ongoing monitoring and adaptive management plan must be developed to confirm predictions and respond if LFN/vibration result in community annoyance or adverse health effects.	Mitigation for the predicted change in noise level is presented in Section 4.4.5.2 Table 4.4-9 of the Application. Details on a noise monitoring program will be included in the Noise Management Plan (per Section 14.5 of the Application) to confirm assessment predictions and provide information for corrective actions (continuous improvement programs), if required. The Noise Management Plan will also describe a process for outlining how complaints regarding noise, including LFN and vibration, will be addressed. LFN analysis results during both construction and operation phases are included in Section 4.4.5.2 of the Application. The LFN analysis for Year 1 construction, Year 5 construction, and operations phase are presented in Table 4.4-17, Table 4.4-18, and Table 4.4-19 of the Application, respectively. The results are presented for both the daytime and nighttime period.
992.1	round 1	Metlakatla First Nation	4.4.10	Acoustic Environment	The Assessment is not satisfactory in two regards: 1) the application has dismissed the potential for LFN during operations without adequate data and rationale to do so and (2) the almost exclusive focus on dBA renders the assessment sufficient only to assess effects of noise on humans. Please provide an additional discussion of bird sensitivity to noise (both dBA and dBC) and an assessment of the predictions for noise on birds. Particular emphasis must be paid in this discussion to the potential effects to birds of operational noise given the proximity of infrastructure that may cause significant noise immediately adjacent to Delusion Bay, currently a site of high bird density.	A discussion on potential noise-based effects (i.e., dBA and dBC) to human receptors is provided in Section 4.4 of the Application. The low frequency noise effect analyses for construction and operation are summarized in Table 4.4-17 to Table 4.4-18 of the Application. The results indicate no exceedance when compared to the ANSI 12.9 standard threshold for human receptors. Wildlife-related literature has primarily centered on A-weighted decibel noise effects, as it represents the most common weighting used in noise measurement. There is limited information available on the effects of C-weighted decibel noise to wildlife. Section 4.7.5 of the Application discusses indirect effects of change in habitat, incorporating available scientific literature, based on noise-based effects for species occurring within the LAA (or for similar species whose effects are expected to be representative). The riparian buffer (mitigation 4.5.1) is expected to reduce sensory disturbance effects to wildlife using habitats in Delusion Bay.
993.1	round 1	Metlakatla First Nation	4.4	Acoustic Environment	Acoustic disturbance is a notable concern for Metlakatla members. For purposes of consultation, further work will be required by Nexen to demonstrate to members how acoustic impacts will affect their daily activities, undertaken at multiple locations. Regardless of the measurements and predictions reported in this chapter, members value the pristine and relative quiet of their marine and land based experiences in and around the project area. Impacts to members' experiences must be assessed and fully understood to inform rigorous conclusions on the project.	As per Section 14.5 of the Application, Aurora LNG will develop a Noise Management Plan in advance of Project construction. The Plan will include a description of requirements for notifying local residents of construction works, and outlining how complaints regarding noise will be addressed. Aurora LNG will continue to engage with Metlakatla First Nation in order to better understand concerns regarding noise impacts. This increased understanding will be incorporated into Aurora LNG's continuous improvement programs as they relate to mitigating Project acoustic effects.
994.1	round 1	Metlakatla First Nation	4.5.3	Water Quality	Each lake/stream appears to only be sampled once. Why was seasonality not addressed through field work?	There are no effluent discharges to lakes or streams planned, so for general assessment of freshwater quality, seasonal water quality data is not needed. For freshwater quality, related to the potential for acidification and eutrophication, it has been common practice in other regional assessments to sample lakes during fall turnover to capture fully mixed conditions that represent times of maximum nutrient concentrations. Seasonal data for identified areas of concern (e.g., lakes with predicted critical load exceedances) should be collected as part of future regional monitoring programs.
995.1	round 1	Metlakatla First Nation	4.5.3	Water Quality	How was the methodology changed for LAK03 (exhibiting a thermocline)? Were samples collected above and below thermocline?	For LAK03, a composite sample was collected to incorporate stratified layers.
996.1	round 1	Metlakatla First Nation	4.5.6.3	Water Quality	What are the direct effects of the nutrient-nitrogen critical load values being exceeded for LAK12? Metlakatla needs to further understand the implications of this exceedance and an analysis of how it will impact the community water supply and recreational values is required.	There are no nutrient nitrogen exceedances predicted for Lake 12. A table showing all nutrient nitrogen exceedances can be found in Appendix E: Surface Freshwater Quality Technical Data Report (Appendix 1, Table 1-5 Nutrient Nitrogen Critical Load Exceedances).
997.1	round 1	Metlakatla First Nation	Table 4.5-26	Water Quality	The use of tugs equipped with propulsion systems that reduce sediment scour will be considered.' Considered is a weak word that should not be given a high likelihood of success expectation. The use of tugs equipped with propulsion systems that reduce sediment scour should be a mitigation measure used throughout the whole project.	This mitigation was rated as having a high likelihood of success because tugs equipped with propulsion systems that reduce sediment scour are widely used in industry, and their limitations are well-understood. Aurora LNG will make a final decision on tug propulsion type when Project detailed design is complete.
998.1	round 1	Metlakatla First Nation	Appendix E-Water Quality	Water Quality	Concentrations of TOC were not available for the historical datasets; therefore, DOC concentrations were used in the calculation.' Was the calculation modified to account for DOC being used instead of TOC?	Concentrations of TOC and DOC were often similar in waterbodies where both parameters were sampled. For the sites sampled on Digby Island and the Tsimpsean Peninsula, no change in the calculation was required, as TOC was measured. For the Environment Canada dataset only DOC was measured, therefore this value was supplemented into the calculation in place of TOC to calculate acid neutralizing capacity. Typically, dissolved concentrations are less than total concentrations and therefore the use of DOC will give a more conservative estimate (i.e., lower ANC value). There is no adjustment to the calculation required.
999.1	round 1	Metlakatla First Nation	Appendix I	Vegetation and Wetland Resources	Provide information as to why an invasive species specific survey wasn't conducted within the PDA and Terrestrial LAA? I.e. the focus was on roadways, cleared areas, corridors.	The success of implemented Best Management Practices (BMPs) related to invasive plants are well understood, and Environmental Inspectors will be well qualified to identify and manage invasive plants. Aurora LNG does not consider a specific invasive plant survey necessary for this Environmental Assessment. An Invasive Plant Management Plan (IPMP; Mitigation 4.6.6) will be developed in consultation with regulators. The IPMP (described in Section 14.6 of the Application) will describe BMPs which will meet legislated requirements and permit conditions related to invasive plants and invasive plant management.
1000.1	round 1	Metlakatla First Nation	Appendix I	Vegetation and Wetland Resources	In addition to the Weeds Act and NWIPC invasive species list, were any other invasive species lists (additional unregulated invasive plants of concern in BC ISCBC) consulted?	No. The Northwest Invasive Species Council is the relevant regional partner to the broader BC ISCBC.
1001.1	round 1	Metlakatla First Nation	4.6-10	Vegetation and Wetland Resources	Pre-construction rare plant surveys will be conducted in the PDA, near known locations of rare plants.' Please define "near".	"Near" in this context means: within the spatial extent of contiguous suitable habitat for the known occurrence of a given species.
1002.1	round 1	Metlakatla First Nation	4.6.3	Vegetation and Wetland Resources	The red-listed non-vascular plant, Sphagnum major (no common name) and blue-listed non-vascular plant, Sphagnum centrale (no common name) will be translocated from the known locations within the PDA. This mitigation measure involves salvaging the species from the PDA and transplanting it outside of the PDA so that it may persist within the RAA. How will compensation be achieved if transplants do not succeed?	An example of possible compensation, should translocation fail, could be securing, restoring, or enhancing populations of Sphagnum majus and Sphagnum centrale in a nearby area. There are several populations in the vicinity of the Project, including one on Kaien Island, east of Digby Island.
1003.1	round 1	Metlakatla First Nation	4.6-31	Vegetation and Wetland Resources	4 TU species were identified in the PDA but not elsewhere in the terrestrial LAA. Are the locations of these recorded occurrences mapped?	Yes, spatial data for each record exists, though it is not presented graphically in the Application. This information can be made available to Metlakatla First Nation if interested.
1004.1	round 1	Metlakatla First Nation	4.6.5.2	Vegetation and Wetland Resources	TU species commonly occur elsewhere in the RAA. Has the accessibility of these TU species by local FN groups been considered? Has compensation, transplanting TU species to be destroyed in the PDA to other FN accessible areas on Digby Island?	Yes, access to TU species has been considered in the assessment. Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include an assessment on vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address site-specific loss of vegetation resources for traditional use within the PDA. Also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments"prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. Transplanting TU plant species from within the PDA to areas outside the PDA has not been considered among the mitigation measures for the Project.
1005.1	round 1	Metlakatla First Nation	4.6	Vegetation and Wetland Resources	Please provide a figure showing rare plant survey locations	Rare Plant Survey locations are shown in Figure 3 of the Vegetation and Wetlands Resources Technical Data Reportin Appendix I of the Application.
1006.1	round 1	Metlakatla First Nation	Table 4.6-11, 4.6-10	Vegetation and Wetland Resources	Where effects to vegetation from NO2 and SO2 atmospheric concentrations, soil acidification or soil eutrophication are predicted to occur through modelling, vegetation and soils will be periodically monitored as necessary in consultation with the BC MOE. This mitigation measure will monitor for changes in vegetation and soils, and provide adaptive management if necessary. Please provide details on the monitoring program expectations likely to be requested by MOE.	The details of this monitoring plan are still to be determined. However, examples of monitoring parameters could include sampling of soils within predicted exceedance areas to measure pH and Nitrogen (various forms), along with vegetation attributes such as species composition, cover, and health and vigor at each soil-sampling site. Sampling outside the modeled area of exceedance would likely be required for comparison.
1007.1	round 1	Metlakatla First Nation	Table 4.6-13	Vegetation and Wetland Resources	The table references implentation of a Wetland Compensation Plan to achieve no net wetland loss. Further details as to the compensation plan, including its planned location and main components is necessary to ensure this mitigaiton can be implemented. There is difficulty in finding locally-acceptable compensation projects on the north coast. Confidence as to the mitigation is needed prior to reviewers accepting the conclusions of this section.	The details of the Wetland Compensation Plan, such as location and main components, will be determined in consultation with the Canadian Wildlife Service/ Environment and Climate Change Canada, the Prince Rupert Port Authority (where relevant), and potentially affected Aboriginal groups, following issuance of the Environmental Assessment Certificate. Other major projects in the province provide precedents for this process whereby the details of the Wetland Compensation Plan were developed in response to the Conditions issued with the EA Certificate.
1008.1	round 1	Metlakatla First Nation	4.6.5.4	Vegetation and Wetland Resources	Will there be any compensation for TU important wetlands destroyed by the project?	The Wetland Compensation Plan aims to achieve no net loss of wetland functions for wetlands that are designated as 'ecologically or socio-economically important to a region in BC, as defined by regional guidance issued by the Canadian Wildlife Service/Environment Canada (2014), which does not necessarily include wetlands that may be of importance to First Nations for traditional use purposes.
1009.1	round 1	Metlakatla First Nation	4.6.5.4	Vegetation and Wetland Resources	Project is expected to destroy +450ha of wetlands, the majority of which are bogs. Has carbon sequestration offsetting been considered? What are the mitigation methods to deal with the reduction in carbon storage?	The Project would affect 370 ha of wetlands within the PDA, the majority of which are bogs. The carbon sequestration function of wetlands within the PDA has been considered in Section 4.6.5.4 of the Application and Section 3.3.2.2 of the conceptual Wetland Compensation Plan. Table 4 of the Wetland Compensation Plan identifies the functions and wetland area that will be replaced through compensation, and it includes carbon sequestration. The details of the Wetland Compensation Plan, such as methods of replacing the carbon sequestration function, will be determined in consultation with the Canadian Wildlife Service/ Environment and Climate Change Canada, the Prince Rupert Port Authority (where relevant, as a federal lands manager), and potentially affected Aboriginal groups, following issuance of the Environmental Assessment Certificate. Examples of methods that could be considered to compensate for the loss of the carbon sequestration function include restoration, enhancement, or creation of swamp-class wetlands, or contributions to a carbon credit program.
1010.1	round 1	Metlakatla First Nation	4.6.6.2	Vegetation and Wetland Resources	Why is the loss of red- and blue-listed ecological communities from the PDA not being compensated for? Their occurrence within the RAA does to seem like a sufficient answer; if they are present in the PDA, compensation must occur.	For regulatory guidance on this topic, the Application relies on the Objectives set for red- and blue-listed plant communities within the Great Bear Rainforest Order (GBRO), which is a Ministerial order that provides land use objectives according to ecosystem-based management principles for the region where the Project is located. The GBRO objectives for red- and blue-listed plant communities allow up to 5% of a red-listed community to be disturbed and 30% of a blue-listed community within a landscape unit to be disturbed, where there is no practicable alternative for avoidance. See Table 4 in Appendix I, Vegetation and Wetlands Resources Technical Data Report, for the proportions of each occurrence and regional extent that would be disturbed. All instances are below the allowable thresholds stated in the GBRO objectives. Other than the regulatory guidance provided by the GBRO objectives, Aurora LNG is not aware of any legislation or regulations that require compensation for the loss of red- or blue-listed communities.
1011.1	round 1	Metlakatla First Nation	Appendix I	Vegetation and Wetland Resources	Why were seaweed and fungi not included in the listed species of Traditional Use Plants in the RAA?	Seaweed were not included among Traditional Use Plants in the RAA, because the RAA for Vegetation and Wetland Resources is defined as the terrestrial portion of the Tuck and Kaien Landscape Units; terrestrial in this context refers to the area above the high tide/high water mark of the coast. Fungi were not included among Traditional Use Plants in the RAA, because plant species in the TDR and Application were limited to vascular and non-vascular plants and lichens.
1012.1	round 1	Metlakatla First Nation	4.7.3.1	Wildlife Resources (Terrestrial)	Timing of surveys were inconsistent from year to year and many surveys were only conducted once per year or season. Please explain the rationale for this approach.	Field studies for wildlife resources were completed to provide a record of occurrence and patterns in habitat use within the PDA and LAA. The scope and timing of field studies were consistent with recommendations within applicable Resource Inventory Standards Committee Standards. Although some surveys were in a single season, survey effort was replicated across and within habitat types in the PDA and LAA. To provide greater regional context, results of field studies were evaluated in consideration of regional datasets and information sources.

1013.1	round 1	Metlakatla First Nation		Wildlife Resources (Terrestrial)	Traditional ecological knowledge should include which animal species are important, used or harvested, what times of year harvesting takes place, and areas within the RAA (if available).	Available information related to the referenced areas was compiled in Appendix S.2 (Aboriginal Consultation TDR) of the Application. In particular, Aurora LNG notes the information compiled for Metlakatla First Nation in Tables 5-11 to 5-20 (p 44 to 74). Section 4.7.2.3 (Traditional Knowledge and Traditional Use Incorporation) of the Application and Section 3.1.1 (Traditional Ecological Knowledge) of the associated Appendix J (Wildlife Resources (Terrestrial) TDR) indicate that available Traditional Knowledge /Traditional Use information (i.e. the information compiled in Appendix S.2) was reviewed, considered and, where appropriate, incorporated into Section 4.7 of the Application.
1014.1	round 1	Metlakatla First Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Wildlife habitat suitability modelling: Were other habitat suitability models available for species that reside in the LAA? Why were these four species chosen for habitat modelling?	The assessment for wildlife resources uses two modelling approaches to evaluate change in habitat for species known or potentially occurring within the PDA and LAA. Wildlife habitat community modelling was developed to provide an assessment of potential effects on habitat availability for 15 wildlife habitat communities within the LAA. These wildlife habitat communities provide coverage for all habitat types that occur within the LAA and are used to assess effects of change in habitat to a wider suite of wildlife species assemblages that occupy them. Methods and findings of the wildlife habitat community models are provided in Section 4.1 of Appendix J and carried forward in Section 4.7.5.2 of the Application. These sections provide a detailed description of each of the 15 communities, describes wildlife species that are expected to occur within each, and discusses potential effects to species assemblages due to construction and operation of the Project. Four terrestrial wildlife species were selected for wildlife habitat suitability modelling (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad) based on the following suite of criteria (also described in Sections 4.7.3 of the Application and Section 4 of Appendix J): (1) likelihood of occurrence or documented use of habitats within the LAA and RAA; (2) potential interaction with Project activities; (3) conservation status; (4) ecological importance; (5) established base of information, knowledge, or data; and, (6) cultural or traditional value. The four selected species were considered to best represent the criteria listed above, given consideration of the primary habitats available within the LAA and the likelihood of occurrence based on Project and regional datasets and known habitat requirements. In addition, the four selected species were determined to be good candidates for species-specific habitat suitability models because they each require a suite of habitat features that are best assessed at the species-level (rather than at the community-level). Provincial standards advise planners to select species for suitability modelling where there is a strong understanding of the relationship between habitat characteristics and species whose life requisites (e.g., breeding, feeding) compare well with terrestrial ecosystem map units (RIC 1999). Specifically, marbled murrelet requires old to mature coniferous forests with specific tree-level characteristics for nesting (e.g., large branches, high epiphyte cover); western screech owl requires open mixedwood forest with large diameter trees for nesting and roosting; little brown myotis requires mature and old growth forests with cavities and snags for male and maternal roosting; and western toad requires shallow wetlands with fine sediments that retain open water throughout the breeding season. Collectively, the habitat requirements of the four selected species are complementary and serve to evaluate a range of habitat types within the LAA. References: Resource Inventory Committee (RIC). 1999. Wildlife Habitat Rating Standards, Version 2. Ministry of Environment, Lands and Parks. Victoria, BC. 98 pp.
1015.1	round 1	Metlakatla First Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Where were marbled murrelet audiovisual surveys conducted? Were these located in "critical habitat" or high suitability habitat?	The locations of marbled murrelet audiovisual surveys are shown in Figure 9 of Appendix J. Survey locations were selected to provide survey coverage within or adjacent to critical or preferred breeding habitat (including areas of overlap), with individual stations positioned to provide optimal audio or visual detection.
1016.1	round 1	Metlakatla First Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Species listed as important for local FNs should be considered as species of concern for the Project and the effects assessment.	Sections 4.7.2.2 and 4.7.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how the information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for wildlife resources. Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources, including identified species and areas of importance for harvesting by Aboriginal Groups; these details are also described in Appendix J. Species identified therein are discussed throughout Sections 4.7.5 and 4.7.6 where there was an identified mechanism for interaction with Project activities and infrastructure.
1017.1	round 1	Metlakatla First Nation	Table 4.7-9	Wildlife Resources (Terrestrial)	Waste management should be included in Change in Habitat (change in nutrients/contaminants) for all phases. Remediation and reclamation should be included as a change in habitat (even if change is positive).	On-site waste management includes temporary container storage to contain waste materials as a means to limit environmental releases, and subsequent effects on environmental valued components. Contaminant storage and disposal is subject to regulatory requirements, but will also be contained to prevent environmental releases. Accordingly, waste management was not considered a mechanism for interaction with change in habitat. However, the potential for waste management to serve as an attractant for some terrestrial wildlife (e.g., bears, wolves) increases the potential for human-wildlife conflict, and was carried forward in the assessment of change in mortality risk for wildlife resources (see Section 4.7.5.3 of the Application). Aurora LNG recognizes that decommissioning activities may result in a positive change in habitat availability and quality for wildlife resources. Table 4.7-9 indicates that dismantling of land-based and marine infrastructure is the primary mechanism in which that change will occur.
1018.1	round 1	Metlakatla First Nation	4.7	Wildlife Resources (Terrestrial)	Mitigation measures in the tables (4.7-10, 4.7-14 and 4.7-15) consistently refer to implementing measures "as soon as practicable" or "where practicable". For the reviewer to have any faith in the assessment, stronger commitments are required. Precise language should be used. For example: What is the maximum length of time between clearing and revegetation? Where would measures not be practicable? Wording must leave no room for non-compliance.	Aurora LNG is committed to following a mitigation hierarchy to avoid, limit, and mitigate for potential effects to wildlife resources and will implement options that result in avoiding or reducing effects to wildlife resources. Some Project activities (e.g., vegetation clearing within the PDA) will result in direct and indirect loss of habitat, however, these activities will be scheduled to occur outside of restricted activity periods to avoid effects on wildlife (as per mitigation 4.7.17). In cases where Project activities or infrastructure cannot avoid effects to wildlife resources, Aurora LNG has proposed alternative mitigation measures to reduce and mitigate those effects. For example, if vegetation clearing is required during breeding bird and amphibian periods, pre-clearing surveys will be completed (as per mitigation measures 4.7.18 and 4.7.19). Applicable management plans will provide detail on timelines for implementing Project mitigation measures, and will describe monitoring and reporting requirements, as appropriate, to support compliance monitoring.
1019.1	round 1	Metlakatla First Nation	4.7	Wildlife Resources (Terrestrial)	The Wetland Compensation Plan is only compensating for a very small fraction of wetlands to be disturbed or removed through the Project. Please see comments in the Vegetation and Wetland Resources section.	The Wetland Compensation Plan was prepared according to regional guidance issued by the Canadian Wildlife Service of Environment Canada (2014), which stipulates which wetlands are subject to the no-net-loss goal of the Federal Policy on Wetland Compensation. Offsetting for estuarine wetlands will occur through the Fish Habitat Offsetting Plan. Reference: Environment Canada. 2014. Federal Policy on Wetland Conservation – Guidance for Application and Implementation in Environmental Assessment. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p403/d37786/1404937173815_193684738c554031afd3fe7a5b3bf6196c13620cba3241eac8c3f318682e8f7f.pdf. Accessed: March 2017.
1020.1	round 1	Metlakatla First Nation	4.7.5	Wildlife Resources (Terrestrial)	Revegetating temporary work spaces is assumed to have a high success rate but some uncertainty as regeneration may take longer than expected or have lower productivity. It should also be noted that mature forests cannot be "replaced". The assumption that the success rate is high is false. From a habitat perspective, areas of forest cannot be replaced- they can take it generations to replace. This timeframe is too long to be of value.	Revegetating temporary workspaces and reclaimed land (Mitigation 4.6.5) is considered to be effective during the construction phase of the Project (i.e., short-term) and therefore expected success was evaluated for the construction phase only. The goal of this mitigation measure is to establish functional habitat to promote wildlife use after temporary spaces are no longer needed. For example, regenerating vegetation will provide security cover to support wildlife movement. To reduce the extent of necessary vegetation clearing, including clearing of mature or old forests, temporary workspaces will be limited to within the PDA boundaries to the extent practical (as per mitigation 4.7.1). Revegetation activities for temporary workspace will be provided in the Invasive Plant Management Plan. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development ofthis plan.
1021.1	round 1	Metlakatla First Nation	4.7.5	Wildlife Resources (Terrestrial)	When will a bat management plan be developed, and by whom? Key details of bat management and mitigaiton is needed to support conclusions.	Management plans will be developed by Aurora LNG prior to the commencement of construction. The Bat Management Plan will specifically outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects from change in habitat or mortality risk from Project construction and operation activities. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
1022.1	round 1	Metlakatla First Nation	4.7.5	Wildlife Resources (Terrestrial)	High-disturbance project related activities are to be avoided within 300m of occupied bald eagle nests. Helicopter distances of greater than 500m from bald eagle nests and heron rookeries has been proposed. While both these measures are good mitigation practices (with stronger language for the 300m distance), there should be monitoring that goes along with these measures to confirm that bald eagle and heron are not disturbed from nests (at least at the beginning stages of the work). In addition, heron nests/rookery should be added to the 300m buffer for high-disturbance activities.	High-disturbance Project-related activities (e.g., blasting, pile driving) will be avoided where practicable within 500 m of occupied nest locations for great blue heron (i.e., the rookery at Dodge Cove) and within 300 m of occupied nest locations for bald eagles during the breeding windows for either species. Helicopter flights will be a minimum of 500 m from known locations of great blue heron and bald eagle nests. The setback distances are based on prescribed setbacks provided in A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia, Interim Guidance, North Area (BC MFLNRO 2014), the Environmental Protection and Management Guideline (BC OGC 2016) and Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (BC MOE 2014). As per Mitigation 4.7.18, setbacks will be established around active nests to limit disturbance or displacement. The on-site Environmental Monitor will be responsible for monitoring the effectiveness of no-disturbance setbacks for all active nests within or adjacent to the PDA (including bald eagle nests), and to modify disturbance buffers as necessary to maintain effectiveness. Details for active nest setbacks will be described in the Wildlife Management Plan. Aurora LNG has further committed to monitoring the rookery for changes in breeding activity ifvegetation clearing for Project construction overlaps with the breeding window for great blue heron. References: British Columbia Ministry of Environment (BC MOE). 2014c. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: February 2017. British Columbia Ministry of Forests, Lands, and Natural Resource Operations (BC MFLNRO). 2014. A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia, Interim Guidance, North Area. 212 pp. British Columbia Oil and Gas Commission (BC OGC). 2016. Environmental Protection and Management Guideline. Version 2.2. Available at: http://www.bcogc.ca/node/5899/download. Accessed: February 2017.
1023.1	round 1	Metlakatla First Nation	4.7.5	Wildlife Resources (Terrestrial)	Please provide details for the marbled murrelet management plan. Who will be responsible for this? When will it be prepared? What will it include? Please provide the same for the Wildlife Management Plan and Bat Management Plan.	The Marbled Murrelet, Wildlife, and Bat Management Plans will specifically outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects from change in habitat, mortality risk,or movement (as applicable) from Project construction and operation activities. Management plans will be developed by Aurora LNG prior to commencement of construction. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
1024.1	round 1	Metlakatla First Nation	4.7.5	Wildlife Resources (Terrestrial)	Will management plans be prepared for other species of concern, such as great blue heron or western toad?	There are no species-specific management plans currently proposed for great blue heron or western toad. The Wildlife Management Plan will outline measures to avoid, reduce, mitigate, and monitor for breeding birds and amphibians, and will include direction on mitigation measures specific to great blue heron and western toad (e.g., Mitigation measures 4.7.4, 4.7.6, 4.7.10, 4.7.12, 4.7.16, 4.7.17, and 4.7.19).
1025.1	round 1	Metlakatla First Nation	4.7.5	Wildlife Resources (Terrestrial)	"Proposed clearing for the entire PDA footprint is estimated to result in the removal of 19ha of marbled murrelet critical habitat and 77ha of preferred habitat for marbled murrelet. Project specific studies indicate that areas outside of the PDA, specifically on the north side of Casey Cove and Metford Island, represent high-suitability with a moderate likelihood to support nesting activities." Is this statement supposed to justify the loss of critical habitat?	This statement is intended to provide context for the extent and distribution of critical and preferred breeding habitat for marbled murrelet within the PDA or LAA, and provides context for characterizing the effects of change in habitat availability for the species. Please refer to Figure 9 in the Wildlife Resources (Terrestrial) Technical Data Report for the distribution of critical and preferred habitat.
1026.1	round 1	Metlakatla First Nation	Table 4.7-12	Wildlife Resources (Terrestrial)	Table only includes four of the 19 species of management concern that may occur in the LAA or RAA. Of those, it is known that great blue heron, band-tailed pigeon, and barn-swallow are known to occur in the PDA. Why have these species not been included in the assessment?	The assessment of Project effects on wildlife resources considers effects on great blue heron, band-tailed pigeon, and barn swallow in consideration of documented or potential occurrence within the PDA and LAA, how habitats within these boundaries support life history requirements, and the mechanisms for interaction with Project activities and infrastructure. Section 4.7.5 discusses potential effects of change in habitat, mortality risk, or movement as applicable to each species. Field studies and the wildlife habitat community model (existing condition and full Project build-out scenarios) are used to support the characterization of effects for each.
1027.1	round 1	Metlakatla First Nation	4.7.5.2	Wildlife Resources (Terrestrial)	Indirect change in habitat: Only a brief discussion of acoustic emissions or in-air noise has been included. However, this discussion is based on A-weighted decibels. Where is the discussion of C-weighted decibels? The C-weighted dBs have a lower frequency sound and produce a stronger pressure wave. These waves could have a greater effect on birds, and should be considered in the assessment. How will the vibration cavity of birds be affected by the acoustic emissions? How will this relate to sudden pressure and sudden noise associated with flaring? Or with construction and operational noise?	Section 4.7.5.2 of the assessment considered indirect effects of change in habitat incorporated information on noise-based effects available in scientific literature, for species occurring within the LAA (or for similar species whose effects are expected to be representative). Available wildlife-related literature has centered on A-weighted decibel noise, as it represents the most common weighting used in noise measurement. Although there is limited information available on effects of C-weighted decibel noise to wildlife, a discussion on potential effects to human receptors is provided in Section 4.4of the Application. The low frequency noise effect analyses for construction and operation are summarized in Table 4.4-17 to Table 4.4-18. The results indicate no exceedance when compared to the ANSI 12.9 standard threshold for human receptors. Continuous flaring with high flow rate and no noise mitigation considerations can result in noise effects at nearby receptors. The LNG facility will be designed such that continuous flaring during operations will not result in regulatory exceedances. There will be flaring with higher flow rate during the startup phase; however, effects are expected to be temporary, short term, and intermittent. While flaring will affect noise production during Project operations, it is not expected to generate substantial vibration for wildlife receptors unless they are in the immediate vicinity of an active flare, in which case individuals are likely close enough to a heat source sufficient to cause injury or mortality (as assessed in Section 4.7.5.3). Aurora LNG has committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injury or mortality related to Project activities; where possible, Project personnel will be required to describe the cause of mortality (including pressure-based mortality [e.g., barotrauma]).

1028.1	round 1	Metlakatla First Nation	4.7.5.2	Wildlife Resources (Terrestrial)	The habitat suitability models chosen (marbled murrelet, western toad, western screech-owl, and little brown myotis) do not represent a diverse range of wildlife habitat types. No medium or large mammals have been considered, no small terrestrial mammals (only bats for small mammals), no songbirds, no primary cavity nesters, no aerial foraging birds (swifts, swallows).	The assessment for wildlife resources uses two modelling approaches to evaluate change in habitat for species known or potentially occurring within the PDA and LAA. Wildlife habitat community modelling was developed to provide an assessment of potential effects on habitat availability for 15 wildlife habitat communities within the LAA. These wildlife habitat communities provide coverage for all habitat types that occur within the LAA and are used to assess effects of change in habitat to a wider suite of wildlife species assemblages that occupy them. Methods and findings of the wildlife habitat community models are provided in Section 4.1 of Appendix J and carried forward in Section 4.7.5.2 of the Application. These sections provide a detailed description of each of the 15 communities, describes wildlife species that are expected to occur within each, and discusses potential effects to species assemblages due to construction and operation of the Project. Habitat suitability models were developed for four terrestrial wildlife species (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad) based on criteria described in Section 4.7.3 of the Application and Section 4 of Appendix J. Although these models were not specifically developed for large, medium, or small mammals (other than bats), songbirds, cavity nesting species, or aerial foragers, their habitat requirements are accounted for through the wildlife habitat community modelling approach.
1029.1	round 1	Metlakatla First Nation	4.7.5.2	Wildlife Resources (Terrestrial)	What explanation is there for federally designated critical habitat for marbled murrelet being assessed as "low or moderate likelihood to support nesting activity and were generally ranked as moderately suitable based on habitat attributes described…"? These critical habitat features were added to the recovery strategy in 2014, thus they should be up to date and accurate. Furthermore, while retention objectives for suitable habitat on the northern mainland coast are currently being achieved, cumulative effects of additional losses in the region are not advised. These are minimum amounts.	Environment Canada (2014) acknowledges that their current identification of marbled murrelet critical habitat "constitutes a partial identification of nesting critical habitat". The current extent of mapped critical habitat represents areas "within which nesting critical habitat is found for marbled murrelet is delineated by a set of geographic location polygons". The recovery strategy provides a set of polygons representing the largest extent of areas thought to contain suitable nesting habitat, using the best available information. Although the recovery strategy was released in 2014, it incorporates several different mapping approaches, some of which have incorporated older datasets and may not accurately reflect current conditions at individual sites (see Environment Canada 2014 for full details on methods). As a result of this mapping approach, identified polygons represent areas where the biophysical attributes for marbled murrelet nesting habitat are found but it does not necessarily mean that the entire extent of an identified critical habitat polygon meets the attributes necessary to support nesting activities. Aurora LNG used a combination of wildlife habitat assessments (i.e., desktop mapping verified by ground plots), detailed habitat assessments focused on preferred suitability habitat and identified critical habitat, and audio-visual surveys to provide a detailed, ground-truthed, assessment and verification of the availability and quality of nesting habitat on Digby Island (see Appendix J for details). Given that these field studies reflect current existing conditions and are comprehensive and site-specific, Aurora LNG expects some discrepancy between the extent of potential critical habitat identified in Environment Canada (2014) and that which has been verified through site-specific field assessments completed for the Project. For the purpose of comparison, Figure 9 of Appendix J provides an overview of the spatial extent of Project-specific habitat data superimposed with identified critical habitat polygons. In Section 4.7 of the Application, the net change in identified critical habitat was estimated to be 14 ha, accounting for less than 0.0001% of the habitat supply target for the Northern Mainland Coast population. The Project's contribution to cumulative effects is considered a conservative estimate given that: (a) the full extent of identified critical habitat polygons were used to estimate direct effects, (b) the majority of habitat is located within 500 m of shoreline and is therefore only 'moderately likely' to support nesting (Environment Canada 2014), and (c) Aurora LNG is committed to implementing a Marbled Murrelet Management Plan to avoid or reduce potential Project effects to changes in nesting habitat. Accordingly, the Project's contribution to cumulative effects of change in nesting habitat is not expected to affect the ability to achieve short and long-term regional population and habitat objectives as per the recovery strategy (Environment Canada 2014). References: Environment Canada. 2014. Recovery Strategy for the Marbled Murrelet (Brachyramphus marmoratus) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 49 pp.
1030.1	round 1	Metlakatla First Nation	4.7.5.2	Wildlife Resources (Terrestrial)	"Direct habitat removal will occur once during vegetation clearing and will persist until the PDA is reclaimed following decommissioning of the Project." Revegetation may take generations to be fully functional when replacing mature forests. Ecosystem functions will not be the equivalent of existing conditions for potentially a hundred years, if possible to recover at all.	The statement quoted is meant to confirm that vegetation in the PDA will remain cleared until decommissioning and reclamation - not that the effect on habitat will only last until decommissioning and reclamation. Duration of effects to direct habitat removal is characterized as long-term, which is defined in Section 4.7.2.6, as "Residual effect occurs across multiple breeding seasons or generations".
1031.1	round 1	Metlakatla First Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.9 includes measures for reducing the risk of lighting to "marine birds". This mitigation should also include terrestrial birds and bats.	Aurora LNG acknowledges the comment from Metlakatla First Nation. To clarify, mitigation measure 4.7.9 is applicable to terrestrial and marine birds, as well as bats and is carried forward in Sections 4.7 and 4.11. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1032.1	round 1	Metlakatla First Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.20 should include shielding to prevent birds and bats from injury or death during flaring events.	Section 1.2.5.1 describes the proposed flare system design and does not include a shielding mechanism, due to infrastructure constraints. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). As per mitigation measure 4.7.20, maintenance flaring events will be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. This is expected to reduce potential effects of injury or mortality to birds and bats; however, Aurora LNG is committed to monitoring the effectiveness of this mitigation measure through the reporting of injuries and mortalities (mitigation measures 4.7.14 and 4.7.16).
1033.1	round 1	Metlakatla First Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.12 includes mitigation measures to reduce injuries and mortalities to amphibians and other wildlife. How will this be monitored? Who is responsible? Who decides when temporary drift fencing needs to be installed? These details are important in determining the efficacy of the mitigation strategies. Furthermore, it would be advisable to develop strategies to allow amphibians and other small wildlife to cross roads in areas where migration between wetlands or other features is observed. This could include the installation of small underpasses with drift fences leading to the underpasses at key locations. This has the potential to significantly reduce road mortalities for migrating western toad.	Aurora LNG has committed to developing a Wildlife Management Plan and Transportation Management Plan (see Section 14 of the Application), both of which will include a description of activities to meet the commitment for Mitigation 4.7.12. These plans will outline detailed mitigation activities (e.g., instructions for timing, locations, and procedures for drift fence installation), effectiveness monitoring, and education and training requirements for Project personnel. The need, locations, and extent of drift fencing installation will be determined by a Qualified Environmental Professional in consultation with the on-site Environmental Monitor.
1034.1	round 1	Metlakatla First Nation	4.7.5.3	Wildlife Resources (Terrestrial)	4.7.19 mitigation cites a salvage program for toads during breeding season. Metlakatla understands that this measure has a low likelihood of success due to difficulty in identifying and then reloacting toads. Without further proof that this mitigation is possible, it should be rated as low likelihood of success and not considered as effective for the purposes of planning and conclusions of this section.	Procedures for amphibian salvage will be outlined in the Wildlife Management Plan and will be conducted following Best Management Practices for Amphibian and Reptile Salvages in British Columbia (BC MFLNRO 2016). In accordance with mitigation measure 4.7.17, Aurora LNG will adhere to clearing of wetland habitats within the PDA outside of restricted activity period (where practicable) to avoid mortality of western toads or other breeding amphibians. As per mitigation measure 4.7.19, if clearing or disturbance of open water wetland sites within the PDA cannot avoid the amphibian breeding period, amphibian salvage will be completed. Amphibian salvage during the breeding season is expected to be an effective means at reducing the likelihood of mortality as individuals are concentrated at breeding locations, and the ability to detect and capture individuals of all life stages (e.g., eggs, tadpoles or larvae, juveniles, or adults) is improved. Salvaged individuals will be relocated, subject to applicable permits, to proximal areas of suitable habitat. Wetland habitats on Digby Island with similar habitat attributes and/or where western toads were previously detected will be preferred relocation areas. Reference: BC Ministry of Forest, Lands, and Natural Resource Operations (BC MFLNRO). 2016. Best Management Practices for Amphibian and Reptile Salvages in British Columbia. Victoria, BC. 57 pp.
1035.1	round 1	Metlakatla First Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.14 includes the reporting of bird injuries or fatalities related to Project activities. This should also include any other wildlife injuries or fatalities. In addition, the mitigation mechanism should include birds, bats and other wildlife, and an Adaptive Management plan to be developed (identify when this will be prepared and by whom).	Aurora LNG acknowledges the comment and will amend Mitigation 4.7.14 to include bat and wildlife injury and fatality reporting. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. The Wildlife Management Plan will include reporting requirements of wildlife sightings and is inclusive of detections of wildlife injuries or fatalities, as a means to evaluate patterns in use, potential mortality, and for monitoring the effectiveness of mitigation measures.Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Wildlife Management Plan. An errata document is being compiled that captures this additional commitment and it will be filed with the BC EAO.
1036.1	round 1	Metlakatla First Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Characterization of Residual Effects for Change in Mortality Risk: How does having the PDA on an island affect the ability of local populations to recruit to offset losses? This is a limited resource if populations are restricted by waterbodies. Are there unique genetic populations on the island, specifically for non-flying wildlife such as terrestrial mammals and amphibians? If wildlife is salvaged during the construction phase, what is the risk of breaching the carrying capacity of populations on the rest of Digby Island?	Natural recruitment (e.g., through reproduction and immigration) is expected to offset potential Project effects to a regional population, accounting for individuals located within the LAA and RAA (including areas of Digby Island, other coastal islands, and the mainland). The area in which recruitment can occur depends on the mobility of organisms, with less mobile species (e.g., amphibians) restricted to recruitment from regional populations elsewhere on Digby Island, while mobile species (e.g., songbirds) having broader capacity. Although individual distribution for some species may be restricted to Digby Island, the Island is not known to support genetically distinct populations. If salvage is required, preference will be to relocate individuals to adjacent suitable habitats present on Digby Island to support maintenance of the overall viability of Island populations. However, the extent of salvage (e.g., the number of individuals) and the size, suitability, and access to relocation sites will inform the inclusion of alternate sites for relocation to maintain viable populations at each. Relocation sites are subject to review and approval through application for wildlife salvage under the BC Wildlife Act, and will be developed in consultation with the Ministry of Forest, Lands, and Natural Resource Operations.
1037.1	round 1	Metlakatla First Nation	4.7.4	Wildlife Resources (Terrestrial)	Table 4.7-15: See comments from previous tables (4.7-10 and 4.7-14).	Clarifications to mitigation measures presented in Tables 4.7.10 or 4.7.14 also apply to those mitigation measures that have been carried forward in Table 4.7-15.
1038.1	round 1	Metlakatla First Nation	4.7	Wildlife Resources (Terrestrial)	While a vegetated buffer around the PDA has been proposed as mitigation, this narrow strip of mature and old growth forest (30m in most parts) is inadequate to prevent losses of marbled murrelet habitat. The critical habitat within the vegetated buffer strips should also be considered effectively lost and calculated in the total losses. This is fragmentation of critical habitat. Furthermore, removing forested areas beyond 30m leaves trees exposed to wind damage and creates edge habitat. How is this useful to marbled murrelet? What is the viability of this vegetated buffer? Areas designated as "high suitability" during Project surveys should also be included in losses. These statements are based on the recovery strategy that states that the most likely suitable sites for nest habitat are 0.5 to 30km from saltwater habitat. Leaving 30m adjacent to saltwater with nothing left behind provides unsuitable habitat for marbled murrelet. Please also discuss the effectiveness of these thin vegetated buffers with respect to bat habitat.	Section 4.7.5.2 of the Application provides an estimate of direct and indirect loss of preferred breeding habitat and identified critical habitat for marbled murrelet within the LAA, after accounting for the riparian buffer. The Project is estimated to result in the direct removal of 61 ha of preferred and 14 ha of identified critical habitat (with overlap in extent between those two classifications; see Figure 9 of Appendix J). The majority of preferred and identified critical habitat is located in stands of old-growth forests located on the perimeter of Digby Island. Environment Canada (2014) identifies marbled murrelet critical habitat as "a set of polygons representing the largest extent of areas thought to contain suitable nesting habitat, using the best available information". The entire extent of an identified polygon does not neoessarily meet the attributes for critical habitat. In absence of more detailed mapping information in the recovery strategy, the Application used a conservative estimate of potential effects to identified critical habitat, including: (a) using full extent of identified critical habitat polygons to estimate direct effects, (b) qualifying habitat within 500 m of shoreline although it is only 'moderately likely' to support nesting (Environment Canada 2014). Habitat suitability models were supplemented with audio-visual surveys and detailed habitat assessments to refine the prediction of potential effects on marbled murrelet habitat. Baseline data was used to determine evidence of breeding (i.e., marbled murrelets seen or heard landing, perching, or flying through or out of the forest canopy) and to refine habitat attributes within preferred or identified critical habitat polygons (see Section 5.7.2 of Appendix J for details). To reduce potential effects on marbled murrelet nesting habitat, Aurora LNG will retain a marine riparian disturbance buffer. The riparian buffer will be a minimum of 30 m wide, but may extend beyond 30 m in some areas on the east side of Digby Island (see Figure 4.7-7). Given the proximity of these habitats to salt water, they are only "moderately likely" to support nesting habitat under existing conditions but given the width of the riparian buffer on the east side of Digby Island, they are expected to retain habitat function during construction and operation by reducing noise and light transmission to interior forested habitats remaining. To further address direct loss of nesting habitat, Aurora LNG has committed to developing a Marbled Murrelet Management Plan that will outline avoidance, reduction, mitigation, and monitoring measures to effects from Project construction and operation activities. Based on the information provided in the recovery strategy and the potential effects on marbled murrelet terrestrial nesting habitat, marbled murrelet use of the local assessment area is not expected to change as a result of the Project. The Project's residual effects and its contribution to cumulative effects on marbled murrelet are not expected to influence the long-term viability of regional murrelet populations and are therefore considered not significant. With respect to bats, the riparian buffer will be a minimum of 30 m wide, but extend beyond 30 m in some areas on the east side of Digby Island resulting in greater retention of mature and old-growth forest habitat to support roosting opportunities for local bat species. Given the width of the riparian buffer on the east side of Digby Island, this area is expected to retain habitat function during Project construction and operation. Aurora LNG has also committed to developing a Bat Management Plan that will outline avoidance, reduction, mitigation, and monitoring measures to effects from change in habitat or mortality risk for bats from Project construction and operation activities. References: Environment Canada. 2014. Recovery Strategy for the Marbled Murrelet (Brachyramphus marmoratus) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 49 pp.
1039.1	round 1	Metlakatla First Nation	4.7	Wildlife Resources (Terrestrial)	There has been no mention of white-nose syndrome in bats in this assessment. This is a major oversight, as bat populations in BC may be on the verge of a potential devastating collapse. Please revise assessment to include cumulative impacts of white-nose syndrome.	The assessment for wildlife resources recognizes that little brown myotis is a species designated as Endangered on Schedule 1 of SARA, due in part to rapid declines in eastern populations as a result of the spread of white-nose syndrome (WNS; Environment Canada 2015). Although there have been no confirmed records of white-nose syndrome (WNS) in British Columbia, Aurora LNG is aware that the Washington State Department of Fish and Wildlife confirmed that WNS was identified in a single little brown myotis in March 2016. Recovery objectives for populations of little brown myotis in non-affected areas of western Canada are to maintain current population levels (Environment Canada 2015). Accordingly, Aurora LNG has committed to several bat-specific mitigation measures, including the development of a Bat Management Plan, which will outline measures to avoid, reduce, and mitigate for potential effects from Project infrastructure and activities. Mitigation measures applicable to little brown myotis (and other bat species) are listed in Table 4.7-17. Collectively, these measures are expected to limit the Project's contribution to cumulative effects on little brown myotis and supports the current objective to maintain current population levels in western Canada. Reference: Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.
1040.1	round 1	Metlakatla First Nation	4.7	Wildlife Resources (Terrestrial)	How will anthropogenic structures within the PDA influence bats and bat mortality? Little brown myotis are known to use anthropogenic structures, and may be drawn to the PDA with the loss of forest habitat. As such, this may increase the likelihood of accidental mortality (collisions, flaring, etc.).	Species of bats with potential to occur in the PDA may use anthropogenic structures to various degrees for roosting and foraging. The extent to which bats may attempt to roost in buildings within the PDA is unknown, but is expected to be low given that building maintenance will limit access opportunities, and presence of operational noise and light will decrease the suitability of roosting structures. Section 4.7.5.3 of the Application describes the influence of anthropogenic light on disruptions to roosting and foraging behaviour, and the associated mortality risk. Facility staff will document and report bat injuries or fatalities related to Project activities, alongside birds (as per Mitigation 4.7.14).

1041.1	round 1	Metlakatla First Nation	4.7.6.4	Wildlife Resources (Terrestrial)	Please see comments on Vegetation and Wetland Resources regarding soil acidification. Given that amphibians are particularly sensitive to changes in pH, what are the calculated impacts on western toad?	Acidification and eutrophication could reduce survival and reproductive success of amphibians in the RAA. Section 4.7 of the Application acknowledges that there is some uncertainty in the response of freshwater systems and, in turn, the health of aquatic wildlife, as a result of acidification and eutrophication that may occur due to Project emissions. To address this uncertainty, Aurora LNG has committed to developing an Acidification and Eutrophication Follow-up Program in consultation with BC MOE (see Section 15: Summary of Follow-up Programs and Compliance Reporting). The follow-up program will include freshwater, soil, and vegetation monitoring that will together provide a measure of change in wetland functions, such as the ability of wetlands to support amphibian breeding.
1042.1	round 1	Metlakatla First Nation	4.7	Wildlife Resources (Terrestrial)	This assessment of wildlife resources (terrestrial) is incomplete. As such, a result of non-significant adverse effects has been determined. We disagree with this conclusion. See comments above for additional discussions required to complete the assessment. Currently, the assessment's conclusion of non-significant effects is inappropriate given the loss of critical habitat and high suitability habitat for marbled murrelet and little brown myotis. In addition, FNs interests have not been considered in the impacts, therefore impacts to harvestable species have not been addressed.	Aurora LNG acknowledges the comment from Metlakatla First Nation. The assessment of wildlife resources (terrestrial) was completed following the framework outlined in the Project's Application Information Requirements and Valued Components Selection document. Significance thresholds for wildlife resources (terrestrial) present the limits of an acceptable change in a measurable parameter or state of regional wildlife populations and are based on applicable legislation, regulatory guidance documents, or other management standards (including cultural use). Where thresholds are not set by legislation, policy, and regulatory guidance documents, a threshold has been developed based on scientific literature and professional judgement, and with the incorporation of available traditional ecological knowledge. Significance thresholds vary between species or species groups and potential effects. As described in Section 4.7.2.8 of the Application, a residual effect is considered significant if it affects the viability of local or regional terrestrial wildlife populations. The viability of species can be affected by several factors, including reproduction, mortality, immigration, emigration, and habitat availability, where viability was defined in the Application as the long-term maintenance in abundance, diversity, or distribution of wildlife through natural recruitment. Viability is inclusive of maintaining sustainable wildlife populations from both a conservation status and cultural use perspective. Aurora LNG has determined that residual effects of the Project on preferred and critical habitat for marbled murrelet is not significant, based on it's evaluation of the extent of effects in combination with proposed mitigation measures (including the Marbled Murrelet Management Plan). Mitigation measures applicable to marbled murrelet are listed in Table 4.7-17. Please see responses to responses to comments #686 and #695 for further information. Residual effects of the Project on preferred habitat for little brown myotis is also expected to be not significant. As with marbled murrelet, Aurora LNG has committed to several bat-specific mitigation measures, including the development of a Bat Management Plan, which will outline measures to avoid, reduce, and mitigate for potential effects from Project infrastructure and activities. Mitigation measures applicable to little brown myotis (and other bat species) are listed in Table 4.7-17. Collectively, these measures are expected to limit the Project's contribution to cumulative effects on little brown myotis. Aurora LNG's proposed mitigation measures for change in habitat have incorporated federal and provincial regulations and guidelines as well as measures that have been recommended or proven effective on similar projects within the RAA with associated marine terminals. With the implementation of mitigation measures, the partial loss of habitats expected to support breeding or roosting by marbled murrelet and little brown myotis (respectively), will be offset for the Project and will reduce the net effect of change in habitat removed by construction of the LNG facility and associated infrastructure. Information on harvested species presented in traditional ecological knowledge studies from Aboriginal groups informed the assessment and characterization of residual Project effects, and is described in Section 4.7.2.2 and 4.7.2.3.
1043.1	round 1	Metlakatla First Nation	4.8	Freshwater Fish and Fish Habitat	Please include benthic and macro invertebrates in the assessment of freshwater fish and fish habitat. How will water quality affect the benthic and macro invertebrates? How will this in turn affect food sources for fish? How will removal of instream habitat affect recruitment of benthic and macro invertebrates. How will this be monitored? This assessment is incomplete without the inclusion of this information.	Freshwater benthic and macro invertebrates were not included in the baseline surveys of Freshwater Fish and Fish Habitat for the Project as the assessment of Freshwater Fish and Fish Habitat focusses on CRA fisheries, as defined in the Fisheries Act. By identifying important fish that might be affected by the Project (CRA fish species) and developing mitigation measures to protect these resources, which includes protecting their habitat and the fish and invertebrate communities that live in it, the overall effects on the ecological function of the aquatic ecosystems can be reduced or avoided. Invertebrates and other aquatic life in the freshwater environment are considered as part of the freshwater habitat ecosystem and are not defined individually in the assessment. There are no predicted residual effects to water quality in watercourses retained within and around the Project footprint, and therefore no predicted effects on the benthic invertebrate communities within those watercourses.
1044.1	round 1	Metlakatla First Nation	Appendix K	Freshwater Fish and Fish Habitat	Some watercourses that were investigated for fish presence were only assessed during summer months. How did low seasonal water levels affect fish habitat sampling and assessment? Some watercourses may only provide habitat for overwintering, and thus would not have had CRA fish present in the summer.	Watercourse reaches identified as not fish-bearing (i.e., reaches above a known permanent barrier to fish passage) were sampled for fish presence in two or three seasons to confirm fish presence/absence. If all sections of a watercourse above a known barrier were determined to be dry or not have the minimum water depths to support fish at the same time, the reaches above the barrier were designated as not fish-bearing. Reaches where only one season of sampling occurred, but no barrier was present, were conservatively identified as suspected fish-bearing even though no fish were caught during sampling. A second season of sampling should be completed to confirm fish presence/absence. The majority of these watercourses are outside of the PDA, and will not be removed or modified due to Project construction (J watercourse system).
1045.1	round 1	Metlakatla First Nation	Appendix K	Freshwater Fish and Fish Habitat	What was the criteria for selecting the 60 watercourse reaches, of 106 within or connected to the PDA? What assumption has been made about the 46 watercourse reaches not surveyed? Is it assumed that these watercourses do not have CRA fish species present? Or no fish at all present?	A desktop review was completed for Digby Island and identified 106 reaches on the island. Fish presence and habitat surveys were conducted in the watercourse reaches that are within, or directly connected to the PDA, including the reference reaches. This totalled 60 reaches. Sampling locations were systematically selected to provide adequate representation of the freshwater communities within, and in the vicinity of, the Project area. Data from fish presence and habitat surveys were used to complement and verify results of the desktop review.
1046.1	round 1	Metlakatla First Nation	4.8.3.2	Freshwater Fish and Fish Habitat	Please confirm whether the 32,752m2 of fish habitat identified within 39,356m2 of instream area includes all 106 watercourses or just the 60 watercourses investigated.	The 32,752 m2 of fish habitat identified in the environmental assessment is part of the 39,356 m2 of instream area represents the watercourses located in, or connected to the PDA. The 106 watercourse reaches represent all watercourse reaches on Digby island, only 60 of which connect directly to, or are within, the PDA. It is these 60 watercourse reaches that were surveyed for fish presence and habitat, and from these area calculations were generated.
1047.1	round 1	Metlakatla First Nation	4.8.3.2	Freshwater Fish and Fish Habitat	>"Instream and riparian areas of watercourses determined to be non-fish-bearing are not considered fish habitat". Please explain this statement given that suspected non-classified drainages (NCDs) connected upstream of some of the most valuable fish habitat (J1.1.1, J2.1.2L and J2.1.1.1L) would fall into this category. These reaches provide food and nutrients, and contribute to water quality and water quantity in the downstream fish-bearing reaches.	Instream and riparian areas of watercourses determined to be not fish-bearing are not considered fish habitat for the purposes of habitat loss calculations in the assessment and fish habitat offsetting plan. While these areas support and maintain the quality of existing fish habitat through the contributions of water, food, and nutrients, they do not represent direct loss of instream habitat utilized by CRA fish. The final agreed to gain-to-loss ratio will provide, at a minimum, enough habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the project as required by the Fisheries Protection Policy Statement.
1048.1	round 1	Metlakatla First Nation	4.8.3.2	Freshwater Fish and Fish Habitat	If only 60 watercourses were surveyed, please explain how 97 watercourse reaches were assigned a fish bearing status, and how 70 watercourse reaches were found to be CRA fish-bearing.	A desktop review was completed for all 106 reaches identified on Digby Island. Sample locations (60) were identified in the known or suspected fish-bearing reaches and suspected not fish-bearing reaches within or connected to the PDA. These sample locations were selected to characterize the freshwater fish communities within, and in the vicinity of, the Project area. Data from the ground surveys were used to complement or verify results of the desktop review. Fish-bearing reaches were proven by the capture of fish in the field or assumed based on information found in the desk-top review. Fish-bearing reaches supporting CRA fish species were similarly proven by the capture of salmon, trout, or charr or assumed based on access to this habitat by these species (i.e., no barriers to fish migrations). Fish-bearing reaches not supporting CRA fish species were those where no salmon, trout, or charr were captured in the field and where barriers to fish migrations existed or where habitat conditions (e.g., low pH) were unsuitable for CRA fish. Those unsurveyed reaches outside of the PDA where no barriers were known to exist, or those reaches connected to known fish bearing reaches were considered fish-bearing by default. Of the 106 reaches that were mapped on Digby Island, 97 are thought to be fish bearing and/or a classified stream. There are a total of 24 streams that are thought to be fish bearing, including those in the reference stream (S), and these 24 streams have 70 reaches. The total of 97 fish-bearing reaches included those that were confirmed fish bearing, and those that were connected to fish-bearing watercourses and by default were classified as streams and considered fish bearing. This includes reaches inside, and outside of the PDA.
1049.1	round 1	Metlakatla First Nation	4.8.3.2	Freshwater Fish and Fish Habitat	Why was dissolved oxygen only measured for 23 of the watercourse reaches?	In situ dissolved oxygen (DO) was measured at a sub-sample of fish-bearing reaches where water depths and conditions were sufficient to do so. While in situ DO was not measured at all sampling locations, it should be noted that at locations where it was measured, the value represents an isolated, single snapshot in time of DO levels within any given section of stream, and the value was not used to infer the fish-bearing status of sampled stream reaches.
1050.1	round 1	Metlakatla First Nation	4.8.3.2	Freshwater Fish and Fish Habitat	Where were instances of turbidity that were not low? Why was turbidity not measured but only visually assessed? Were background metals sampled? If so, please provide results.	Turbidity was assessed as a qualitative visual estimate, as an indication of what stream conditions were like at the time of sampling. Measurements of turbidity (NTUs) were not taken at the time of habitat surveys, as each measurement would represent only an isolated, single event, snapshot in time of turbidity levels at the time of sampling. Specific measurements of turbidity will be used during construction monitoring to maintain levels of suspended sediments within guidelines for the protection of aquatic life. For streams in BC, section 4.2.5.7 of the Reconnaissance (1:20 000) Fish and Fish Habitat Inventory Standards and Procedures(as were used during the baseline data collection - see Appendix K), only requires the visual estimation of turbidity. Background metals were not sampled as there are no predicted effects on metal levels resulting from the project.
1051.1	round 1	Metlakatla First Nation	4.8.3.3	Freshwater Fish and Fish Habitat	"There are 60 watercourse reaches within, or adjacent to the PDA, and from these 60 reaches, 54 were sampled for fish." This statement is inconsistent with the information provided above.	Aurora LNG acknowledges that this is an error. The statement in Section 4.8.3.2 which reads "Of the 106 freshwater watercourse reaches within, or adjacent to, the PDA, 60 watercourse reaches were surveyed for fish presence. " should be changed to "Of the 106 freshwater watercourse reaches within, or adjacent to, the PDA, 60 watercourse reaches were surveyed for fish or fish habitat." Fish habitat assessments were completed in 60 reaches and fish sampling was conducted at 54 of the 60 reaches. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
1052.1	round 1	Metlakatla First Nation	4.8.3.3	Freshwater Fish and Fish Habitat	"There are no known traditional use sites, or harvest locations, of freshwater fish within the PDA." However, discussion mentions importance of Pacific salmon, trout and char to FNs. Given the anadromous nature of these species, the freshwater environment is of importance to FNs whether they specifically harvested at the freshwater locations within the PDA, or not.	Aurora LNG acknowledges and agrees with the comment. While there are no specific harvest locations or traditional use sites identified in the freshwater areas within the PDA, it is recognized that the fish that inhabit or temporarily make use of these areas are fish that may be important to First Nations at locations outside of the PDA.
1053.1	round 1	Metlakatla First Nation	4.8.4	Freshwater Fish and Fish Habitat	Please describe how waste management will not interact with change in fish habitat, but will interact with fish mortality and health and fish abundance. Please describe whether LNG production will require the transportation of materials over any watercourses.	Waste management is not expected to interact with change in fish habitat during the decommissioning phase of the project (as indicated in Table 4.8-9), as the fish habitat in areas near the infrastructure will have already been removed. As part of the facility construction, bridges are expected to be built over the retained watercourses to facilitate transportation of personnel, vehicles, and materials throughout the site. The potential for interaction with change in fish health and fish abundance exists through all phases of the Project as transportation of waste materials within and away from the site will occur in construction through operations and decommissioning.
1054.1	round 1	Metlakatla First Nation	4.8.5	Freshwater Fish and Fish Habitat	"All watercourses in the LAA were assumed to be fish-bearing, unless proven otherwise by field assessment." Please explain how this was determined based on a few field surveys? What about watercourse reaches not sampled? How was fish status confirmed in those reaches? How much sampling effort was required to "prove" no fish presence? Was seasonal habitat use taken into consideration?	Watercourse reaches were identified as not fish-bearing if they were located upstream of a known permanent barrier to fish passage and no fish were captured during sampling over two or three seasons to confirm fish presence/absence. Reaches above a known barrier for which only one season of sampling was completed were identified as "suspected" not fish-bearing, acknowledging that a second season of sampling should be completed to confirm fish presence/absence. Once a second season of sampling was completed, reaches were designated as fish-bearing or not fish-bearing according to results of the surveys. All assessed reaches were eventually given one of the following designations: "fish-bearing", "suspected fish-bearing", or "not fish-bearing". All fish-bearing and suspected fish-bearing reaches were considered fish habitat for the purposes of the assessment. If all sections of a watercourse above a known barrier were determined to be dry or not have the minimum water depths to support fish at the same time, the reaches above the barrier were designated as not fish-bearing. Seasonal habitat use was considered, as baseline sampling occurred throughout the year.
1055.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Table 4.8-10 Potential effects on fish habitat should include change in food and nutrients supplies/concentrations for grading and use of industrial equipment under construction, and waste management under operations. Vehicle traffic and Organic debris management should include change in food availability and nutrients.	Potential changes in food and nutrient supply are assessed under vegetation clearing during the construction phase of the project (Section 4.8.5.2) as the majority of allochthonous food and nutrient inputs in project area watercourses are afforded by insect and leaf litter drop from stream side vegetation.
1056.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Table 4.8-11: Further details regarding mitigations are needed that will be included in the CEMP. For exapmle: Exclusion fencing is to be installed - how far from habitat will the fencing be installed? Please describe which BMPs will be used. How has water quality been included in the mitigation measures to avoid or reduce change in fish habitat? How will water quality be monitored and measured, and what parameters will be used ie. Metals, oil & grease, PAHs, pH, temperature, dissolved oxygen? Where will water be discharged from and where will it be discharged to? etc etc	Further details on construction and operations monitoring, mitigation measures, best management practices, erosion and sediment control, wastewater management, and compliance monitoring, etc. will be provided in the Marine and Freshwater Resources Management Plan (equivalent to the construction environmental management plan) developed for the project. The plan will be developed prior to the phase of the Project for which is required. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan. Storm or wastewater will not be discharged from the site until it has been tested and confirmed that it meets regulatory requirements
1057.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Please explain the difference between "important spawning habitat" and "spawning habitat".	For the purpose of this section of the assessment, spawning habitat refers to instream areas of project area watercourses where conditions (e.g., substrates, depths, water velocity) are sufficient to provide the potential for spawning activity to occur, whereas important spawning habitat refers to instream areas with ideal spawning habitat characteristics (e.g., redds, observed spawners)for a species observed using, or known to use, the specific location for spawning activity.

1058.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Please describe how the non-CRA fish bearing watercourses in the PDA contribute to food, nutrients, water quality and water quantity in the downstream fish-bearing reaches. The removal of all the non-CRA fish bearing watercourse reaches within the PDA represents an impact on fish habitat downstream, and potentially fish abundance.	Watercourses in the PDA that are being retained will have an intact 30 m vegetated riparian buffer, and their upstream watershed will remain intact. Aurora LNG is aware of the hydrological conditions associated with the PDA and surrounding area and recognizes that upstream areas of fish-bearing waters support and maintain the quality of existing fish habitat through the contributions of water, food, and nutrients; as such there will be detailed water management, erosion and sediment control plans in place and approved by regulators in advance of Project construction.
1059.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Why has the Riparian Reserve Zone (RRZ) been used in the calculation of riparian losses when the text says the losses are based on the Riparian Management Area (RMA)? Please show RRZ widths used for the watercourse calculations.	The sentence referenced in the Application states: "Riparian losses are based on the RMA, which consists of the Riparian Management Zone and the Riparian Reserve Zone (RRZ) (BC MOF 1995; BC OGC 2016). The potentially affected riparian area is based on the width of the RRZ for the application of the watercourse classification (S1 – S6)." The first sentence is meant to be an introduction to the components of the RMA (two components, RRZ and RMZ) and the second sentence defines which component is being used to calculate riparian losses. The RRZ is chosen as the width to be used in calculating riparian losses, as this is the riparian buffer that should be retained in all cases (except where watercourses are crossed by a linear development) according to the OGC's Environmental Protection and Management Regulation. The RRZ used for calculating riparian habitat losses varies between 0 and 30 m within the PDA, depending upon the riparian class of the stream. Aurora LNG used a conservative approach and assumed a minimum 15 m RRZ on all riparian stream classes, including non-fish bearing (S5-6). Streams that were fish bearing had a RRZ of between 20 and 30 m on each side of the watercourse.
1060.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	"The five most important watercourse reaches (J5, J1.1, TT1, K2 and J2) with the most observed fish habitat…" Why have TT1 and K2 not been discussed until this point? K2 is also shown on the maps as a suspected non-fish bearing (CRA) watercourse. Does this mean K2 may contain other fish species other than CRA species? Why is K2 considered one of the most important? "Four of these reaches will be retained, or will remain accessible after Project completion." Which four? J1.1, J5 and J2 will be retained, so between K2 and TT1, which one will remain accessible? By Project completion, does this mean construction phase or after decommissioning?	The statement "five most important watercourse reaches" was determined by the area available for fish, and J5, J2, J1.1, TT1 and K2 provided the most area of fish habitat. Of these five watercourse reaches, J5, J1.1, TT1, and J2, will remain accessible after Project construction and during operations. Watercourse TT1, in the northern part of the PDA, will not be removed, but will have a culvert or bridge installed that will maintain fish access and passage through that area. All applicable provincial and federal permitting will be completed prior to instream works in TT1. After the baseline study was completed, watercourse reach K2 was suspected to be non-fish bearing; access may currently be limited by a cascade barrier at the downstream end of the reach. No fish were captured in this reach during the baseline studies (see Appendix K - Technical Report); however, the reach was observed to contain habitat that would be suitable for spawning and rearing salmonids, if accessible. To address this, reference to the "five most important watercourse reaches" will be revised to " The four most important watercourse reaches (J5, J1.1, TT1, and J2), with the most observed fish habitat, account for almost 60% of the fish habitat in the PDA (see Figure 1 of the Freshwater Fish and Fish Habitat TDR; Appendix K); these reaches will be retained, or will remain accessible after Project completion (see Freshwater Fish and Fish Habitat TDR; Appendix K)." in an eratum. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. "By Project completion" was meant to indicate the completion of Project construction and the start of operation of the facility.
1061.1	round 1	Metlakatla First Nation	4.8.5.2	Freshwater Fish and Fish Habitat	How is a loss of 10,000m2 of instream habitat and 218,000m2 of riparian habitat considered a moderate magnitude residual effect, but with offsetting these are considered negligible? Compensation habitat is only being considered for fish-bearing watercourses that are to be lost, not the other 6,600m2 instream and 140,300m2 riparian habitat. In addition, habitat offsetting is not equivalent to retaining existing habitat. It can take generations for fish habitat to function as intended or equivalently to existing habitat. Furthermore, offsetting habitat must be in place and functioning before the loss of existing habitat, otherwise there is most certainly a negative impact on fish habitat.	Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates that all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the net residual effect to fisheries productivity will be negligible. Instream and riparian areas of watercourses determined to be not fish-bearing are not considered fish habitat for the purposes of habitat loss calculations in the assessment and fish habitat offsetting plan. While these areas support and maintain the quality of existing fish habitat through the contributions of water, food, and nutrients, they do not represent direct loss of instream habitat utilized by CRA fish. Within the detailed offset plan for the project, any time lags in the function of offset habitats will be considered in habitat balance calculations. Ratios of offset habitat to impacted habitat will be established that will account for any time lags.
1062.1	round 1	Metlakatla First Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Table 4.8-14: Potential effects on fish habitat should include change in food and nutrients supplies/concentrations for grading and use of industrial equipment under construction, and waste management under operations. Vehicle traffic and Organic debris management should include change in food availability and nutrients.	Potential changes in food and nutrient supply are assessed in Section 4.8.5.2 under vegetation clearing during the construction phase of the project as the majority of allochthonous food and nutrient inputs in project area watercourses are afforded by insect and leaf litter drop from stream side vegetation.
1063.1	round 1	Metlakatla First Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Structures or materials placed in water may also reduce complexity and cover if surfaces are smooth, such as a culvert or bridge abutment.	Aurora LNG agrees with the comment. Potential effects of structures or materials placed below the high water mark of a stream has been considered in the assessment.
1064.1	round 1	Metlakatla First Nation	4.8	Freshwater Fish and Fish Habitat	How has change in water quantity/base flows due to infilling of watercourse reaches upstream of fish habitat been considered? This needs to be modelled. How will these changes be monitored? This assessment is not complete without the inclusion of effects of changes to water flows.	No effect on water quantity/base flows is expected as flows will be maintained within watercourses that will remain in the PDA (J1-5 and J1.1). Runoff from areas within the PDA will be collected, diverted around project infrastructure, and returned to the same drainage downstream, if possible; otherwise it will be directed through a storm water system and released into the marine environment. Storm water or wastewater from the site will be tested and treated, if required, to meet regulatory requirements prior to being discharged.
1065.1	round 1	Metlakatla First Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Table 4.8-15: See comments to Table 4.8-11. Mitigation No 4.8.9 mentions a concrete wastewater plan. Who is responsible for this? Mitigation No 4.8.10 should include the preparation of a Construction Environmental Management Plan, training for employees, and a spill response plan. Responsible parties should also be identified. Mitigation measures should also include water quality monitoring during operations, fish sampling and monitoring plans, fish offsetting monitoring, fish tissues for contaminants if water quality is an issue, water flow monitoring and an adaptive management plan.	Details on measures pertaining to fish and fish habitat such as construction monitoring, additional construction mitigation measures, best management practices, wastewater treatment, erosion and sediment control, and compliance monitoring will be provided in the Marine and Freshwater Resources Management Plan developed for the project. Requirements for both effectiveness and compliance monitoring for project related fish habitat offsets will be described in the Fish Habitat Offsetting Plan for the project.
1066.1	round 1	Metlakatla First Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Acidification and Eutrophication: "Acidification is not expected in 92% of lakes and streams in the LAA assessed for three of the four case scenarios…" Which three scenarios? And what happens in the fourth? "Overall, no changes in pH above the biological limit are anticipated, and no fish mortality is anticipated as a result of acidification." What about pH below the lower threshold of 6.5? This is acidification, and many watercourses are already well below this. J7 is expected to receive above the critical threshold for Nitrogen. While no CRA fish species were present (three spine stickleback were), what will this do to the stickleback, and the downstream CRA fish-bearing watercourse reaches including J5 and associated reaches?	The four emissions cases that were modelled are the Base case, Application case, Project case and Cumulative effects assessment (CEA) case. Under the Base case, three lakes (ADSW9, LAK12, LAK13) show a predicted critical load exceedance indicating that at baseline conditions these lakes are acid sensitive. Zero depositional input would result in a modelled critical load exceedance for these lakes due to low acid neutralizing capacity, low pH and alkalinity. Therefore, for the Project and Application case (which incorporate estimated deposition from project and background emissions) these three lakes also indicate a modelled exceedance to the critical load. For the CEA case, (which incorporates estimated deposition from project, background and future regional industrial emissions) two additional lakes (NC309 and NC366) show a predicted critical load exceedance. For the CEA case, three streams have also been predicted to have a pH change above 0.3 units (conservative biological threshold). The model used to predict pH changes relates pH to acid neutralizing capacity which was based on lake systems as there isn't an applicable stream system. The model may overestimate effects to streams as streams have higher rates of water renewal due to water flow. Cumulative emissions can be considered conservative as they incorporate some regional projects that are not expected to be implemented. In addition, a more conservative threshold of 0.3 was chosen to align with previous regional studies, however pH changes of up to 0.4 are still considered protective of aquatic biota. Modelled pH changes for these three streams are at or below the 0.4 threshold. It is anticipated that lakes and streams that indicate predicted exceedances will be incorporated into the followup monitoring program for acidification and eutrophication.
1067.1	round 1	Metlakatla First Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Table 4.8-16: Potential effects on fish habitat should include change in food and nutrients supplies/concentrations for grading and use of industrial equipment under construction, and waste management under operations. Vehicle traffic and Organic debris management should include change in food availability and nutrients.	Potential changes in food and nutrient supply are assessed in Section 4.8.5.2 under vegetation clearing during the construction phase of the project as the majority of allochthonous food and nutrient inputs in project area watercourses are afforded by insect and leaf litter drop from stream side vegetation.
1068.1	round 1	Metlakatla First Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Excavation: "Lower flows may limit access to upper reaches of watercourses, as well as cause increased water temperatures, changing the use of existing habitat." How will this be predicted (modelled?), monitored or mitigated?	No effect on water quantity/base flows is expected as flows will be maintained within watercourses that will remain in the PDA (J1-5 and J1.1). Runoff from areas within the PDA will be collected, diverted around project infrastructure, and returned to the same drainage downstream, if possible; otherwise it will be directed through a storm water system and released into the marine environment Delusion Bay. Storm water or wastewater from the site will be tested and treated, if required, to meet regulatory requirements prior to being discharged.
1069.1	round 1	Metlakatla First Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Avoidance: "Mitigation of serious harm to CRA fish under the Fisheries Act, through the loss of freshwater habitat, will be through the development and implementation of the fish and fish habitat offsetting plan, with the goal to achieve an overall no-net loss of the productive capacity of the freshwater environment on Digby Island." Productive capacity must include food, nutrients, water quality and quantity. Loss of upstream habitat will impact downstream reaches that are being retained, thus a decreasing productive capacity with changes in food, nutrients, water flows, temperature and other potential water quality parameters. In addition, offsetting habitat must be in place and functioning as intended prior to impacts for a "no-net loss".	There are no measurable changes to habitat productivity expected in the retained watercourses (J1.1 and J5). All offset habitat created for the project will be of similar or better quality to the habitat lost through project development, and therefore overall productivity of the fishery will be maintained. Within the detailed offset plan for the project, any time lags between loss of the original habitat and confirmed functionality of the offset habitats will be considered in habitat balance calculations, and additional offsets or mitigation measures may be required to account for these time lags.
1070.1	round 1	Metlakatla First Nation	4.8.5.4	Freshwater Fish and Fish Habitat	CRA Fish Species Distribution and Abundance: Catch per unit effort measurements shown are only applicable for seine netting, and do not represent the fish sampling program as a whole.	The catch per unit effort (CPUE) results referenced in section 4.8.5.4 include electrofishing effort and seining. The range provided was to demonstrate that a wide range of fish densities were present in the project areas, but overall number of captured fish, per unit of effort, were not high. Additional details on CPUE are provided in Section 4.8.3.2 and in the technical report in Appendix K.
1071.1	round 1	Metlakatla First Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Summary: Negligible to low magnitude effects are only manageable if offsetting habitat is functioning as intended prior to impacts. See comment above regarding avoidance and productive capacity. Will lost habitat be re-opened during decommissioning?	Aurora LNG will conduct effectiveness monitoring on all offset habitat constructed. The effectiveness monitoring will assess the offset habitat against specific parameters to confirm that the habitat functions as proposed. In the event that offset habitat does not function as intended, Aurora LNG will be required to implement additional mitigation measures or create additional habitat so that there is no detrimental effect to the productivity of the local fisheries. Aurora LNG will revegetate the site and restore drainage patterns, where possible, as part of the decommissioning phase of the Project which will reconnect upstream habitats to downstream habitats. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Decommissioning and Abandonment Plans.
1072.1	round 1	Metlakatla First Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Likelihood of Residual Effects. We disagree with the residual effects assessment. Only 60/106 watercourse reaches were sampled. There will be a loss of food, nutrients, water flow and loss of potential fish habitat - just because fish are not present currently (or not sampled), this does not mean the watercourse does not have the potential to have fish in the future.	While only a subsample of watercourse reaches identified on Digby Island were sampled (57%), the selected watercourse reaches included watercourse reaches that may be affected by the Project. The subsample was selected to provide a representation of the freshwater communities within, and in the vicinity of, the Project area. Data from ground surveys were used to complement and verify results of the desktop review. As the watercourses being retained within the PDA will have undisturbed riparian buffers and mostly undisturbed upstream areas there are no measurable changes to habitat productivity due to loss of food, nutrients, or flow expected in these watercourses.
1073.1	round 1	Metlakatla First Nation	4.8.6.1	Freshwater Fish and Fish Habitat	Please describe how a loss of 1/3 of the available fish habitat in the LAA is considered a "relatively small area of the available fish habitat"	The description of the loss of fish habitat was meant only as a frame of reference to the scale of habitat available in the LAA; the loss of approximately 33% of the available habitat within the LAA means that 67% of the habitat would be retained. These losses would be mitigated by offsetting such that the productivity of the local fishery would be maintained or potentially improved. The loss of habitat is smaller when compared to the remaining habitat within a 10 km radius of the PDA (i.e., within the RAA) which also contributed to the productivity of the fishery.
1074.1	round 1	Metlakatla First Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Cumulative Effects Mechanisms: "Important habitats within fish-bearing watercourses in the LAA that are permanently altered or destroyed by Project activities, that overlap spatially and temporally with effects from other projects, can affect overall productivity of the fishery before disturbed habitats can recover or offset habitats become fully functional." Offset habitat must be functional before impacts take place.	The detailed offset plan will consider time lags in the function of offset habitats when calculating the Project's offsetting habitat balance. Typically, additional offsets or mitigation measures may be required to account for an increased time lag between habitat changes and offsetting. Offsetting requirements will be determined during the permitting phase of the Project.
1075.1	round 1	Metlakatla First Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Cumulative Effects Mitigation: "With the application of mitigation identified in Section 4.8.5.2, along with the offsetting measures described in the Project specific CFHOP, the losses of fish habitat productivity, due to Project construction and operational activities, will be effectively counterbalanced." We disagree with this statement. Effects have not fully been described or considered and productivity will most certainly be affected.	Aurora LNG acknowledges your comment. Fish habitat impacts resulting in serious harm to fish (which includes both permanent alteration of habitat and the death of fish) associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity increases associated with offset measures, and the net residual effect to fisheries productivity will be negligible.
1076.1	round 1	Metlakatla First Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Residual Cumulative Effects: "The area of instream fish habitat affected by the Project represents 33% of the available fish habitat in the PDA/LAA." The PDA and the LAA are not the same. Please fix. What is the fate of the watercourse reaches not surveyed? "No loss of spawning habitat is predicted due to the development of the Project." This statement is simply not true. J2.1, J3.1 are reaches that contain spawning habitat that will not be retained.	Agreed, the LAA and the PDA do not represent the same area. This should have been written as only the PDA ("The area of instream fish habitat affected by the Project represents 33% of the available fish habitat in the PDA"). An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. Watercourse reaches that have not been surveyed for fish presence or habitat are outside of the PDA, and do not have a direction connection to the PDA. These watercoursesand will be retained and no habitat removal or clearing will occur in these areas; therefore, not all watercourse were ground-truthed in these areas. All watercourses within the PDA that will be removed for project development have been surveyed for fish presence or habitat, with the exception of those streams that were identified by LiDAR only and could not be ground-truthed (identified by a 'L' at the end of the watercourse identifier). Additionally, watercourse reaches upstream of a known non fish-bearing reach, with a confirmed barrier to fish passage, were not all sampled for fish presence. The basis of the serious harm for fish habitat accounted for all fish habitat within the PDA to be infilled with the exception of J5 and J1.1. Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates that all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the net residual effect to fisheries productivity will be negligible.

1077.1	round 1	Metlakatla First Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Residual Cumulative Effects: Consistent argument that the Project effects represent a "relatively small area" of the available fish habitat. This is a meaningless argument unless it can be backed up with numbers and facts stating this loss is not significant. "…the fish habitat offsetting plan will be designed to achieve an overall net gain in fish productivity, and there is no predicted population-level effects to anadromous fish species in the RAA." This is the first mention of the offsetting plan having a "net gain". Please provide more details.	Use of the term "relatively small area" was used as a frame of reference to indicate that the area of loss (10,857 m2 or 33% of the total available habitat) was relatively small in comparison to the amount of available fish habitat in the LAA (32,752 m2) and the amount of fish habitat that would remain in the LAA (21,895 m2 or 67% of the total available habitat). The final offset plan (as approved by DFO) will provide more habitat and/or higher quality habitat than will be lost due to construction of the project. The offset ratio will take in to account any uncertainties in fish production and any time lags that may result. The final agreed to gain-to-loss ratio will provide, at a minimum, enough habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the project as required by the Fisheries Protection Policy Statement.
1078.1	round 1	Metlakatla First Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Summary: "This cumulative effect is anticipated to be reversible immediately after reclamation of the site." This statement is simply false. Restoring filled in watercourses that have been buried for approximately 30 years will take time to become functional. How long will reclamation take? How long will it take until the watercourses are functional?	There will be no net cumulative effect on change in fish habitat as all adverse effects on fish habitat will be offset as legislated under the federal Fisheries Act. If there is a time lag between the time habitat is adversely affected and the time created offset habitat is completed and functional, there will be a temporal effect that will be reversed once offset habitats are functional. Any temporary loss of productivity will be accounted for in the habitat balance specified in the detailed habitat offset plan developed for the project.Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the likelihood of a net residual effect is low. The statement in Section 4.8.6.3 will be revised to read: Residual effects are anticipated to be reversible once offset habitats are functional and consequently there are no predicted cumulative effects. An errata document has been created that captures these corrections and it will be filed with the BC EAO.
1079.1	round 1	Metlakatla First Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Likelihood of residual cumulative effects: Likelihood has been considered low. We disagree based on the arguments addressed above.	Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the likelihood of a net residual effect is low. There will be no net cumulative effect on change in fish habitat as all adverse effects on fish habitat will be offset as legislated under the federal Fisheries Act. If there is a time lag between the time fish habitat is adversely affected and the time when created offset habitat is completed and functional, there will be a temporal effect which will be reversed once offset habitats are functional. Any temporary loss of productivity will be accounted for in the habitat balance specified in the detailed fish habitat offset plan developed for the project. A correction will be made to Section 4.8.6.3 so that the statement reads: Residual effects are anticipated to be reversible once offset habitats are functional and consequently there are no predicted cumulative effects. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
1080.1	round 1	Metlakatla First Nation	4.8.6.4	Freshwater Fish and Fish Habitat	Concerns re: acidification: Please explain how five lakes anticipated to exceed critical loads for acidification for the CEA case are not expected to have concerns for acidification. Please show, do not just reference. What about J7? This waterbody has not been mentioned in this section. Section also references the LAA, which should be the RAA for cumulative effects."Additional studies may be needed to determine the accuracy of the predictions and the potential effects of acidification on fish health on the Project area." Please indicate when these studies will be undertaken and when results will be incorporated.	The four emissions cases that were modelled are the Base case, Application case, Project case and Cumulative effects assessment (CEA) case. Under the Base case three lakes (ADSW9, LAK12, LAK13) (see Section 4.5) show a predicted critical load exceedance, indicating that at baseline conditions these lakes are acid sensitive. Zero depositional input would result in a modelled critical load exceedance for these lakes due to low acid neutralizing capacity, low pH and alkalinity. Therefore, for the Project and Application case (which incorporate estimated deposition from project and background emissions) these three lakes also indicate a modelled exceedance to the critical load. For the CEA case, (which incorporates estimated deposition from project, background and future regional industrial emissions) two additional lakes (NC309 and NC366) show a predicted critical load exceedance. For the CEA case, three watercourses (TT1, J6 and J1/2) have also been predicted to have a pH change above 0.3 units (conservative biological threshold). Watercourse J7 is not predicted to have this change. It is anticipated that lakes and streams that indicate predicted exceedances will be incorporated into future monitoring programs to monitor pH changes. Details of the proposed follow-up program on acidification and eutrophication (noted in Table 15-1 of the Application) will be determined in coordination with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Note that this program would be to monitor any changes that may occur during facility operations. LAA references are to provide details on the location of the modelled effects, the RAA is specifically indicated in the discussion on cumulative and residual effects in section 4.8.6.4.
1081.1	round 1	Metlakatla First Nation	4.8.6.5	Freshwater Fish and Fish Habitat	CPUE numbers are only for seining results. Not representative of fish populations as a whole for the study.	The CPUE results referenced in section 4.8.6.5 include electrofishing effort and seining. The range provided was to demonstrate that a wide range of fish densities was present in the project areas, but overall number of captured fish, per unit of effort, was not high. Additional details on CPUE are provided in section 4.8.3.2 and in the technical report in Appendix K.
1082.1	round 1	Metlakatla First Nation	4.8.6.5	Freshwater Fish and Fish Habitat	Assumption that the LAA supports only a small population of fish for a "portion of their life cycle" as justification for impacts is inappropriate. The portion of the life cycle within the LAA for CRA species is highly important. Overwintering habitat is generally considered a limiting factor for salmonid populations, and spawning habitat is critical.	The assumption will be revised as follows: The majority of watercourses in the LAA support a small population of CRA fish species for a portion of their life cycle. The project design has been modified to retain watercourses in which CRA populations carry out one or more critical life-stages. These watercourses include J1-5 and J1.1, which contain the highest quality, deep channel habitat in the LAA, and which provides fish opportunities to carry out critical stages in their life-cycle (e.g., spawning. overwintering). An errata document has been created that captures these corrections and it will be filed with the BC EAO.
1083.1	round 1	Metlakatla First Nation	4.8.9	Freshwater Fish and Fish Habitat	Follow-up monitoring is absolutely necessary. Monitoring should include water quality, water/flow levels, fish abundance and distribution, benthic or macro invertebrates, and must include monitoring of the offsetting habitat. This is important to determine if impacts to watercourses are indeed negligible, or require further mitigation or adaptive management.	Compliance monitoring will occur to verify implementation of Project mitigation measures and adherence to regulatory requirements of permits, authorizations and EAC conditions (see Section 15.3 of the Application). Requirements for both effectiveness and compliance monitoring for project related habitat offsets will be described in the Project fish habitat offset plan, which will follow the Fisheries Productivity Investment Policy: A proponent's Guide to Offsetting, as required by DFO to meet the requirements for permitting and offsetting under the Fisheries Act.
1084.1	round 1	Metlakatla First Nation	4.8.2.2 and Table 4.9-2	Marine Fish and Fish Habitat	Note that vessel wake is also a concern as it may affect safety of harvesters on shore or while fishing. Study designs need to consider this in order for the conclusions to be meaningful when carried forward to Part C.	The assessment of potential project effects on intertidal harvesters working on shore conservatively assumed that the harvesters are using both low tide periods in a day (this is unlikely, as the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping is temporally restricted on a daily basis; for approximately 83% of each day, wake from Project-related shipping cannot interact with intertidal harvesters The potential for Project-related ship wake to interact with fishing vessels on the water is also temporally limited. Please refer to the "Effects of Lost Fishing Time" technical memo for a description of conditions that must be met for a fisher-LNG carrier interaction to occur. The rationale outlined in that memo also applies to wake effects. The technical memo will be filed with the BC EAO. Section 6.5.4.2 states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches the shoreline or a fishing vessel is expected to be lower than the original wake height at the source vessel, and within the natural wave height range currently experienced by shoreline harvesters and fishing vessels. Moreover, Project-related traffic will travel along the existing and established shipping route currently used by other marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to access the Port of Prince Rupert. The predicted wake-related wave height 300 m from the centreline of travel of a large loaded LNG carrier traveling at 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by fishing vessels and shoreline harvesters, relating to natural weather patterns and existing shipping. Consequently, no significant effects from Project generated wake are predicted. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
1085.1	round 1	Metlakatla First Nation	4.9.2.8	Marine Fish and Fish Habitat	The significance threshold is noted as an effect "that threatens the long-term persistence of a marine fish population." Please provide a definition of "persistence" as it relates to population numbers or percentage of population affected and the relationship to viability. Please also indicate whether salmon species have been assessed by river of origin as some populations may be disproportionately affected by impacts. This is relevant to First Nations harvesting, as harvest locations may be determined by cultural rules rather than by presence of alternative harvesting opportunities.	Population-level inference was determined based on existing information relating to (a) environmental and regulatory guidelines, and (b) the ecology of those species likely to be affected. Specifically, for (b), we focused on issues such as their use and dependency on the area being affected, the life stage affected, availability of similar habitat elsewhere, and the potential for that effect to interrupt a life process on a scale that could cause harm at the population level. This inference considers the biology and ecology of the taxa affected, such as (but not limited to) life-history, reproductive rate, feeding ecology, larval ecology (pelagic dispersal and resulting connectivity), and migratory behaviour. It also considers known information on environmental perturbations that those species are exposed to, and their resilience to those perturbations given their biology and ecology. With regards to the river of origin, it stands to reason that salmon from all salmon-bearing tributaries within the Skeena River must migrate through the river's mouth in order to reach the ocean or from the ocean to reach spawning tributaries. Since the Project lies within the Skeena estuary, Aurora LNG assumed that salmon from all salmon-bearing tributaries of the Skeena would be present within the area, and could therefore interact with the Project. Aurora LNG also assumed that salmon from other (non-Skeena) local and regional watersheds would be present in the marine area. Note that Aurora LNG will offset any residual serious harm to salmon resulting from changes to fish habitat or fish mortality.
1086.1	round 1	Metlakatla First Nation	4.9.4	Marine Fish and Fish Habitat	The Application states that effects of plant operation "Are anticipated to primarily interact with the terrestrial environment...Therefore, potential effects associated with natural gas treatment and natural gas liquids extraction activities are not included in this assessment." This is an inappropriate approach to EA: cooling water from operations will be discharged to the marine environment so a potential pathway of effects exists. A defensible rationale for exclusion of this pathway of effects must be provided or the effect must be assessed. Please provide a rationale for the choice to exclude an effects assessment of cooling water release or assess this effect.	Potential effects to fish and fish habitat resulting from waste discharges to the marine environment are assessed in the Marine Fish and Fish Habitat assessment under Project Mechanisms for Change in Health, Section 4.9.5 of the Application. This section details the mechanisms for change in fish health due to waste discharges during construction, operation, and decommissioning. The assessment identifies waste discharges during construction and operations, including power generation cooling water and treated sanitary wastewater (which may include chlorine content). Mitigation 4.5.8 in Table 4.9-20 covers waste discharges to the marine environment. Potential residual effects are assessed in the Characterization of Residual Effects for Change in Fish Health, under Construction – Waste Management, and Operations – Waste Management. The fish and fish habitat assessment did not assess waste discharge characteristics (e.g. temperature, chlorine concentration) individually. Instead, the potential for all waste discharges to affect fish health was assessed. Waste discharges, regardless of make up, are managed in the same manner; permit conditions limit the quality and quantity of the waste discharged and impose monitoring requirements. Aurora LNG is legally-obliged to abide by permit conditions, which are designed to protect marine life. Therefore, waste discharge effects to fish and fish habitat were considered not significant. The assessment of potential effects to fish and fish habitat resulting from waste discharges is supported by information from the Marine Water Quality assessment (Section 4.5.11 of the Application). A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota. The marine water quality assessment therefore covers changes in water quality that may significantly affect fish and fish habitat. Table 4.5-19 in the Marine Water Quality section lists Project-related wastewater inputs to the marine environment as a project effect mechanism, and potential effects of this mechanism are assessed in Section 4.5.15. Mitigations 4.5.8 and 4.8.9 in Table 4.5-26 cover waste discharges to the marine environment. Potential residual effects to marine water quality related to waste management are characterized in the Characterization of Residual Effects component of Section 4.5.15.3. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1087.1	round 1	Metlakatla First Nation	4.9.5	Marine Fish and Fish Habitat	The Application notes that maintenance dredging may be required approximately once per decade. This represents an operational effect that must be considered. Please assess the effects of maintenance dredging.	The marine fish and fish habitat assessment considered potential effects associated with maintenance dredging under the 'change in habitat' effect (Section 4.9.5.2) and the 'change in mortality risk' effect (Section 4.9.5.4).
1088.1	round 1	Metlakatla First Nation	4.9.5	Marine Fish and Fish Habitat	Were residual effects of sediment disposal on glass sponges and cold water sponges known to be present at the disposal location (ROV study results, PNLWLNG) assessed? Please indicate the sections in the relevant TDRs that include this discussion.	Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea"which will be filed with the BC EAO.

1089.1	round 1	Metlakatla First Nation	4.9.5	Marine Fish and Fish Habitat	A pathway of potential effects exists between liquid effluent and fish/fish habitat. A discussion of potential effects from cooling water release and/or release of residual chlorine in treated wastewater appears to be absent. Please indicate where these potential effects are discussed or provide a rationale for their exclusion.	Potential effects to fish and fish habitat resulting from waste discharges to the marine environment are assessed in the Marine Fish and Fish Habitat assessment under Project Mechanisms for Change in Health, Section 4.9.5 of the Application. This section details the mechanisms for change in fish health due to waste discharges during construction, operation, and decommissioning. The assessment identifies waste discharges during construction and operations, including power generation cooling water and treated sanitary wastewater (which may include chlorine content). Mitigation 4.5.8 in Table 4.9-20 covers waste discharges to the marine environment. Potential residual effects are assessed in the Characterization of Residual Effects for Change in Fish Health, under Construction – Waste Management, and Operations – Waste Management. The fish and fish habitat assessment did not assess waste discharge characteristics (e.g. temperature, chlorine concentration) individually. Instead, the potential for all waste discharges to affect fish health was assessed. Waste discharges, regardless of make up, are managed in the same manner; permit conditions limit the quality and quantity of the waste discharged and impose monitoring requirements. Aurora LNG is legally-obliged to abide by permit conditions, which are designed to protect marine life. Therefore, waste discharge effects to fish and fish habitat were considered not significant. The assessment of potential effects to fish and fish habitat resulting from waste discharges is supported by information from the Marine Water Quality assessment (Section 4.5.11 of the Application). A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota. The marine water quality assessment therefore covers changes in water quality that may significantly affect fish and fish habitat. Table 4.5-19 in the Marine Water Quality section lists Project-related wastewater inputs to the marine environment as a project effect mechanism, and potential effects of this mechanism are assessed in Section 4.5.15. Mitigations 4.5.8 and 4.8.9 in Table 4.5-26 cover waste discharges to the marine environment. Potential residual effects to marine water quality related to waste management are characterized in the Characterization of Residual Effects component of Section 4.5.15.3. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1090.1	round 1	Metlakatla First Nation	Table 4.9-11	Marine Fish and Fish Habitat	Please note that a Mitigation respecting least risk window timing for blasting, dredging, and disposal needs to be added.	The intent of Table 4.9-11 was to identify mitigation measures that will be implemented during construction, operations, and decommissioning activities to avoid or reduce potential changes in habitat. Potential changes in habitat are not expected to be influenced by the timing of dredging, disposal at sea, and underwater blasting activities, and as a result, mitigation measures 4.9.8 (related to restricting dredging and disposal at sea to the least risk timing window) and 4.9.9 (related to restricting underwater blasting to the least risk timing window) were not included in Table 4.9-11. Aurora LNG is committed to conducting dredging, disposal at sea, and underwater blasting activities within the least risk timing window (November 30 - February 15), unless otherwise approved by DFO.
1091.1	round 1	Metlakatla First Nation	Table 4.9-11	Marine Fish and Fish Habitat	No mitigation is present to address potential temperature and chemistry effects (Cl) of cooling water release.	Cooling tower blowdown water will meet CCME and BC water quality guidelines for temperature, outside of the mixing zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The exact size of the mixing zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the mixing zone, cannot be acutely toxic to fish. The effect of cooling tower blowdown waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1092.1	round 1	Metlakatla First Nation	page 4.9-49	Marine Fish and Fish Habitat	Please confirm that the regulatory guideline being used is the 24-hour guideline (5mg/L)	The regulatory guideline referred to in the following sentence "Given the expected requirement for offsetting, permanent alteration to substrate as a result of dredging is considered to exceed regulatory guidelines..." refers to the Fisheries Actwhich prohibits any work, undertaking, or activity that results in serious harm to fish.Aurora LNG will need to offset for any work that results in serious harm to fish. Serious harm to fish is defined by DFO (2013) as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carr out one or more of their life processes; or c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Although it is not relevant to the paragraph referenced, which discusses thresholds for serious harm to fish, elsewhere in the application the 24 hour (5 mg/L) threshold is used for purposes of water quality monitoring (e.g. 4.9.5.5, in particular page 4.9-103 "ANTICIPATED TSS LEVELS DURING DISPOSAL AT SEA"). Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
1093.1	round 1	Metlakatla First Nation	4.9.9.2., 4.9.9.5	Marine Fish and Fish Habitat	Metlakatla has consistently identified the need to conduct a fulsome, inclusive and transparent alternatives assessment for disposal at sea locations since initial discussions with Nexen on the Aurora project. This request has been repeatedly voiced throughout pre-application and screening. Assessing Brown's Pass as the location for disposal without first conducting a constraints mapping alternatives assessment is unacceptable. Following an alternatives assessment, further investigation of baseline conditions at desired location(s) for disposal are necessary. These steps should occur during the EA and not left to permitting as they are essential for understanding, characterizing, and concluding on the potential impacts of a key project component.	The EAO hosted a meeting on April 28, 2017 with Aurora LNG and members of the Working Group to discuss DAS and potential alternative sites. Results of this workshop were incorporated into the technical memo "Analysis of Alternative Locations for Disposal at Sea" which will be filed with the BC EAO.
1094.1	round 1	Metlakatla First Nation	page 4.9-52	Marine Fish and Fish Habitat	Please indicate the expected seasons/months in which the 4 referenced disposal periods will occur. Please also indicate the number of disposal events in each disposal period.	A sediment transport model was used to predict sediment dispersion and deposition associated with disposal at sea activities (Appendix H, Technical Memorandum – Aurora LNG: Disposal at Sea Modelling). The model assumed that dredged material destined for disposal at sea would be disposed of during the DFO least risk timing window (i.e., November 30-February 15) over the course of two years. Dredgeate removed from the MOF, Berth 1 North, and Berth 1 South would be disposed of in year 1, while dredgeate removed from Berth 2 would be disposed of in year 2. Each of the four dredge pockets is associated with a disposal period that is identified in the following tables in Appendix H: Table 4-1 (MOF), Table 4-2 (Berth 1 North), Table 4-3 (Berth 1 South) and Table 4-4 (Berth 2). These tables also indicate the total number of disposal events (or 'trips') within each disposal period.
1095.1	round 1	Metlakatla First Nation	page 4.9-52	Marine Fish and Fish Habitat	The Application states that "communities in this area have been previously exposed to sediment deposition and are anticipated to recover to these baseline conditions within one to five years". Glas sponges and cold water corals are present in the disposal area. Recovery rates of these species are unknown but are likely to be longer given sensitivity to sediments and slow growth rates. Please indicate for the presence of sensitive, slow-growing species in the characterization of residual effect.	Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea" which will be filed with the BC EAO.
1096.1	round 1	Metlakatla First Nation	page 4.9-70	Marine Fish and Fish Habitat	The application notes literature that identifies 95dB as the threshold above which salmonids respond to sound and also that impulsive sound causes greater response than continuous sound. To better understand project effects, it would be useful to see a figure derived from modelling which identifies the 95dB contour for dredging. Please provide this figure to enable a better understanding of the geographic scope of potential behavioral disturbance to salmonids.	As stated in the Application, Section 4.9, pp. 4.9-69 to 4.9-70, lower frequency (< 380 Hz) underwater sounds with sound pressure levels above 95 dB are expected to be within the audible range of Pacific salmon. The cited literature (Feist et al. 1996; citing Hawkings and Johnstone 1978) does not, however, identify 95 dB as a threshold above which salmon respond to underwater sound. A figure showing the expected spatial extent of audible detection of a sound source by salmonids is therefore not considered a suitable proxy for the spatial extent of their potential behavioural disturbance. Reference Feist, B. E., J. J. Anderson and R. Miyamoto. 1996. Potential impacts of pile driving on juvenile pink (Oncorhynchus gorbuscha) and chum (O. keta) salmon behaviour and distribution. Fisheries Research Institute, School of Fisheries, University of Washington. FRI-UW-9603. pp. 58.
1097.1	round 1	Metlakatla First Nation	page 4.9-76 AND	Marine Fish and Fish Habitat	The Application notes that herring are noted to reorient in response to vessel noise at a distance of up to 1000 m from the vessel in a 40-degree arc around the bow. What is the rationale for using a distance threshold of 400m as the distance from vessels within which fish will be disturbed rather than the more conservative value of 1000m?	Herring are able to detect underwater sounds over a broader frequency range than the majority of fish species and have the ability to determine the location of a sound source within a distance of at least 400 m (Schwarz and Greer 1984). As stated in the Application (Section 4.9 p. 4.9-77), although Misund et al. (1996) report individuals reorienting themselves to the path of approaching vessels at distances between 25 m and 1,000 m, the majority of individuals responded at a distance that aligned with the 400 m distance identified by Schwarz and Greer (1984). References Misund, O.A., J.T. Øvredal and M.T. Hafsteinsson. 1996. Reactions of herring schools to the sound field of a survey vessel. Aquatic Living Resources 9: 5-11. Schwarz, A. L. and G. L. Greer. 1984. Responses of Pacific herring, Clupea harengus pallasi, to some underwater sounds. Canadian Journal of Fisheries and Aquatic Sciences 41: 1183-1192.
1098.1	round 1	Metlakatla First Nation	Table 4.9-19	Marine Fish and Fish Habitat	The maximum distance at which injury threshold for type-3 fish is indicated to be 1,800m from the MOF. This is wider than the channel between Kaien and Digby Islands at the MOF location and therefore represents a complete sonic barrier to fish movement which will either require bahavioural change (avoidance) or lead to death. What is the rationale for characterizing this sound level effect on behaviour (as opposed to mortality) as low magnitude and assessing it as "not significant"?	The 1,800 m radius reported in Table 4.9-19 does not represent a 'sonic barrier', nor does it represent a zone of permanent injury or mortality. Rather, the 1,800 m radius is the maximum distance from impact pile driving at the MOF where type 2 and 3 fish (i.e., fish with swim bladders) may experience recoverable (i.e., non-lethal) injury. It is important to note that all thresholds reported in Table 4.9-19 are based on physiological effects to fish - not behavioural responses. Broadly applicable thresholds for behavioural response have not been established because different fish species and life stages vary in their response (e.g., avoidance response, startle response, no response) to various sound sources, intensities and frequencies (Popper et al. 2014). Furthermore, the duration of impact pile driving at the MOF and LNG Jetty will not be continuous (i.e., will consist of multiple regular events over the medium term). With the implementation of mitigation measures, residual adverse effects for change in behaviour during all Project phases are not expected to threaten the long-term persistence of a marine fish population and are, therefore, predicted to be not significant. Reference: Popper, A. N., A. D. Hawkins, R.R. Fay, D. A. Mann, S. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P. H. Roger, B. L. Southall, D. G. Zeddies, and W.N. Tavolga. 2014. Sound Exposure Guidelines for Fishes and Sea Turtles. A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Published by the Acoustical Society of America.
1099.1	round 1	Metlakatla First Nation	Table 4.10-1	Marine Wildlife - Marine Mammals	This table suggests that the 160dB isopleth lies 100m away from LNG vessels travelling at 16kts (approx. 30kph). Please confirm this is correct.	Table 4.10-1 correctly outlines that the acoustic modelling showed that the 160 dB rms re 1 µPa isopleth was reached at a maximum distance of 0.1 km (100 m) from LNG vessels travelling at 16 knots during transiting.
1100.1	round 1	Metlakatla First Nation	Table 4.10-2	Marine Wildlife - Marine Mammals	Please indicate whether the term "health" includes "reproductive success"? This question is raised because noise, avoidance behaviours, stress, and reliance on less preferred food sources or locations are known to reduce mating and gestational success.	It is recognized that there is potential for overlap between the issues addressed under 'change in health' and 'change in behaviour'. Similarly, increased potential for vessel strikes (assessed under 'change in mortality risk') might have been discussed under 'change in health' as sub-lethal effects from strikes are also possible. For the purposes of the Application, 'change in health' focussed on potential physical injury resulting from underwater noise or in-water blasting. Increased levels of stress, which may in turn cause physiological responses such as diminished reproductive effort, avoidance behaviour, and effects on foraging patterns and foraging success were considered in the assessment of change in behaviour in marine mammals (see Section 4.10.5.3).
1101.1	round 1	Metlakatla First Nation	Table 4.10-3	Marine Wildlife - Marine Mammals	Triple Island is believed to be an upwelling zone preferred as a foraging location by grey whales. Triple Island is also an area of very high historical and current use by Metlakatla members and an area identified as important in the Metlakatla Marine Use Plan. Please indicate the way in which increased vessel activity associated with boarding PPA pilots and cumulative effects of triple island as a necessary waypoint have been assessed for effects? Specifically, how have cumulative vessel presence and noise been accounted for?	The LAA is based on a 6 km buffer around the marine terminal and a 6 km buffer extending on either side of the shipping route, which extends from the marine terminal to the Triple Island pilot boarding station. The RAA extends from the marine terminal to west of the Triple Island pilot boarding station and encompasses Prince Rupert Harbour and most of Chatham Sound. Triple Island is therefore considered within both spatial boundaries used in the assessment of marine mammals (see Figure 4.10-1). Additionally, the waters around Triple Island were surveyed as part of the marine mammal survey programs for the Aurora LNG Project (see Marine Mammals Technical Data Report - Appendix N), the PNW LNG project (Stantec 2016), and the LNG Canada project (LNG Canada 2014), results of all three of which were considered in the assessment. Acoustic monitoring was conducted for 113 days near Triple Island and recordings were analyzed for current ambient noise conditions (including vessel traffic) and marine mammal vocalizations (see Prince Rupert – Aurora LNG Acoustic Monitoring Study, Appendix O). The cumulative effects assessment for marine mammals (see Section 4.10-6) considered the potential adverse effects of vessel traffic from Kitimat and Prince Rupert that overlaps with the RAA (including in the area around Triple Island) and is associated with past, present and reasonably foreseeable future projects. LNG Canada. 2014. LNG Canada Export Terminal. Marine Resources Technical Data Report. 236 pp + Appendices. Stantec Consulting Ltd. (Stantec). 2016. Pacific NorthWest LNG Project Marine Mammal Program Final Report. Prepared for Pacific NorthWest LNG Limited Partnership. Burnaby, BC. 154 pp. Available at: http://www.pacificnorthwestlng.com/media/Marine%20Mammal%20Final.pdf.
1102.1	round 1	Metlakatla First Nation	Table 4.2-10	Marine Wildlife - Marine Mammals	Exclusion from preferred forage locations is a health effect that may result from a change in behaviour (noise avoidance). How was this assessed? Please indicate the locations in the Application and TDRs in which this was discussed.	The assessment of potential residual effects of change in behaviour on marine mammals considers avoidance behaviours and effects to foraging patterns and foraging success (see Section 4.10.5.3 of the Application).

1103.1	round 1	Metlakatla First Nation	4.10.2.5	Marine Wildlife - Marine Mammals	The Application notes (p.4.10-9) that "it is also understood that for the assessment of underwater noise on marine mammals, some behavioural effects will extend beyond the LAA into the RAA. These effects are considered in this assessment." The area in which effects are expected is, by definition in the methodology section, the LAA. Defining an LAA for marine mammals that does not encompass all effects is therefore contrary to appropriate EA methodology. Please provide a rationale for this choice or modify the LAA appropriately, to encompass the entire area in which noise effects are expected to modify behaviour. Please also provide a figure identifying the spatial extent of potential behavioural change by marine mammal group (toothed whales; baleen whales, pinnipeds). note: monitoring needed to determine avoidance of entrance to chatham sound.	The extents of the LAA were originally defined prior to the completion of the underwater acoustic modelling and was determined by applying a 6 km buffer around the LNG jetty and MOF and on either side of the shipping route. During review of the AIR, DFO advised that: "The LAA should encompass the area where any project activity (construction, operations, decommissioning) will exceed 160 dB" (BC EAO 2015). Results of underwater noise modeling work confirm that the original 6 km buffer captures the area over which both the predicted Rmax and R95% sound pressure levels exceed the 160 dB re 1 µPa rms thresholds during Project-related activities. Since it is recognized that Project-related sounds will be detectable to marine mammals beyond the 160 dB behavioural disturbance threshold (and thus beyond the boundaries of the LAA), the assessment of potential residuals effects of change in behaviour for marine mammals includes underwater noise that extends into the RAA, providing a complete assessment of Project-related potential residual effects. Maps showing the extents of underwater noise in exceedance of the interim NOAA disruption thresholds (for pulse and non-pulse noise) and the species-specific behavioural thresholds are available in Appendix N: Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting. British Columbia Environmental Assessment Office (BC EAO). 2015. Tracking Table for Working Group Comments on dAIR. BC EAO Project Information Centre (e-PIC). Accessed August 2016. Available at: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_416_39606.html
1104.1	round 1	Metlakatla First Nation	Table 4.10-4	Marine Wildlife - Marine Mammals	Short-term effects are defined as measurable for a few hours to a few months. Seasonality is a factor in determining overall significance of effects. For instance, noise during courting/mating season may have a greater adverse effect than during winter. How has this been accounted for in characterization efforts?	The term 'duration' in the characterization of residual effects tables refers to a length of time, but not the timing of occurrence of a residual effect. Timing, including assessment of seasonal fluctuations (where relevant), is characterized within the assessment of individual effects. See for example the section on 'Timing' under the 'Characterization of Residual Effects for Change in Health' for 'In-water Blasting' (p.4.10-45).
1105.1	round 1	Metlakatla First Nation	4.10.3.1	Marine Wildlife - Marine Mammals	Acoustic monitoring in the vicinity of Triple Island occurred from July 11 to October 31 (3.5 months) and was used to identify mammals present. This does not represent a full year of acoustic data. Critically, it does not provide information in the spring, a period of high orca, and possibly grey whale, activity. What is the rationale for conducting the EA without a full year of acoustic data?	While the data collected during the acoustic monitoring program (Appendix O) was analyzed for marine mammal vocalizations, detection of marine mammals was not the primary objective of this program. The primary objective of the acoustic monitoring program was to document the baseline noise conditions near the proposed Project site so as to provide a statistical noise distribution of the pre-Project development conditions. The timing and duration of the program were therefore developed primarily in consideration of the desire to characterize the existing ambient sound levels and existing vessel traffic, both of which are adequately captured in the selected 3.5 month period that spans periods of lower and higher expected vessel traffic in the region.
1106.1	round 1	Metlakatla First Nation	4.10.5.1 (p.4.10-34)	Marine Wildlife - Marine Mammals	Reference is made to zones of audibility identifying the "maximum zone over which project noise might be detectable) for killer and humpback whales, harbour seals, and harbour porpoises. Please provide a figure identifying these zones by species.	Maps of thresholds and zones of audibility are available in Appendix P (Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting) of the application.
1107.1	round 1	Metlakatla First Nation	Table 4.10-8	Marine Wildlife - Marine Mammals	The text of the application indicates that blasting will be restricted to least-risk-windows. Please ensure that this mitigation is added to this table.	As noted in the comment, DFO's north coast least risk timing window for marine fish will be applied during blasting activities. As discussed in the first paragraph following Table 4.10-8 in the Application, timing windows were specifically designed by DFO to reduce potential harm to marine fish and are not optimized to benefit marine mammals. While there may be some collateral benefits for certain marine mammal species (see discussion under 'Characterization of Residual Effects for Change in Health for In-water Blasting' on page 4.10-45), it was considered misleading to include mention of this marine fish mitigation measure under the table of mitigation measures designed specifically to reduce adverse effects to marine mammals.
1108.1	round 1	Metlakatla First Nation	4.10.5.2, p. 4.10-46	Marine Wildlife - Marine Mammals	The application notes that "Timing windows for marine fish will not be applied to pile installation". The Application further notes that it is "assumed that marine mammals will be present". How is the differential (greater) effect of ensonification during critical life-cycle stages (notably courting/mating) assessed and mitigated for?	As discussed in the Application, while timing of peak marine mammal occurrence in the RAA is likely to coincide with other peak periods of biological activity in the region (e.g., northern resident killer whales following the migration of the Skeena and Nass rivers Chinook salmon [Ford 2006; Ford and Ellis 2006]), this assessment is based on the assumption that marine mammals may be present in the LAA and RAA at any time of the year, and thus may interact with Project activities regardless of the construction schedule or timing of such activities.As a result, all marine mammal life-cycle stages are considered in the assessment of potential residual effects. Timing, including assessment of seasonal fluctuations (where relevant), is characterized within the assessment of individual effects. See for example the section on 'Timing' under the 'Characterization of Residual Effects for Change in Health' for 'In-water Blasting' (p.4.10-45). Ford, J.K.B. 2006. An Assessment of Critical Habitats of Resident Killer Whales in Waters off the Pacific Coast of Canada. Canadian Science Advisory Secretariat, Research Document. Nanaimo, BC. 1-34 pp. Ford, J.K.B. and G.M. Ellis. 2006. Selective foraging by fish-eating killer whales Orcinus orca in British Columbia. Marine Ecology Progress Series 316:185-199.
1109.1	round 1	Metlakatla First Nation	4.10.5.2, p. 4.10-48	Marine Wildlife - Marine Mammals	Please provide figures that identify 160 dB isopleths for both SPL and SEL24 at both the MOF and the berthing jetty in order to facilitate a discussion regarding an appropriate exclusion zone during pile driving. There is some concern that this isopleth extends across the channel between Digby and Kaien Islands, effectively creating a sonic barrier to movement that will have behavioural and health effects (trapping marine mammals within, or excluding mammals from, the inner harbour during pile driving).	Maps showing the extents of underwater noise to the selected injury and behavioural thresholds for model scenarios are available in Appendix P: Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting. The extent of underwater noise above 160 dB SPL (rms) from pile driving activities at the MOF and the LNG jetty do extend between Digby and Kaien Islands. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) in the development of the Marine and Freshwater Resources Management Plan. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA
1110.1	round 1	Metlakatla First Nation	4.10.5.2, p. 4.10-51	Marine Wildlife - Marine Mammals	Please provide acoustic information regarding disposal at sea and provide a figure that shows the 120 and 160dB isopleths associated with dredge disposal at Brown Passage. This is critical in order to understand the potential sonic limitations to marine mammal movement through Brown Pass to and from the open ocean.	As discussed on page 4.10-51 of the Application, and based on literature reported values (e.g., Todd et al. 2015), it is considered unlikely that the NOAA (n.d.) interim thresholds for behavioural disturbance (i.e., 120 and 160 dB re 1 µPa rms) will be exceeded during dredging and disposal at sea activities. As such, acoustic modelling of dredging and disposal at sea were not undertaken. This approach is in keeping with that taken on other recently-approved projects in northern BC. Aurora LNG maintains that the Application adequately characterizes potential residual effects of dredging and disposal at sea on marine mammals, and that additional quantitative modelling is unlikely to change the conclusions presented in the Application.
1111.1	round 1	Metlakatla First Nation	Table 4.10-9	Marine Wildlife - Marine Mammals	The principles guiding the determination of exclusion zones (in consultation with DFO) must include the creation of a corridor in which sound levels are below 160dB. This may require significant reductions in vessel speed within narrow channels.	Acoustic modelling of Project-related vessels in transit predicted that sound levels would drop below 160 dB re 1 µPa rms within 0.1 km of the vessel propellers based on conservative assumptions. Modelling assumed that LNG carriers were accompanied by two tugs (which will not occur beyond the boundaries of the PRPA) and that vessels were travelling at the maximum speed of 16 knots (30 km/hr) (while the average speeds throughout the PRPA will be 12 knots [22 km/hr]). Further details on vessel scenarios and acoustic modelling results are provided in Appendix P.
1112.1	round 1	Metlakatla First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	The Application notes that the proposed upper-end LNG carrier transit speed within the RAA is 16kts. Literature from the US suggests that baleen whales have difficulty maintaining speeds over 10kt and may therefore have difficulty outrunning vessels travelling at top speed if startled or otherwise engaged in an activity (mating/foraging) that prevents early vessel detection. Speeds from triple island to the jetty should be maintained at no more than 10kts. This is expected to reduce behavioural changes associated with noise, as well, because noise from LNG carriers generally increases more than proportionally with increases in speed.	The relationship between vessel speed and strike risk was considered in the assessment (see Section 4.10.5.4) and the relationship between sound levels and vessel speeds is recognized. The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) process, conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects, and feedback through consultation with PRPA, DFO, Aboriginal Groups, and others. Project-related vessels will proceed at a safe speed and respect any regionally-defined or PRPA-specific speed profiles that are applicable at the time of operations, subject to navigational safety. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
1113.1	round 1	Metlakatla First Nation	Appendix Q	Marine Wildlife - Marine Birds	Please explain the reasoning for the following methods: Why were there no shoreline stationary counts conducted on Tuck Island or the Kinahan Islands? Why were shoreline surveys only conducted for fall migration and summer, and only in one year? Why were vessel-based surveys conducted at different months for summer surveys (July 2014 vs. June 2015)? Why were vessel-based surveys only conducted once per season, with the exception of summer? Why were vessel-based surveys conducted to survey marine birds 300m on either side of the centreline? Standard is 300m total width, at 150m on either side of the centreline. Marbled murrelets are increasingly difficult to detect beyond 100m. Why were surveys conducted between 8am and 6pm? Marine birds are typically best to sample in the morning or dawn/dusk. Why were vessel-based surveys so concentrated in Chatham Sound, outside the RAA? More effort should have been taken to survey within the RAA. This was not explained. Why were results not shown by habitat type? Please show more information about the results of the survey and describe the importance/significance of the results. Why were vessel-based surveys conducted in a different pattern (continuous straight lines) during the February 2015 survey? Why were some habitat types not sampled during the July 2014, June 2015 and November 2014 vessel-based surveys?	Methods for shoreline stationary counts and vessel-based surveys are described in Section 4.1.2 and 4.2.2 of Appendix Q. Field studies for marine birds were completed to provide a record of occurrence and patterns in habitat use within the LAA and RAA. The scope and timing of field studies were consistent with recommendations within applicable sampling protocols referenced in Appendix Q. Shoreline stationary counts and vessel-based surveys were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use during overwintering, migration, and breeding periods. Although surveys were generally completed once per season, survey effort was replicated across and within habitat types in LAA and RAA. Surveys were completed in July 2014 and June 2015 to provide additional information about patterns in marine bird use of the LAA and RAA across the summer breeding period. To provide greater regional context, results of field studies were evaluated in consideration of regional datasets and information sources (see Appendix Q). Shoreline stationary counts were located to maximize survey coverage in habitats within the LAA. Specific placement of individual points was intended to survey across various nearshore environments within the LAA, targeting unique marine features. A shoreline stationary count was located on Spire Island (MBDI20) and included Tuck Island in its radius of detection (see Figure 2 of Appendix Q). Although no shoreline stationary counts were located on Kinahan Islands, vessel-based surveys included survey effort in adjacent marine habitats. Vessel transects were stratified across four primary habitat guilds to account for potential differences in marine bird habitatuse. Transects were distributed throughout the RAA but also Chatham Sound more broadly, to account for regional patterns in seasonal richness, abundance, and distribution. Transects placement was random within each guild to provide an indiscriminate sample of species presence, richness, abundance, and distribution. As noted in Appendix Q, the number and placement of transects completed in each season (including distribution across habitat guilds) varied based on constraints in weather and sea conditions. A complete summary of marine bird detections by habitat guild is provided in Appendix 3 and discussed in Section 4.2.3 of Appendix Q. Vessel-based survey methods (e.g., RIC 1997; Gjerdrum et al. 2012) recommend that observers scan out to 300 m ahead and to one side of the vessel. This can result in an underestimate of difficult to detect species (e.g., alcids) if surveying under challenging weather conditions, however a 300 m transect width better accounts for species that avoid transiting vessels that would also be underestimated using a narrower transect width (e.g., loons, diving ducks; RIC 1997, Gjerdrum et al. 2012). Detection of smaller species beyond 150 m is optimized by surveying during conditions were visibility is not compromised and through the use of skilled observers (see Appendix Q for details). References: Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) Standardized Protocol for Pelagic Seabird Surveys from Moving and Stationary Platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. Resource Inventory Committee (RIC). 1997. Inventory Methods for Seabirds: cormorants, gulls, murres, storm-petrels, Ancient Murrelet, auks, puffins, and Pigeon Guillemot. Victoria, BC.
1114.1	round 1	Metlakatla First Nation	Appendix Q	Marine Wildlife - Marine Birds	Survey methodology was not well described. Nor were there justifications for locations chosen for surveys. Please elaborate on the methodology and provide justifications.	Methods for shore and vessel-based surveys are described in Section 4.1.2 and 4.2.2 of Appendix Q and are consistent with the level of information required based on the survey protocol standards referenced within each section. Shore-based points were located to maximize survey coverage in habitats within the LAA while preventing overlap of the observation radius of individual points to avoid duplication in survey effort. Specific placement of individual points were intended to survey across various nearshore environments within the LAA, targeting unique marine features (e.g., Delusion Bay, Casey Cove, surrounding islands and islets). Vessel transects were stratified across four primary habitat guilds to account for potential differences ir marine bird habitat use. Transects placement was random within each guild to provide an indiscriminate sample of species presence, richness, and abundance.
1115.1	round 1	Metlakatla First Nation	Appendix Q	Marine Wildlife - Marine Birds	Were shoreline surveys conducted within 2hrs of high tide at each survey location? Methodology only states that surveys were conducted between 8am and 4pm.	Consistent with sampling protocols referenced in Appendix Q, shore and vessel-based surveys were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use. Stationary shoreline points situated around mudflats (e.g., Delusion Bay, Casey Cove) were surveyed at mid- or high-tide, to optimize detection of shorebirds and dabbling ducks, as well as to facilitate access to survey locations.
1116.1	round 1	Metlakatla First Nation	Appendix Q	Marine Wildlife - Marine Birds	Were shoreline surveys conducted with spotting scopes and binoculars? 300m is a long distance to see with just binoculars and many species including marbled murrelet may be missed. Please provide more information, including the number of observers.	Shoreline surveys were completed using a combination of a spotting scope and binoculars to support species identification (including for species that are more difficult to detect at greater distances, such as marbled murrelet).
1117.1	round 1	Metlakatla First Nation	4.11.2.5	Marine Wildlife - Marine Birds	Please explain why Dodge Cove was not included in the LAA? This area looks to be within 1km of the MOF, thus should be included.	The LAA for marine birds includes a 1 km buffer around the proposed marine terminal, including the MOF. Dodge Cove is located just outside of this 1 km buffer (see Figure 4.11-1 in Section 4.11); however, Project studies included three shoreline stationary counts in Dodge Cove to understand marine bird presence, abundance, and distribution in this area. Given its proximity to the LAA, potential effects to marine birds using habitats in Dodge Cove are expected to be similar to those characterized for other areas within the LAA. A discussion of potential effects to nesting herons in Dodge Cove is also considered in Section 4.7 of the Application.
1118.1	round 1	Metlakatla First Nation	1.2	Proposed Project Overview	Please show the infrastructure for the natural gas delivery on the site maps. This context is important for determining the constructed layout and allows for a broader picture of the end product.	As noted in section 1.2.7.1 of the Application, natural gas will be delivered to the Project via a third party-owned pipeline, which is yet to be determined, and not in the scope of this Project. The feed gas pipeline will enter the PDA via a dedicated pipeline delivery station. It is expected that the marine-based feed gas pipeline would approach Digby Island from the south to avoid further disturbance to areas on Digby Island outside of the PDA. However, the exact location for landfall is subject to change since the pipeline supplier has not been selected.

1119.1	round 1	Metlakatla First Nation	4.11.3.1 and Table 4.11-7	Marine Wildlife - Marine Birds	Despite scoping in section 4.11.2 that lists Bird Conservation Region 5 and First Nations interests (section 4.11.3.2) as part of the scope, these species of interest have not been carried forward in the assessment. Please explain why priority species for BCR5 and harvestable marine birds of value to FNs have not been included in the assessment.	Sections 4.11.2.2 and 4.11.2.3 of the Application describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds and is described in more detail in Appendix Q of the Application. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies, and scientific literature to determine the appropriate extent of spatial boundaries, characterize residual Project and cumulative effects, and to assign significance determinations. Species of cultural importance are discussed throughout Section 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure. Additional details on the timing and location of marine bird harvesting practices are provided in Appendix S.2. Information on harvesting practices was used to support Section 4.11, Section 11, and Part C of the Application. The assessment also integrated information from the Bird Conservation Region 5 (BCR 5) Strategy (Environment Canada 2013), recognizing that the BCR 5 extends from the western Gulf of Alaska to northern California. The Application draws information on conservation objectives outlined in the Strategy that is relevant to marine bird species present, and habitats available, within the LAA and RAA. Priority species identified in the Strategy align with those presented in Section 4.11.3.2 and Appendix Q of the Application. Supporting field studies were developed in consideration of habitat requirements for priority species / species of management concern. The key threats identified for priority species in the Strategy are considered in the Application, where the Project has potential to contribute to residual effects (e.g., habitat change and alteration, mortality, and disturbance). Section 4.11.5.6 of the Application describes residual Project effects that have potential to interact cumulatively with other projects and activities within the RAA, including those identified in the Strategy (e.g., commercial fishing and by-catch, marine transportation). Environment Canada (2013) further outlines that BCR strategies are not intended to be highly prescriptive. Proponents are recommended to integrate local information, recommendations, and management practices. Accordingly, Aurora LNG incorporated information from regional data and information sources (e.g., land use plans, traditional ecological studies) into Section 4.11 of the Application. Mitigation measures are developed in consideration of other relevant provincial and federal regulations and best management practices. Reference: Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 5: Northern Pacific Rainforest. Canadian Wildlife Service, Environment Canada. Delta, British Columbia. 128 pp. + appendices.
1120.1	round 1	Metlakatla First Nation	4.11.4	Marine Wildlife - Marine Birds	Why is marine construction not considered a mortality risk? Effect of blasting on diving birds includes concussive force and pressure. This effect should be included in the assessment. Why is discharge to the marine environment under commissioning and start-up not considered as a change in habitat? Hydro-testing will include fresh water plus impurities in the pipe, which gets discharged to the marine environment. This poses a risk to change in environment for marine birds. Why is LNG shipping not considered a mortality risk? There is a risk that marine birds disoriented by lights or avoiding ships are not able to make it to a rest area or suitable landing site. Why has LNG production not been considered a risk to change in behaviour of marine birds? Flaring and lighting may cause marine birds to avoid the area, or be disoriented by the lights, changing their behaviour.	Effects of underwater noise to marine birds is primarily expected to result in sensory disturbance that could influence change in habitat use or change in behaviour, and is discussed in Sections 4.11.5.2 and 4.11.5.4 of the Application, respectively. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations). Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.7.14, facility staff will document and report bird injuries or fatalities, including birds that would be potentially affected by underwater noise. Methods for waste discharge into the marine environment, and potential effects to the physical or chemical composition of marine waters is assessed in Section 4.5.15.3 of the Application. Changes in physical or chemical conditions, and resulting effects to marine bird prey, are considered as part of the assessment of change in habitat under Section 4.11.5.2 of the Application. Section 4.11.5.3 indicates that for marine birds, change in mortality risk for the Project is primarily associated with increased nighttime lighting at the LNG facility, marine terminal, and from berthed or transiting vessels (inclusive of LNG carriers). The assessment of change in mortality risk specifically addresses effects of disorientation that could result in stranding, injury, or mortality from all Project-related anthropogenic light sources. Section 4.11.5.4 further acknowledges that marine birds are also expected to adjust behaviour patterns, either through attraction to, or disorientation caused by, nighttime lighting at the marine terminal and at berthed or transiting vessels. However, because behaviour-related changes as a function of Project-related lighting can ultimately result in injury or mortality of marine birds, this mechanism for effect was assessed in Section 4.11.5.3.
1121.1	round 1	Metlakatla First Nation	4.11.4	Marine Wildlife - Marine Birds	How will wastes be treated during waste management? Will there be any disposal or discharge to the marine environment?	Methods for waste storage, treatment, disposal, and discharge into the marine environment, and potential effects to the physical or chemical composition of marine waters are assessed in Section 4.5.15.3 of the Application. Changes in physical or chemical conditions, and resulting effects to marine bird prey, are considered under Section 4.11.5.2 of the Application. Details regarding Project waste sources, anticipated waste streams, and disposal options will be described in the Waste Disposal Management Plan (see Section 14.14 of the Application).
1122.1	round 1	Metlakatla First Nation	4.11.5.2	Marine Wildlife - Marine Birds	A general assumption has been made that "most marine birds present in the LAA and RAA have secure populations and have access to other suitable marine habitats, marine birds are expected to demonstrate a moderate degree of resilience to change in habitat availability". However, 22 species of marine birds of management concern have been identified as potentially occurring in the LAA or RAA. These species do not have secure populations, or are at risk of having unsecure populations. In addition, species traditionally harvested by First Nations have not been included in the assessment (unless already of management concern). The inability to harvest traditionally harvested marine birds, either due to a decrease in availability, change in behaviour of the species, or because the added pressure of harvesting would be detrimental to the species, is in conflict with the rights of FNs to practice Aboriginal rights. Marine birds on the priority list for BCR5 (including species where an increase in population is desired) have also not been included. Please explain rationale for concluding that marine birds are expected to demonstrate a moderate degree of resilience.	Species of management concern and traditionally harvested species have been included in the assessment (see subsections within Section 4.11.3.2) and although there is some overlap, they are not necessarily representative of the same marine bird species or species groups. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies and scientific literature to characterize residual Project and cumulative effects, and to assign significance determinations. The assessment also integrated information from the Bird Conservation Region 5 (BCR 5) Strategy (Environment Canada 2013), drawing information on conservation objectives outlined in the Strategy that is relevant to marine bird species present, and habitats available, within the LAA and RAA (see response to comment 776 for more information). As per Table 4.11-15, resilience was determined for marine bird species and species groups (including species of management concern and traditionally harvested species) based on the existing conditions, the potential for interaction with Project activities and infrastructure, the nature of that interaction, and the sensitivity of marine birds to respond. Given these criteria, marine birds were assessed to have moderate tolerance to change from existing conditions; the viability of local or regional populations was not expected to be affected by residual project effects. The prediction confidence is moderate or high (see Section 4.11.8) given some uncertainty over the degree to which some marine bird species may be affected by the Project. Information presented in Section 4.11 was carried forward to Section 11 (see Section 11.3.8.3 starting on page 11-123) and Part C (see Section 12.5.5.6) of the Application and considers the resilience of harvested species to residual Project and cumulative effects in combination with traditional harvesting practices. Reference: Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 5: Northern Pacific Rainforest. Canadian Wildlife Service, Environment Canada. Delta, British Columbia. 128 pp. + appendices.
1123.1	round 1	Metlakatla First Nation	4.11.5.2	Marine Wildlife - Marine Birds	Please provide the lowest noise levels that cause disturbance to marine birds. This information is important in determining potential effects on birds. Please show isopleth lines on a map of the project area, along with marine bird concentrations. Please show attenuation distance of underwater noise and model used to determine this.	Scientific understanding and recognition of the potential effects of underwater noise (i.e., behavioural and injury thresholds) on marine mammals have increased dramatically in recent decades. However, for other marine taxa (e.g., marine birds) there remain substantial limitations in current scientific understanding of this potential stressor. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds, an acoustic model for marine birds was deemed inappropriate. The nature and extent of underwater noise effects are limited to species who spend a portion of their life cycle below the water surface (i.e., diving and pursuit foragers) that are likely to use marine habitats experiencing elevated noise levels. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations).
1124.1	round 1	Metlakatla First Nation	4.11.5.2	Marine Wildlife - Marine Birds	What is the rationale for determining that adverse effects are not expected on marine birds given that noise produced by the Project vessels is expected to be 206dB re 1uPa for transiting tugs and pile driving is expected to reach 230dB re1uPa, yet an expose level of 202dB can caused injury to marbled murrelet? This is a clear exceedance, yet the assessment claims that the noise produced by ships in the shipping lane "are well below the threshold expected to cause injury in diving bird species". What threshold is this if not the 202dB for marbled murrelet? At what dB level does noise cause disturbance or change in behaviour for marbled murrelet?	Effects of underwater noise to marine birds was expected to result in sensory disturbance that could influence change in habitat use or change in behaviour, and was discussed in Sections 4.11.5.2 and 4.11.5.4 of the Application, respectively. The assessment did indicate that underwater noise would result in an adverse residual effect of displacement or disturbance within each section. Given available scientific evidence, the SAIC (2011) concluded that terrestrial and marine mammals represent reasonable surrogates for characterizing auditory injuries to marbled murrelets, while thresholds for fish are useful for estimating non-auditory injuries. Based on that species extrapolation, the SAIC (2011) estimated that a continuous 24-hour sound exposure level (SEL) greater than 202 dB re 1uPa could cause disturbance or injury to marbled murrelet. However, the SAIC (2011) recommends this as a guideline given that the SEL threshold represents a 24-hour cumulative exposure period (i.e., an individual remains submerged and its distance to the noise source remains constant for a continuous 24-hour exposure period) and has limitations in its application for species that are a) mobile, and b) spend only a proportion of its daily cycle below the surface of the water. Detailed technical information on the nature and extent of underwater noise effects continue to be limited for marine birds. Although Project-related activities may result in underwater noise production above 202 dB re 1uPa, marbled murrelets or other marine bird species are not expected to be exposed for a sufficient period to sustain injury. Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction; these plans will consider timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to noise reduction for blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Reference: Science Applications International Corporation (SAIC). 2011. Environmental science panel for marbled murrelet underwater noise injury threshold. Prepared for: US Navy, Bothell, WA. 34 pp.
1125.1	round 1	Metlakatla First Nation	4.11.5.3	Marine Wildlife - Marine Birds	Table 4.11-10: Mitigation for marine construction/operations is incomplete. Suggested mitigation measures include: -bubble curtain to limit risk of marine birds (and fish) from getting too close to pile driving operations or other appropriate mitigatins if bubble curtains are unfeasible in some locations; surveys/monitoring for birds during construction and operations; timing of works to avoid sensitive periods, such as when young are present (likely more susceptible to noise effects); shielding of the flare to prevent accidental mortality	As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Section 1.2.5.1 describes the proposed flare system design and does not include a shielding mechanism, due to infrastructure constraints. However, maintenance flaring events will be scheduled during daylight hours to the extent practicable to reduce the potential of accidental mortality of marine birds (mitigation 4.7.20). Aurora LNG has further committed to limit exterior lighting, and use of directional or shielded lighting to reduce the risk of injury or mortality of marine birds during all Project phases (mitigation 4.7.9).
1126.1	round 1	Metlakatla First Nation	4.11.5.2 & 4.11.5.3	Marine Wildlife - Marine Birds	Please describe in-air noise effects on marine birds. Include information on pressure and vibration changes associated with flaring and how these will affect birds (vibration cavity of birds differs from humans, and as such, human-centric thresholds are not applicable).	Effects of in-air noise on marine birds are described in Sections 4.11.5.2 and 4.11.5.4. While flaring will contribute to noise production during Project operations, it is not expected to generate substantial noise for marine bird receptors unless they are in the immediate vicinity of an active flare, in which case individuals are likely sufficiently close to the pilot flare to be at risk of injury or mortality from collision with the flare stack or flame (see Figure 11 of Appendix C). Changes in mortality risk from injury or collision with the flare system are discussed in Section 4.11.5.3. While effects from sudden pressure changes (e.g., barotrauma) are well documented among bats, the unique respiratory anatomy of birds is thought to make them less susceptible to changes in pressure and is not expected to be a potential effect for marine birds (Baerwald et al. 2008). Aurora LNG has committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injuries or mortalities related to Project activities; where possible, Project personnel will be required to describe the cause of mortality. Reference: Baerwald, E.F., D;Amours, G.H., Klug, B.J., and Barclay, R.M.R. 2008. Barotrauma is a significant cause of bat fatalities at wind turbines. Current Biology, 18(16): 695-696.
1127.1	round 1	Metlakatla First Nation	4.11.5.3	Marine Wildlife - Marine Birds	Please describe how sudden pressure changes, sudden noise, burns and collisions related to flaring will affect marine birds.	Effects of flaring on marine birds are described in Section 4.11.5.3. While flaring will contribute to noise production during Project operations, it is not expected to generate substantial noise for marine bird receptors unless they are in the immediate vicinity of an active flare (see Figure 11 of Appendix C to see predicted noise levels of Project infrastructure within the PDA). If individuals are sufficiently close to the pilot flare to experience elevated noise levels, they're also likely sufficiently close to the pilot flare to be at risk of injury or mortality from collision with the flare stack or flame. While effects from sudden pressure changes (e.g., barotrauma) are well documented among bats, the unique respiratory anatomy of birds is thought to make them less susceptible to changes in pressure and is not expected to be a potential effect for marine birds (Baerwald et al. 2008). Aurora LNG has committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injuries or mortalities related to Project activities; where possible, Project personnel will be required to describe the cause of mortality. Reference: Baerwald, E.F., D;Amours, G.H., Klug, B.J., and Barclay, R.M.R. 2008. Barotrauma is a significant cause of bat fatalities at wind turbines. Current Biology, 18(16): 695-696.
1128.1	round 1	Metlakatla First Nation	4.11.5.3	Marine Wildlife - Marine Birds	Discussion of residual effects for change in mortality fails to mention discussion of underwater noise, as in the previous section. As shown in above comment, underwater noise is expected to exceed thresholds for marbled murrelet (and likely other species). Please include underwater noise in this discussion.	Effects of underwater noise to marine birds is primarily expected to result in sensory disturbance that could influence change in habitat use or change in behaviour, and is discussed in Sections 4.11.5.2 and 4.11.5.4 of the Application, respectively. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Scientific understanding and recognition of the potential effects of underwater noise (i.e., behavioural and injury thresholds) on marine mammals have increased dramatically in recent decades. However, for other marine taxa (e.g., marine birds) there remain substantial limitations in current scientific understanding of this potential stressor. The nature and extent of underwater noise effects are limited to species who spend a portion of their life cycle below the water surface (i.e., diving and pursuit foragers) that are likely to use marine habitats experiencing elevated noise levels. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations). Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.7.14, facility staff will document and report bird injuries or fatalities, including birds that would be potentially affected by underwater noise.

1129.1	round 1	Metlakatla First Nation	4.11.5.3	Marine Wildlife - Marine Birds	Table 4.11-11: Mitigation describes LNG carriers as having to maintain a distance of greater than 500m from known marine bird colonies, and 1km from Lucy Island. However, the existing shipping lane is 6km from Lucy Island. Limiting ships to >5km from Lucy Islands Conservancy would be more prudent.	Aurora LNG is committed to complying with available guidance provided by federal agencies, such as Environment and Climate Change Canada (ECCC). ECCC provides guidance to avoid disturbance to seabird and waterbird colonies in Canada and recommend that large vessels maintain a minimum distance of 500 m from marine bird colonies (ECCC 2016). Given the distance between the existing shipping lane and Lucy Island (approximately 6 km), LNG carriers for the Project are expected to exceed ECCC's recommendations and vessel-based disturbance to colonial breeding marine birds are expected to be low as a result of Project activities. Details of this mitigation measure will be provided in the Wildlife Management Plan (see Section 14.8 in Section 14). Reference: Environment and Climate Change Canada (ECCC). 2016. Guidelines to Avoid Disturbance to Seabird and Waterbird Colonies in Canada. Available at: https://www.ec.gc.ca/paomitmb/default.asp?lang=En&n=E3167D46-1. Accessed: March 2017.
1130.1	round 1	Metlakatla First Nation	4.11.5.3	Marine Wildlife - Marine Birds	Please describe wake effect of LNG carriers on marine habitats, including nesting areas. How will wake be attenuated (show on map)? How will this affect marine bird colonies 500m from the shipping lane?	Section 6.5.4.2 of the Application provides details on wake from operational shipping traffic. Waves generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high at the source vessel and is within the size range of naturally occurring waves in the region. Historical data collected at weather buoys operated by Environment and Climate Change Canada indicate the average wave heights in Hecate Strait were 1.8 m. The Project's shipping route passes through unconfined waters in Chatham Sound towards Hecate Strait, which lends itself to larger distances between transiting carriers and shoreline habitats. This will allow wake waves to grow smaller (attenuate) as they travel over distance. As outlined in Section 4.11.5, Environment and Climate Change Canada recommends that large vessels maintain distances greater than 500 m from breeding colonies to reduce disturbance effects while transiting. Because the Project's shipping route is located more than 1 km from the nearest marine bird colony, the disturbance caused by LNG carriers for the Project are expected to attenuate to levels representative of average ambient wave conditions within the LAA and RAA. Maintaining distance from active marine bird colonies will reduce the potential for disturbance, including flushing of breeding adults from active nests.
1131.1	round 1	Metlakatla First Nation	4.11.5.3	Marine Wildlife - Marine Birds	Please describe monitoring programs to determine whether construction, operations or decommissioning are having an impact on marine birds.	Aurora LNG has committed to implementing standard mitigation measures, guidelines, and practices to avoid or reduce potential adverse effects of Project activities on marine birds during construction, operations, and decommissioning. These mitigation measures are described in Tables 4.11-9 (to avoid or reduce change in habitat), 4.11-10 (to avoid or reduce change in mortality risk), and 4.11-11 (to avoid or reduce change in behaviour for marine birds). To monitor potential effects of lighting on bird and bat mortality, facility personnel will be required to document and report injuries or fatalities related to Project activities (mitigation 4.7.14). As per mitigation 4.7.16, light-induced stranding's of migratory birds (including marine bird species) at the LNG facility, marine terminal, supporting infrastructure and facilities, and on berthed vessels will also be documented and reported. Reporting the extent to which birds are susceptible to light-induced mortality allows for monitoring and adaptive management of lighting mitigation measures, as necessary, throughout Project operations. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Full details will be described in the Wildlife Management Plan (see Section 14.8 of the Application).
1132.1	round 1	Metlakatla First Nation	4.11.6.3	Marine Wildlife - Marine Birds	Please describe resiliency of SAR to cumulative changes in habitat.	As per Table 4.11-5, resilience was determined for marine bird species and species groups (including species of management concern) based on the existing conditions, the potential for interaction with Project activities and infrastructure, the nature of that interaction, and the sensitivity of marine birds to respond to changes. Cumulative changes in habitat for marine bird species of management concern were assessed in Section 4.11.6.3. Given the criteria for resilience in Table 4.11-5, marine birds were assessed to have moderate tolerance to change from existing conditions; the viability of local or regional populations was not expected to be affected by residual Project and cumulative effects from change in habitat. The prediction confidence is high for residual Project and cumulative effects on change in marine bird habitat (see Section 4.11.8 of the Application), based on the availability of data used to characterize existing conditions in the LAA and RAA, the quality of available literature to understand the Project and cumulative effect mechanisms, the effectiveness of proposed mitigation measures, and professional judgement. The Project's residual effects, and its contribution to cumulative effects will be offset by implementation of the Fish Habitat Offsetting Plan. The Fish Habitat Offsetting Plan is expected to reduce regional changes to marine bird habitats, particularly in nearshore areas in the Prince Rupert region. Proposed mitigation measures for change in habitat have incorporated federal and provincial regulations and guidelines as well as measures that have been recommended or proven effective on similar projects in the RAA which will further reduce cumulative effects to marine bird habitats throughout the RAA.
1133.1	round 1	Metlakatla First Nation	4.11.7.1	Marine Wildlife - Marine Birds	Please describe population thresholds for SAR populations. At what point will populations be unable to rebound from loss of habitat or incidental mortalities? What percentage of SAR populations are affected by the Project? What about cumulative effects from other projects?	Significance thresholds for marine birds present the limits of an acceptable change in a measurable parameter or state of regional marine bird populations and are based on applicable legislation, regulatory guidance documents, or other management standards (including cultural use). Where thresholds are not set by legislation, policy, and regulatory guidance documents, a threshold has been developed based on existing data and information, scientific literature and professional judgement, and with the incorporation of available traditional ecological knowledge. Significance thresholds vary between species or species groups and potential effects. As described in Section 4.11.2.8 of the Application, a residual effect is considered significant if it affects the viability of local or regional marine bird populations. The viability of species can be affected by several factors, including reproduction, mortality, immigration, emigration, and habitat availability, where viability was defined in the Application as the long-term maintenance in abundance, diversity, or distribution of marine birds through natural recruitment. Species of management concern with potential to occur in the LAA and RAA are described in Section 4.11.3 (see Table 4.11-7). A total of 22 species of management concern were identified as having potential to interact with Project activities and infrastructure, the effects of which may act cumulatively with other projects and activities within the RAA. Potential residual Project and cumulative effects are described in Section 4.11.5 and 4.11.6, respectively. Species listed on Schedule 1 of the Species at Risk Act that are expected to interact with the Project, including mitigation measures for each, are listed in Table 4.11-13 of the Application. The number of affected species cannot be reported as a percentage, because regional populations for each of these species has potential to experience effects, however the degree will vary based on species presence, abundance, and distribution within the RAA and mechanisms for interaction with the Project.
1134.1	round 1	Metlakatla First Nation	4.11.7 & 4.11.8	Marine Wildlife - Marine Birds	Given the lack of discussion on in-air noise and dismissal of effects of underwater noise on marine birds, lack of discussion of marine birds of interest to FNs, lack of inclusion of priority birds for BCR5, and lack of fully comprehensive mitigation plans, we disagree in the significance and confidence predictions.	Effects of in-air and underwater noise on marine birds are described in Sections 4.11.5.2 and 4.11.5.4 of the Application. The assessment for marine birds considered results of acoustic models developed for the Project in combination with best-available information in scientific literature to characterize residual Project effects. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Sections 4.11.2.2 and 4.11.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds and is described in more detail in Appendix Q. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies and scientific literature to inform the assessment. Species of cultural importance are discussed throughout Section 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure. The assessment also integrated information from the Bird Conservation Region 5 (BCR 5) Strategy (Environment Canada 2013), recognizing that the BCR 5 extends from the western Gulf of Alaska to northern California. The Application draws information on conservation objectives outlined in the Strategy that is relevant to marine bird species present, and habitats available, within the LAA and RAA. Priority species identified in the Strategy align with those presented in Section 4.11.3.2 and Appendix Q of the Application and occur within the LAA and RAA. Supporting field studies were developed in consideration of habitat requirements for priority species / species of management concern. The key threats identified for priority species in the Strategy are considered in the Application, where the Project has potential to contribute to residual effects (e.g., habitat change and alteration, mortality, and disturbance). Section 4.11.5.6 of the Application describes residual Project effects that have potential to interact cumulatively with other projects and activities within the RAA, including those identified in the Strategy (e.g., commercial fishing and by-catch, marine transportation). As noted in Section 4.11.7, the Project is not expected to adversely affect the long-term viability of local or regional marine bird populations and Project effects are considered to be not significant. The prediction confidence was considered moderate or high given some uncertainty over the degree to which some marine bird species may be affected by Project activities or infrastructure. Reference: Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 5: Northern Pacific Rainforest. Canadian Wildlife Service, Environment Canada. Delta, British Columbia. 128 pp. + appendices.
1135.1	round 1	Metlakatla First Nation	4.11.9	Marine Wildlife - Marine Birds	Follow-up monitoring is an important part of large industry projects. Follow-up monitoring is recommended to confirm that Project related impacts are not causing significant impacts on marine birds, ensuring that mitigation measures are being followed, and allows for issues to be addressed in a timely matter. As such, a monitoring program and an adaptive management plan should be developed.	The criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program as outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011). The criteria included a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the VC assessment. In cases where the criteria are met, the proposed follow-up program will be used to verify the accuracy of assessment predictions. For VC assessments that concluded moderate to high prediction confidence, these will be managed through the development of Environmental and Operational Management Plans (Section 14) designed to verify compliance of the Project with commitments in the Application and conditions in an Environmental Assessment Certificate.
1136.1	round 1	Metlakatla First Nation	5	Economic Conditions	In the assessment, Metlakatla participation rate, employment and unemployment data is provided, referencing 2006 INAC data. Please clarify in the report whether this is on-reserve or total Metlakatla population data. The majority of Metlakalta members live off-reserve so on-reserve data is not an accurate representation of the membership. Please note as such in the assessment. In the paragraph that follows, data from the Metlakatla census is provided. Please clarify in the assessment if the employment %s are of total population or labour force. I believe the %s shown are of total popluation and therefore not an apples to apples comparison of other employment rate data shown in the assessment. Please also clarify Figure 5.2-5 accordingly. With reference to this statement: "While Metlakatla is interested in increasing overall employment across its membership, industrial development within the RAA has been identified as a concern with respect to local capacity (the ability to fill Metlakatla employment and volunteer positions)." Please clarify that competition from industrial development employers is the concern.	The 2006 participation rate, unemployment rate, and employment rate of Metlakatla First Nation from the AANDC First Nations Profile is based on data from census subdivisions affiliated with Metlakatla First Nation and does not capture off-reserve populations. Statistics Canada labour force metrics (upon which the AANDC data is based) are calculated as follows: Employment rate = % of persons over 15 employed Participation rate - % of total population 15 years and older participating in the labour force (whether employed or not) Unemployment rate = % of labour force that is unemployed Labour force information provided from Metlakatla First Nation is based on its own membership survey. As indicated in the last paragraph on page 5.2.34 of the Application, this information is based on a percentage of the total community membership. There was no intention to compare this information with the AANDC data.
1137.1	round 1	Metlakatla First Nation	5	Economic Conditions	The assessment states: "Within LAA communities, the labour pool of individuals with skills to operate and maintain an LNG facility is likely to be modest, a proportion of the operations workforce will be hired from outside the LAA." It is troubling to see this assumption included in the assessment when a major emphasis from Metlakatla has been on ensuring proper efforts are allocated to training of available Metlakatla workers. At the working group meeting, Metlakatla emphasized the importance of engaging First Nations in the operations training early so they will be ready for opportunities post-construction. Please revise this statement with language that sets a positive tone and ensures adequate resources are put toward early and substantial efforts toward operations training of FNs within the LAA.	The statement on page 5.2-57 indicating that a proportion of the operations workforce will be hired from outside the LAA reflects the reality that when the plant becomes operational the workforce will need to include some individuals experienced in LNG plant operations. However, it is anticipated that other individuals will be hired from local communities and it is expected that the proportion of operations jobs held by local residents will grow over time, as they acquire the skills and experience needed to operate an LNG facility. Aurora LNG remains committed to hiring appropriately qualified individuals from local communities for Project construction and operations.
1138.1	round 1	Metlakatla First Nation	5	Economic Conditions	Please emphasize the need to engage FN workers in training for operations jobs early in the process. We understand the training can take several years in some cases. It will be important to commit to recruitment and training with enough time to allow FNs participation.	Aurora LNG recognizes that it may take several years of training before individuals become qualified to work at an LNG plant. Aurora LNG will develop and implement a formal training strategy as part of its operational preparedness once the Project reaches a positive Final Investment Decision.
1139.1	round 1	Metlakatla First Nation	5	Economic Conditions	Please include mitigations with respect to employment laddering within the project construction cycle. Some FN workers may lack skills for certain jobs but over the course of the project, though on the job training, etc. may advance their skills to enable better employment positions. Laddering is an important feature of the employment and training strategy. Laddering strategies should also specifically mention the importance of sequeing construction employment to operations employment, with an emphasis on FN workers.	Mitigation 5.2-25 indicates that Aurora LNG will "identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation." This mitigation signals Aurora LNG's support for training initiatives with Aboriginal Groups and local communities. Specific training strategies will be developed as part of human resources planning during detailed engineering. The suggestion of incorporating "laddering" into an employment and training strategy is noted.

1140.1	round 1	Metlakatla First Nation	5	Economic Conditions	The assessment suggests "Mitigation measures presented in Table 5.2-40 will substantially reduce the potential for adverse interactions between LNG carriers and commercial fishers." Yet, the mitigation efforts are fairly weak when considered in the context of the already threatened viability of Metlakatla fishers (MSS, 2013). Any incremental impact could have disproportionately negative effects on Metlakatla fishers; furthermore, Metlakalta has consistently emphasized commercial fishing viability is linked to the viability of subsisence harvest due to reliance on fishing vessels to gather other marine species: Losing commercial fishers (and their vessels) decreases capacity for subsistence gatherers. Even the slightest incremental impact to fishers has a compounding negative effect. The mitigation table should include strategies to address perceived risk of LNG carriers, take into account access routes and timing of fishers, and include a no net loss provision for commercial fisher capacity.	Please see the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
1141.1	round 1	Metlakatla First Nation	5	Economic Conditions	The assessment states: "There is a low likelihood that there will be adverse cumulative effects for change in resource-based primary and subsistence economies due to the limited interaction between reasonably foreseeable projects and primary and subsistence economic activities, in consideration of available mitigation measures." Given the magnitude of proposed projects, majority of which have a a marine component, and coupled with the already threatened viability of Metlakatla commercial fishers (and secondary effects on subsistence harvesters) the claim of a low likelihood of adverse effects seems questionable. Recognition of likely adverse effects is more reasonable, if taking into account current levels of fisher/harvester viability and the magnitide of potential impacts from projects.	Please see the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
1142.1	round 1	Metlakatla First Nation	5	Economic Conditions	The assessment indicates the prediction confidence for significance of effects on marine primary and subsistence economies is moderate due to "limited information on the size of Aboriginal fisheries within the areas that could be affected by Project activities." This admission suggests there is greater potential for effects to First Nations that have not been fully considered in the assessment. At minimum, a better understanding of First Nation activity should be a mitigation measure, potentially providing support to affected First Nations to undertake this work. Further, if data collection demonstrates adverse effects, there needs to be a commitment to mitigate the effects and/or offer acceptable offsets in lieu.	Aurora LNG is open to working with the Metlakatla First Nation to address any potential information gaps and welcomes additional information they can provide regarding Aboriginal Fisheries. As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. The safe-shipping workshops, TERMPOL study, and participation on the Prince Rupert Port Authorities' Marine Construction and Coordination Committee could lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention. Additional information on the nature of the Marine Activities Plan will be shared as the plan is developed.
1143.1	round 1	Metlakatla First Nation	6.2	Visual Quality	The following aspects of the visual quality assessment are missing or not satisfactorally fulfilled and are required to conclude on the potential impacts of the project: - Visual impact of transiting LNG carriers, including at night, on land based viewers as well as seafarers and fishers; - visual impact of LNG terminal at night from multiple viewpoints, including sky glow effects at those locations who may be shielded from direct view of the terminal, but will still see skyglow. Nighttime lighting impacts should also be assessed during foggy conditions, when impacts may be visible for greater distances. - Visual impact of the LNG terminal for transitting vessels (how much of an average journey in and out of the harbour will boaters see?) - Visual impact from multiple viewpoints when flaring, during day and nightime hours.	Please see the following responses to this comment, by topic: 1. Visual impacts of transiting LNG carriers As discussed in Section 6.2.2.4 of the Application, the effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited by large marine traffic), and based on the EAC Application for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not introduce new visual elements or be visibly prominent from most viewpoints along the shipping route. 2. Visual impact of LNG terminal at night from multiple viewpoints, including skyglow effects at those locations who may be shielded from direct view of the terminal, but will still see the skyglow Aurora LNG will prepare a supplemental memo that includes additional night time renderings. Aurora LNG acknowledges that light emissions from the Project could contribute to the skyglow effect in the Prince Rupert area. However, through the use of shielded/directional lighting (mitigations 4.7.9 and 6.2.1), the Project's contributions to sky glow will be minimized where it is safe. 3. Nighttime impacts should be assessed during foggy conditions when impacts would be visible at greater distances Aurora LNG disagrees that lighting effects would be visible at greater distances during foggy conditions. Fog attenuates visible light, such that, depending on the thickness of the fog, the Project's light emissions would appear diffused or obscured. 4. Visual impact of the LNG terminal for transiting vessels (how much of an average journey in and out of the harbour will boaters see)? The length of time that the Project will be visibly apparent to boaters depends on their speed and direction of travel. Assuming that boaters are mainly looking forward, Project components would be visible for approximately 7 km as they leave Prince Rupert Harbour, travelling south. Based on Project components being potentially visibly prominent at 8 km distance (i.e. mid-ground view), for boaters entering Prince Rupert Harbour from the south, Project components would be visibly apparent for approximately 13 km of their travel route. 5. Visual impact from multiple viewpoints when flaring, during day and nighttime hours Aurora LNG will prepare a supplemental memo that includes renderings of flare events.
1144.1	round 1	Metlakatla First Nation	6.2	Visual Quality	Metlakatla members have serious concerns regarding the visual impact of this project. Though not chosen as priority viewpoints, for the purposes of consultation, high quality imagery and explanation will be needed from Nexen, describing the alterations in viewscape as a result of this project from multiple areas of concern, including Metlakatla Village, multiple locations in Prince Rupert, and from marine transit routes.	During the development of the Application, Aurora LNG consulted with Metlakatla First Nation regarding viewpoints to be considered in the assessment. The viewpoints selected for analysis were based partially on this consultation. It is not anticipated that the Project will be visible from Metlakatla Village due to distance and topographical/vegetation screening. While multiple viewpoints in Prince Rupert were considered, due to the orientation of Prince Rupert, the Project will not be visible from most residential or commercial receptors in the city. The Prince Rupert viewpoint selected for analysis (VP03) represents the "worst case" view of the Project from the city. As discussed in Section 6.2.2.4 of the Application, effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because it is already regularly visited by large marine traffic), and based on the Application for the PNW LNG project (which would use similar sized ships, shipping frequency, and shipping route as that of Aurora LNG) it was concluded that Project shipping will not be visibly prominent from most viewpoints along the shipping route.
1145.1	round 1	Metlakatla First Nation	6.03	Infrastructure and Services	The mitigation measures focus more so on strategies to manage workers while in camp, yet the impacts of concern are more related to when workers have time off and leave camp for nearby towns (Prince Rupert and Port Edward, where the majority of Metlakatla members live). The assessment claims the majority of workers will be FIFO but it is unclear how this will be managed and enforced, particularly when considering statements from Aurora to hire locally when possible. More stringent mitiation strategies are required to lessen potential impacts from workers during their time off. For example, the proponent could financially incent workers to travel home during time off rather than spending time off in town or recreating within an area already under pressure from recreational fishers and hunters. Other measures should be explored.	Fly-in/Fly-out (FIFO) workers are estimated to comprise 95% of the peak construction workforce with the remaining 5% expected to be hired from the LAA and RAA (see section 6.3.5.2 of the Application). Transportation of workers from their home communities to the Project site will be coordinated by Aurora LNG. Aurora LNG anticipates adopting a logistics policy that requires FIFO workers to be transported to and from the Project and their point of hire (i.e., home communities). This logistics policy combined with the closed-access camp policy (that workers will be expected to remain onsite for the duration of their shifts) will limit the opportunity FIFO workers have to interact in local communities. Aurora LNG acknowledges that this limits the potential for adverse effects but also reduces potential benefits of the Project on nearby communities. Where workers are hired from local communities, there exists potential for adverse effects when these workers are off shift. Through mitigation 6.3.3, all staff and contractors will be required to undertake worker orientation, including communication of expected behavior when transiting to/from local communities (i.e., a worker code of conduct) and cross-cultural awareness to help build awareness and respect of local concerns and customs to reinforce the importance of respectful conduct when in communities). Through this mitigation, Aurora LNG's will work to reduce the magnitude of adverse effects on infrastructure and services and community health when local workers are off shift and in local communities. Aurora LNG does not have control over the behavior and actions of workers when off duty and must therefore rely on communication of behavioral expectations to workers (such as those proposed through mitigation 6.3.3) to help reduce adverse effects of workers on local communities when off-shift.
1146.1	round 1	Metlakatla First Nation	6.3.5	Infrastructure and Services	The application says: Approximately 10% of construction management workforce will be hired from the LAA for the duration of construction; the remaining will commute on a FIFO basis. Please verify that local workers will return home to their local residences daily? At the Feb. working group meetings, it was indicated the local employees would be expected to stay in camp for their 2 week shifts. If local workers are required to stay in camp, this is a major barrier to local employment. Metlakatla has repeatedly requested Aurora work with Metlakatla to address barriers to employing members, including barriers associated with familial responsibilities, single parenthood, etc. Requiring local workers to stay in camp defeats the purpose of hiring local and elimates a huge portion of the potential workforce. Please verify expectations and work with Metlakatla to address employment barriers further.	As described in the assumptions list in Section 6.3.5.1 of the Application, construction workers are currently assumed to operate on a two weeks on two weeks off shift rotation, and local workers will be transported by Project-dedicated vessels and vehicles from and back to Prince Rupert. Workers will remain on-site for the duration of their shifts. In consideration of issues and concerns expressed by local residents and due to operational challenges related to the continual shuttling of workers from nearby communities and Digby Island, the accommodation camp is closed-access (meaning that Project employees will be expected to remain onsite). Aurora LNG acknowledges that this accommodation strategy, while effective at mitigating potential adverse effects on nearby communities, could have adverse effects on local employment (as noted by Metlakatla could be a barrier to employment). To increase local employment, Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases and develop work packages that consider the capacity and capabilities of local and regional businesses (see mitigation 5.2.1, Section 5.2). Through the community engagement plan, Aurora LNG will further engage in ongoing and meaningful engagement with Metlakatla First Nation to understand barriers to employment and complaints and concerns that may arise.
1147.1	round 1	Metlakatla First Nation	6.03	Infrastructure and Services	Given the lack of mitigations addressing workers that leave camp on days off and remain in the LAA, the estimated low to moderate magnitude residual effect is questionable.	Described in Section 6.3.5.2 of the Application, an estimated 95% of the peak construction workforce is expected to be comprised of fly-in/fly-out (FIFO) workers with the remaining 5% hired from the LAA and RAA. Of the 5%, 3% are anticipated to be local residents of the RAA and 2% in-migrating workers. Transportation of FIFO and local workers (includes current residents and those whom in-migrate to the LAA and RAA) from their home communities to the Project site will be coordinated by Aurora LNG. Aurora LNG anticipates adopting a logistics policy that requires FIFO workers to be transported to and from the Project and their point of hire (i.e., home communities). This logistics policy combined with the closed-access camp policy (that workers will be expected to remain onsite for the duration of their shifts) will limit the opportunity FIFO workers have to interact in local communities. When off-shift, current residents of the LAA and RAA will not contribute to incremental demand as they are already accounted for in baseline conditions. The 2% of the peak construction workforce anticipated to in-migrate will increase demand on infrastructure and services within the LAA and RAA. Aurora LNG is confident that combined, the camp and logistics policies and mitigation measures proposed in Section 6.3 of the Application will effectively manage adverse residual effects on infrastructure and services within the LAA from non-local workers.

1148.1	round 1	Metlakatla First Nation	6.03	Infrastructure and Services	The % of First Nations in core housing need is 2.5 times that of the non-Aboriginal population in Prince Rupert (table 6.3-12). Table 6.2-22 does not identify any mitigation measures that will increase supply of housing or address the upward pressure on housing prices due to increased demand, nor does the table identify any strategies specific to housing for First Nations, despite First Nations being much more vulnerable. There is mention in the assessment of new temporary accommodation and open space lodges that would accommodate 4000 workers/families but Metlakatla is not aware of those projects. We suggest the Proponent take an active role in the creation of housing solutions for direct, indirect and induced employment (and their families) in order to alleviate pressure on housing supply in the LAA and any associated upward pressure on housing prices. Based on the aforementioned, suggeseting "the Project will result in moderate magnitude residual effects within the LAA" seems unlikely; rather a high magnitude residual effect seems more likely and a adverse effect seems likely, suggesting a significant adverse effect.	Aurora LNG acknowledges that a greater percentage of Aboriginal residents within the LAA are in core housing need than non-Aboriginal residents (noted in Section 6.3.3.2 subsection 'Core Housing Need'). While First Nation-specific mitigation measures for changes in accommodations are not currently proposed, mitigation measures proposed in Table 6.3-22 apply to all population (Aboriginal and non-Aboriginal) within the LAA. Aurora LNG is confident that the proposed mitigations in Table 6.3-22, in consideration of workforce estimates (see Section 6.3.5.1 subsection 'Assumptions') and accommodation policies (i.e., a closed-access accommodation camp and expectations for workers to remain onsite for the duration of their shifts), will be effective at mitigating Project-related effects on accommodations. Implemented under the Social Management Plan (mitigation 6.3.1), the Worker Lodging Plan (mitigation 6.3.10) will integrate an adaptive management approach. Aurora LNG's framework for adaptive management is as follows: the social management plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Taken together, as characterized in Section 6.3.5.3, adverse residual effects during construction, operation and decommissioning on housing availability are anticipated to be moderate in magnitude (see Section 6.3.5.3). General information on housing availability within the LAA is provided in Section 6.3.3.2 subsection 'Housing Availability' with additional information on housing within the RAA provided in the 'Supplemental Baseline Information for Infrastructure and Services' technical memo. With respect to proposed open lodge space within the LAA, see Section 6.3.3.2 subsection "Temporary, Commercial and Workforce Accommodations". Additional consideration of issues and concerns related to cost of living is provided in Section 13.5.4 of the Application. Additional baseline information on housing and accommodations within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo which will be filed with the EAO.
1149.1	round 1	Metlakatla First Nation	6.03	Infrastructure and Services	The assessment indicates Prince Rupert hosptial is already at capacity. The assessment acknowledges there will be increased population due to direct, indirect and induced employment (and their families). The mitigations outlined in Table 6.3-26 do not identify strategies that will increase the supply of health care infrastructure and services in town (for those workers and their families not located in camp and for those workers that come into town on their days off). Given supply/demand dynamics, it is not clear how the project will avoid high magnitude residual effects and a high likelihood determinitation with respect to the changes in health care infrastructure and services. The suggestion is to include mitigation strategies that increase supply of services for the LAA.	Aurora LNG proposes to implement mitigation measures (see Table 6.3-26 of the Application) to reduce Project-related demand on health care infrastructure and services. Mitigation measures to increase the supply of health care infrastructure and services within the LAA and RAA are not proposed. Funding for health care infrastructure and services within the LAA is a provincial government responsibility. In-migrating workers, their spouses and dependents will be captured in population-level budgeting processes conducted by the provincial government with respect to health care funding. In BC, health care funding is distributed to health authorities following ministry staff identification of government commitments to health authorities, determination of the amount of funding that remains after making allocations to core-program commitments, and use of the population-based funding model tool to help allocate remaining funding (Auditor General of British Columbia 2013). Should the Project proceed, Aurora LNG will contribute to provincial tax bases providing resources to fund a wide variety of social and health services. Aurora LNG acknowledges that there will likely be a lag effect with respect to population change and adjustments to local and regional health care budgets. Adverse residual effects within the RAA are therefore characterized as moderate to high (see Section 6.3.5.5 of the Application). Auditor General of British Columbia. Health Funding Explained. Available at: http://www.bcauditor.com/book/export/html/775 . Accessed: March 1, 2017.
1150.1	round 1	Metlakatla First Nation	6.03	Infrastructure and Services	In the context of Metlakatla's previous comments about the magnitude and likelihood of adverse effects on health/infrastructure services and housing, it seems likely that additional demand from other projects would only exacerbate the magnitude and likelihood of cumulative effects, notwithstanding proponents taking an active role in the supply of health services and housing.	Assessed in Sections 6.3.6.4 (Cumulative Effects Assessment for Change in Accommodations) and Section 6.3.6.6 (Cumulative Effects Assessment for Change in Health Care Infrastructure and Services) of the Application, cumulative adverse effects with the Project are characterized as being high in magnitude compared to residual adverse effects (see Section 6.3.5.3 and 6.3.5.5) which range from moderate (change in accommodations) to moderate to high (change in health care infrastructure and services). Therefore, the characterization of cumulative effects does take into account that demand from other projects and physical activities would exacerbate the magnitude of effects. Further, as noted in Section 6.3.7 of the Application, cumulative adverse effects on accommodations and health care infrastructure and services are anticipated to be significant while Project-specific residual adverse effects on accommodation and health care infrastructure and services are anticipated to be not significant.
1151.1	round 1	Metlakatla First Nation	6.5.2.5	Marine Use and Navigable Waters	A figure identifying alternate routes has not been provided. It is inappropriate to exclude alternate routes from assessment without identifying their locations and quantifying what "infrequent" use means as part of an overall rationale for exclusion. This is particularly important if alternate routes used in inclement conditions will bring vessels into areas with high harvesting intensity or closer to conservancies where accidents or malfunctions may have greater adverse consequences.	The assessment of Marine Use and Navigable Waters was done using the primary shipping route. This choice was conservative because it represents the route that most large shipping traffic will use and therefore has the greatest potential for adverse effects to marine navigation and fisheries. As described in Section 6.5.2 of the Application, while alternative shipping routes exist, LNG carriers would only ever deviate from the prescribed route under extraneous circumstances (e.g., such as under the direction of the LNG carrier captain or marine pilot to avoid a collision or other emergency). As a result, the assessment focused on the primary shipping route.
1152.1	round 1	Metlakatla First Nation	6.5.3	Marine Use and Navigable Waters	It is inappropriate to suggest that "most invertebrate harvesting locations do not appear to overlap with the shipping route (mainly because they are harvested during low tide in the intertidal zone." In fact, harvesters working on foot in the intertidal zone have repeatedly expressed concern that vessel wake in specific local areas may cause a danger to harvesters. Since wave patterns are extremely difficult to predict, a robust monitoring and adaptive management program is required to identify any locations where wake appears to be a problem during operations and to develop additional mitigations.	If it is conservatively assumed that intertidal harvesters on foot are using both low tide periods in a day (this is unlikely, because the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping is temporally restricted on a daily basis; for approximately 83% of each day, wake from Project-related shipping cannot interact with intertidal harvesters Section 6.5.4.2 states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height at the shoreline is expected to be lower than the wake height at the source vessel, and within the natural wave height range currently experienced by intertidal harvesters. Project-related traffic will travel along the existing and established shipping route currently used by marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by intertidal harvesters, relating to natural weather patterns and existing shipping. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
1153.1	round 1	Metlakatla First Nation	6.5.3	Marine Use and Navigable Waters	See comment above #809	It is not clear what this comment refers to.
1154.1	round 1	Metlakatla First Nation	Table 6.5-12	Marine Use and Navigable Waters	First Nations have consistently indicated concern about the effects of dredge disposal traffic on marine fisheries and other uses. Please provide a rationale for its exclusion from consideration and assessment.	Dredging and disposal at sea activities will be limited to the DFO least risk timing window (November 30 to February 15) and is planned to take place over two years. See Appendix G (Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling) and Appendix H (Technical Memorandum - Aurora LNG: Disposal at Sea Modelling) for additional dredge timing information. Table 6.5-12 indicates that dredging was identified as a construction-related physical activity that could affect marine use and navigable waters. In the context of the operational life of the Project, dredging will occur over a relatively short period during the construction phase, barges will be located outside of major navigation routes during loading, and barges will travel at relatively slow speeds while under way. For these reasons, the effects of dredge-related traffic was not assessed further (see rationale provided in Section 6.5.4.1). However, see the "Effects of Additional Project-related Traffic" technical memo for additional information on dredge-related marine traffic. The technical memo will be filed with the BC EAO.
1155.1	round 1	Metlakatla First Nation	6.5.4.1	Marine Use and Navigable Waters	The Application states that smaller vessels associated with construction "were not carried forward in the assessment of marine use and navigable waters because this vessel traffic does not represent the worst case scenario for potential adverse effects." Failure to include these vessels significantly underrepresents effects to efficiency of movement, access to berthing, and potential for vessel accidents due to vessel congestion between Digby and Kaien Island. To adequately assess effects; both vessel types need to be included in the assessment; numbers, however, should be disaggregated to identify increases in number of small vessels. This is of particular interest and relevance to harvesters in smaller vessels.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
1156.1	round 1	Metlakatla First Nation	6.5.4.1	Marine Use and Navigable Waters	Please provide duration (weeks or months) for disposal, season, and number of seasons, and use this information to provide a robust rationale for the decision not to assess the potential adverse effects of dredging traffic on marine use.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
1157.1	round 1	Metlakatla First Nation	6.5.4.2	Marine Use and Navigable Waters	It is inappropriate to suggest that "most invertebrate harvesting locations do not appear to overlap with the shipping route (mainly because they are harvested during low tide in the intertidal zone." In fact, harvesters working on foot in the intertidal zone have repeatedly expressed concern that vessel wake in specific local areas may cause a danger to harvesters. Since wave patterns are extremely difficult to predict, a robust monitoring and adaptive management program is required to identify any locations where wake appears to be a problem during operations and to develop additional mitigations. Rather than stating that "no further assessment of vessel wake is warranted", it is appropriate to state that the complexities of modelling suggest uncertainty regarding effects; an adaptive management program is therefore required.	If it is conservatively assumed that intertidal harvesters on foot are using both low tide periods in a day (this is unlikely, because the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping is temporally restricted on a daily basis; for approximately 83% of each day, wake from Project-related shipping cannot interact with intertidal harvesters Section 6.5.4.2 states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height at the shoreline is expected to be lower than the wake height at the source vessel, and within the natural wave height range currently experienced by intertidal harvesters. Project-related traffic will travel along the existing and established shipping route currently used by marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by intertidal harvesters, relating to natural weather patterns and existing shipping. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
1158.1	round 1	Metlakatla First Nation	6.5.4.3	Marine Use and Navigable Waters	A figure identifying alternate routes has not been provided. It is inappropriate to exclude alternate routes from assessment without identifying their locations and quantifying what "infrequent" use means as part of an overall rationale for exclusion. This is particularly important if alternate routes used in inclement conditions will bring vessels into areas with high harvesting intensity or closer to conservancies where accidents or malfunctions may have greater adverse consequences.	The assessment of Marine Use and Navigable Waters was done using the primary shipping route. This choice was conservative because it represents the route that most large shipping traffic will use and therefore has the greatest potential for adverse effects to marine navigation and fisheries. As described in Section 6.5.2 of the Application, while alternative shipping routes exist, LNG carriers would only ever deviate from the prescribed route under extraneous circumstances (e.g., such as under the direction of the LNG carrier captain or marine pilot to avoid a collision or other emergency). As a result, the assessment focused on the primary shipping route.
1159.1	round 1	Metlakatla First Nation	6.5.5.1	Marine Use and Navigable Waters	See comment associated with section 6.5.4.1. Effects of carriers and small vessels must each be assessed; data on each should be disaggregated to understand individual effects by vessel size class ("large size" versus "other")	Please see the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
1160.1	round 1	Metlakatla First Nation	6.05	Marine Use and Navigable Waters	The assessment states: "The assessment begins by determining if two key conditions are met: 1) if the fishing grounds overlap with the shipping route, and 2) if the fishing techniques used (i.e., fishing gear type or local fishing practices) could interact with shipping traffic." Travel routes TO and FROM fishing grounds (not just fishing grounds themselves) also need to be considered because impeded travel routes are tantamount to loss of fishing grounds.	See the "Effects of Lost Fishing Time" technical memo for a description of the anticipated conditions required for an LNG carrier-fishing vessel interaction. The technical memo will be filed with the BC EAO. Given the proposed mitigation measures related to marine traffic described in Table 6.5-13, and because Project-related traffic will travel along the existing and established shipping route currently used by other marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to access the Port of Prince Rupert, Project-related traffic is not expected to substantially impede access travel routes over current conditions. The assessment of Metlakatla First Nation's current use fishing practices (see Section 11.3.8.3 of the Application) considered the quantity (area) and quality of current access routes where use will be affected and determined that, with the implementation of the proposed mitigation measures, it is unlikely that Project-related marine traffic will reduce access to fishing sites along the shipping route, as marine users will still be able to travel through the existing shipping lanes. Aurora LNG welcomes further discussions with Metlakatla First Nation to better understand the community concerns.
1161.1	round 1	Metlakatla First Nation	Table 6.5-13	Marine Use and Navigable Waters	All of these mitigations assume smaller vessels must give way to larger (LNG) vessels. While this is appropriate mariner behaviour, it does not address the fact that changing behaviour to accommodate LNG vessels requires a deviation from preferred routing or activities. This represents an adverse effect on the exercise of traditional rights and must be addressed in Part C of the application.	Given the proposed mitigation measures related to marine traffic described in Table 6.5-13, and because Project-related traffic will travel along the existing and established shipping route currently used by other marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to access the Port of Prince Rupert, Project-related traffic is not expected to require deviation from preferred marine routes or activities. The assessment of effects on Metlakatla First Nation's harvesting-related Aboriginal Interests (Section 12.5.5.6) considered effects resulting from Project-related shipping activities. Because shipping has occurred along the shipping route for decades, it is expected that smaller vessel mariners will be accustomed to navigating around large vessel traffic. Given the proposed mitigation, it is unlikely that two LNG carrier transits per day associated with the Project would reduce access to current traditional use sites located along the shipping route, as marine users will still be able to travel through the existing shipping lanes. Travel routes to current traditional use locations that overlap with the Project shipping route are expected to maintain their current level of safety and access after the application of mitigation measures. Aurora LNG welcomes further discussion with Metlakatla First Nation to better understand their community concerns.
1162.1	round 1	Metlakatla First Nation	6.5.5.2	Marine Use and Navigable Waters	The Application notes that 17% of the small vessel corridor will be alienated. The Application does not, however, indicate how many more small vessels will be using this corridor during the 5-year construction period. It is not possible, therefore, to fully assess the effects of the project on marine use. Vessel congestion in the reduced small vessel corridor may be considerable and needs to be quantified before it can be dismissed from consideration.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.

1163.1	round 1	Metlakatla First Nation	6.5.5.3	Marine Use and Navigable Waters	The Application notes that "a fisher may lose a total of one hour of fishing per day). This is a misleading statement because among other things, it implies fishing occurs year round. Harvesting windows for many species are considerably smaller and weather conditions and tides further limit fishing opportunity, thus a one-hour limitation is most definitely more significant than implied.	See the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
1164.1	round 1	Metlakatla First Nation	6.05	Marine Use and Navigable Waters	A potentially effective mitigation would be to understand diurnal and seasonal travel patterns of First Nation fishers and avoid having LNG carriers enter the harbour area during those times.	Aurora LNG acknowledges this mitigation measure suggestion. In addition, Aurora LNG requested and received specific feedback on proposed mitigation measures from Metlakatla First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90. As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG will engage with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders in the development of this plan. Additional input to the planning process will result from the safe-shipping workshops and the recommendations from the TERMPOL study.
1165.1	round 1	Metlakatla First Nation	Table 6.5-15	Marine Use and Navigable Waters	Given the exclusion of small construction vessels from assessment, Metlakatla feels that the determination of magnitude of residual effects of construction is not accurate.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
1166.1	round 1	Metlakatla First Nation	6.5.6.3	Marine Use and Navigable Waters	Given the exclusion of small construction vessels from assessment, Metlakatla feels that the determination of magnitude of residual effects of construction is not accurate.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
1167.1	round 1	Metlakatla First Nation	6.5.6.5	Marine Use and Navigable Waters	Given the exclusion of small construction vessels from assessment, Metlakatla feels that the determination of magnitude of residual effects of construction is not accurate.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
1168.1	round 1	Metlakatla First Nation	6.05	Marine Use and Navigable Waters	Because only fishing grounds and not travel routes to/from fishing grounds are considered, an accurate characterization and likelihood determination is not possible. The same comment applies to cumulative effects characteriziation and likelihood determination.	See the "Effects of Lost Fishing Time" technical memo for a description of the anticipated conditions required for an LNG carrier-fishing vessel interaction. The technical memo will be filed with the BC EAO. Given the proposed mitigation measures related to marine traffic described in Table 6.5-13, and because Project-related traffic will travel along the existing and established shipping route currently used by other marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to access the Port of Prince Rupert, Project-related traffic is not expected to substantially impede access travel routes over current conditions. The assessment of Metlakatla First Nation's current use fishing practices (see Section 11.3.8.3 of the Application) considered the quantity (area) and quality of current access routes where use will be affected and determined that, with the implementation of the proposed mitigation measures, it is unlikely that Project-related marine traffic will reduce access to fishing sites along the shipping route, as marine users will still be able to travel through the existing shipping lanes. Aurora LNG welcomes further discussions with Metlakatla First Nation to better understand the community concerns.
1169.1	round 1	Metlakatla First Nation	6.06	Community Health	Metlakatla has consistently commented that in the context of community health, volume of food harvested or consumption levels are not adequate as measurable parameters in the absence of a consideration of participation levels. Theoretically, a few people could harvest a great volume of food while majority of people are not practicing harvesting methods or "getting out on the water/land". Metlakatla's socio-economic work shows that a key aspect to communtiy well being is participating in food, social and ceremonial (FSC) activities. Metlakatla provided data on FSC participation rates. Adverse effects to FSC participation reduces overall communtiy well being, knowledge transfer, individual health of members, and social fabric. It is important to consider participation rates in the assessment to get an accurate assessment of how the proect affects First Nation community health.	As per responses to screening comment #251 on the draft Application Information Requirements (AIR), in accordance with AIR requirements (specifically Table 6-9) and identified in Table 6.6-2, measurable parameters to be considered in the qualitative assessment of change in harvested foods include volume of foods harvested and harvested food consumption. Consideration of (FSC) participation rates are not a requirement of the AIR. Noted in screening comment #251 of the draft AIR, Section 11.3 addresses specific requirements of CEAA 2012 regarding the effects of the environment on Aboriginal peoples, commonly referred to as the 5(1)(c) effects (i.e., health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance). In addition, Section 12 assesses how the project could potentially affect the interests of Schedule B Aboriginal Groups. Section 11.3.8.3 assesses Metlakatla First Nation members' ability to conduct traditional practices within their traditional territory due to changes in consumptive land and resource use for traditional purposes and changes in non-consumptive land and resource use for traditional purposes. Section 11.3.8.4 assesses how Metlakatla member health may be affected by changes in air quality, harvested food quality or quantity, and noise levels. Section 11.3.8.5 assesses how Metlakatla socio-economic conditions may be affected by changes to visual quality, the acoustic environment, or harvested foods. Section 11.3.8.6 assesses how Metlakatla physical and cultural heritage may be affected by changes to archaeological and heritage resources, and changes to consumptive and non-consumptive use of lands and resources for traditional purposes. Section 12 assesses effects on Metlakatla First Nation Cultural Wellbeing (see Section 12.5.5.7) including consideration of participation in cultural and spiritual activities (see the subsection 'Change in Locations, Landforms, Natural Features and Access Routes Associated with Cultural and Spiritual Use or Place Name-Names") and cultural transmission (see subsection 'Interruption to Cultural Transmission Between Generations'). Through mitigation 6.3.11, Aurora LNG will engage with local communities and Aboriginal Groups to address community concerns associated with the Project. Issues and concerns related to Project-influenced changes in participation rates, should they occur, could be further addressed through this mitigation measure.
1170.1	round 1	Metlakatla First Nation	6.06	Community Health	This part of the assessment needs to link back to changes to marine fisheries and specifically Metlakatla's previous comment about the need to consider LNG shipping impeding access to and from harvesting grounds (not just the grounds themselves). An adverse effect on ability to access fishing grounds will have a corollary effect on harvest levels.	The assessment of change in harvested foods provided in Section 6.6 of the Application (Community Health) as well as the assessment of change in marine fisheries and other uses provided in Section 6.5 of the Application (Marine Use and Navigable Waters), which informs the assessment of change in harvested foods provided in Section 6.6, both consider changes in access to and from harvesting grounds as well as changes in access to grounds themselves. In Section 6.6, the assessment of change in harvested foods considers effects on access (to and from grounds as well as on grounds themselves) through the effect mechanism 'change in accessibility to harvested foods (marine and terrestrial)' as identified in Table 6.6-2. This effect mechanism results in the identification of potential interactions, among others, between LNG shipping (i.e., changes in access to and from harvesting grounds) and marine construction (i.e., changes in accesses to harvesting grounds themselves) and the potential effect change in harvested foods as identified in Table 6.6-17 (Project Interactions with Community Health). These interactions, among others, are assessed in Section 6.6.5.4 of the Application. Similarly, informing the assessment of change in harvested foods (Section 6.6.5.4), Section 6.5 (Marine Use and Navigable Waters) considers effect mechanisms related to shipping and the construction and operation of marine infrastructure in assessment of change in marine fisheries as measured through the 'shipping traffic (ships per year)' and 'fisheries area affected' (see Table 6.5-3 of the Application). Marine construction and LNG shipping are identified as interactions with the potential effect - change in marine fisheries and other uses. These interactions are assessed in Section 6.5.5.3 of the Application.
1171.1	round 1	Metlakatla First Nation	6.06	Community Health	The "stay in camp" policy will do little to address impacts to community health from workers spending their time off in LAA communities. Mitigations that financially incent workers to return to their home communities during time off is a more effective strategy that should be considered.	Fly-in/Fly-out (FIFO) workers are estimated to comprise 95% of the peak construction workforce with the remaining 5% expected to be hired from the LAA and RAA (see section 6.3.5.2 of the Application). Transportation of workers from their home communities to the Project site will be coordinated by Aurora LNG. Aurora LNG anticipates adopting a logistics policy that requires FIFO workers to be transported to and from the Project and their point of hire (i.e., home communities). This logistics policy combined with the closed-access camp policy (that workers will be expected to remain onsite for the duration of their shifts) will limit the opportunity FIFO workers have to interact in local communities. Aurora LNG acknowledges that this limits the potential for adverse effects but also reduces potential benefits of the Project on nearby communities. Where workers are hired from local communities, there exists potential for adverse effects when these workers are off shift. Through mitigation 6.3.3, all staff and contractors will be required to undertake worker orientation, including communication of expected behavior when transiting to/from local communities (i.e., a worker code of conduct) and cross-cultural awareness to help build awareness and respect of local concerns and customs to reinforce the importance of respectful conduct when in communities). Through this mitigation, Aurora LNG's will work to reduce the magnitude of adverse effects on infrastructure and services and community health when local workers are off shift and in local communities. Aurora LNG does not have control over the behavior and actions of workers when off duty and must therefore rely on communication of behavioral expectations to workers (such as those proposed through mitigation 6.3.3) to help reduce adverse effects of workers on local communities when off-shift.
1172.1	round 1	Metlakatla First Nation	6.06	Community Health	Based on Nexen's assessment, a high magnitude of adverse effects on community health during construction within Prince Rupert and Port Edward seems more likely.	Residual effect characterizations provided in Section 6.3.5 and summarized in Section 6.6.5.3 of the Application take into consideration factors such as the Project's location on Digby Island (without fixed link to Prince Rupert), local and in-migrant employment estimates (see Section 6.3.5.2), camp policies (closed-access), logistics planning (that fly-in/fly-out workers will be transported to and from points of hire at the beginning and end of their work shifts), and the proposed mitigation measures in the characterization of adverse residual effects. Given the above, due to the proximity of the Project to Dodge Cove and Crippen Cove, residents in these communities are predicted to experience high magnitude effects on change in community health and wellness during construction and decommissioning and moderate magnitude effects during operation. For remaining communities within the LAA, including Port Edward and Prince Rupert, adverse residual effects on change in community health and wellness are predicted to be moderate during construction and decommissioning and low during operation.
1173.1	round 1	Metlakatla First Nation	6.06	Community Health	An effective potential mitigation could be providing an offset for reductions on harvest activities due to the project, e.g. increasing the capacity for First Nation people to access harvest areas and partake in marine and terrestrial harvest activities through provision of equipment.	Aurora LNG is confident that the suite of mitigation measures proposed in Table 6.6-21 of the Application will effectively manage adverse residual effects on change in harvested foods. The provision of equipment to increase capacity of First Nation members to partake in harvesting areas is not currently proposed.
1174.1	round 1	Metlakatla First Nation	6.06	Community Health	An accurate characterization is not possible without consideration of how the project affects FSC participation rates.	As per responses to screening comment #251 on the draft Application Information Requirements (AIR), in accordance with AIR requirements (specifically Table 6-9) and identified in Table 6.6-2, measurable parameters to be considered in the qualitative assessment of change in harvested foods include volume of foods harvested and harvested food consumption. Consideration of (FSC) participation rates are not a requirement of the AIR. Noted in screening comment #251 of the draft AIR, Section 11.3 addresses specific requirements of CEAA 2012 regarding the effects of the environment on Aboriginal peoples, commonly referred to as the 5(1)(c) effects (i.e., health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance). In addition, Section 12 assesses how the project could potentially affect the interests of Schedule B Aboriginal Groups. Section 11.3.8.3 assesses Metlakatla First Nation members' ability to conduct traditional practices within their traditional territory due to changes in consumptive land and resource use for traditional purposes and changes in non-consumptive land and resource use for traditional purposes. Section 11.3.8.4 assesses how Metlakatla member health may be affected by changes in air quality, harvested food quality or quantity, and noise levels. Section 11.3.8.5 assesses how Metlakatla socio-economic conditions may be affected by changes to visual quality, the acoustic environment, or harvested foods. Section 11.3.8.6 assesses how Metlakatla physical and cultural heritage may be affected by changes to archaeological and heritage resources, and changes to consumptive and non-consumptive use of lands and resources for traditional purposes. Section 12 assesses effects on Metlakatla First Nation Cultural Wellbeing (see Section 12.5.5.7) including consideration of participation in cultural and spiritual activities (see the subsection 'Change in Locations, Landforms, Natural Features and Access Routes Associated with Cultural and Spiritual Use or Place Name-Names") and cultural transmission (see subsection 'Interruption to Cultural Transmission Between Generations'). Through mitigation 6.3.11, Aurora LNG will engage with local communities and Aboriginal Groups to address community concerns associated with the Project. Issues and concerns related to Project-influenced changes in participation rates, should they occur, could be further addressed through this mitigation measure.

1175.1	round 1	Metlakatla First Nation	7.2.2.4, second paragraph	Heritage	"Any potential effects on archaeological and heritage resources are most likely to occur during the construction phase when ground disturbance and tree removal will occur". Metlakatla disagrees- potential effects are just as likely during the pre-construction phase (geotech program, ESA program), operation phase (increased public use of area resulting in rutting and looting due to development), and decommissioning phase (building demolition and reclaimation). These other phases of the project need to be scoped into the assessment in Chapter 7.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1176.1	round 1	Metlakatla First Nation	7.2.2.4, Table 7-2, second column	Heritage	The pre-construction, operation and decommissioning phases should be discussed in this table and assessed in Chapter 7.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1177.1	round 1	Metlakatla First Nation	7.2.2.5, Table 7-3, second row	Heritage	RAA is incorrectly defined and should minimally be set to the Borden block level (16 x 16 km area) or, better, at the broader coast Tsimshian Territory level. RAA is meant to "provide context for the assessment of potential project effects" and is often "used as the spatial boundary for the assessment of potential cumulative effects" (EAO Valued Component Guidelines). A broader area than just the LAA/PDA is required to properly evaluate site significance. For example, at the LAA/PDA level there may be five shell middens. The decision may be made to avoid four and destroy one. At the LAA level, this feels comfortable - you've preserved four of five! However, when using a broader, and we would argue more appropriate RAA, we may find out that there are only five midden sites across the entire Borden block or the entire coastal Tsimshian territory. Now all of a sudden the loss of the one shell midden is more concerning, maybe to the point where all five should be preserved.	The regional archaeology and heritage setting relative to the Project is addressed in the permitted archaeological impact assessment reporting, completed in accordance with regulatory guidelines. Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
1178.1	round 1	Metlakatla First Nation	7.2.2.5, Temporal Boundaries	Heritage	As previously mentioned, the pre-construction phase should be added to the bulleted list and included in the assessment.	There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1179.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4, first row (Magnitude), fourth column	Heritage	For the low magnatiude definition - site significance is not important but rather information loss to an archaeological site is. The wording should be revised to state "A measureable change but is limited to a small amount of information loss at an archaeological or heritage site." This change would also better match the contents of the 'Likelihood' section that follows.	Negligible magnitude is defined as "no measurable change from existing (baseline) conditions (i.e., no loss of information"). Low, moderate and high magnitude are defined in reference to site significance and previous disturbance that could create an effect (i.e., a loss of information) relative to existing conditions. Therefore, the wording will not be revised.
1180.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4, first row (Magnitude), fourth column	Heritage	For moderate magnatiude definition - site significance is not important but rather information loss to an archaeological site is. Please revise current wording to read "A measureable change but is limited to a moderate amount of information loss at an archaeological or heritage site." This change would also better match the 'Likelihood' section that follows.	Negligible magnitude is defined as "no measurable change from existing (baseline) conditions (i.e., no loss of information"). Low, moderate and high magnitude are defined in reference to site significance and previous disturbance that could create an effect (i.e., a loss of information) relative to existing conditions. Therefore, a revision to the chapter is not considered warranted.
1181.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4, first row (Magnitude), fourth column	Heritage	For high magnatiude definition - site significance is not important but rather information loss to an archaeological site. Please revise current wording to read "A measureable change but is limited to a high amount of information loss at an archaeological or heritage site." This change would also make this entry better match the 'Likelihood' section that follows.	Negligible magnitude is defined as "no measurable change from existing (baseline) conditions (i.e., no loss of information"). Low, moderate and high magnitude are defined in reference to site significance and previous disturbance that could create an effect (i.e., a loss of information) relative to existing conditions. Therefore, a revision to the chapter is not considered warranted.
1182.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4, second row (Geographic Extent), fourth column	Heritage	As mentioned above, additional discussions are required to address the RAA's geographic extent.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase.
1183.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4, third row (Frequency), fourth column	Heritage	To the definition of 'Multiple irregular events', pre-construction, operation, and decommissioning phases in addition to the construction phase need to be considered.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources
1184.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4, third row (Frequency), fourth column	Heritage	To the definition of "Continuous" need to ensure this is from the pre-construction phase through to decommissioning so that it is clear what the life of the Project is referring to.	The term "continuous" in Table 7-4 is defined as "occurs continuously throughout the life of the Project", which is the construction, operations and decommissioning phases. There is no pre-construction phase, however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1185.1	round 1	Metlakatla First Nation	7.2.2.6, Table 7-4 (Context), 4th column	Heritage	"Disturbed" archaeological sites may not be in their original primary context however there is still an opportunity for data recovery (eg. artifact analysis) and in the case of shell midden, potential for ancestral remains.	The qualitative categories ("disturbed", "undisturbed") in Table 7-4 refer to a site's research potential based on the extent to which it may have been adversely affected by human activity, and does not preclude analysis of finds from disturbed contexts.
1186.1	round 1	Metlakatla First Nation	7.2.4, second paragraph	Heritage	Add pre-construction, operation, and decommissioning to phases mentioned in the project.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1187.1	round 1	Metlakatla First Nation	7.2.4, Table 7-6, Operations	Heritage	Add "Public Access and Use of the Development and Surrounding Area" and check it off as a potential effect. The development will result in a significant increase in human activity in the area, increasing the liklihood of pedestrian/off road vehicle-related disturbance to sites and the potential for looting of archaeological resources.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1188.1	round 1	Metlakatla First Nation	7.2.4, Table 7-6, Decommissioning and Abandonment, first row	Heritage	The "Dismantaling of land-based and marine infrastructure" has the potential to impact archaeological and heritage resources, and therefore should checkmarked instead of a dash. Please ensure this is fully assessed.	Dismantling of land-based and marine infrastructure is not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources additional to that which occurs during the construction phase.
1189.1	round 1	Metlakatla First Nation	7.2.4, Table 7-6, Decommissioning and Abandonment, second row	Heritage	The "Remediation and reclamation of the site" has the potential to impact archaeological and heritage resources, and therefore should be a checkmark instead of a dash; this impact should be fully assessed.	Remediation and reclamation of the site is not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources additional to that which occurs during the construction phase.
1190.1	round 1	Metlakatla First Nation	7.2.5.1, Assumptions	Heritage	Until the RAA's geographic boundary is adjusted and studied, it is premature to say the potential effects at the RAA level are well understood.	The regional archaeology and heritage setting relative to the Project is addressed in the permitted archaeological impact assessment reporting, completed in accordance with regulatory guidelines. Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
1191.1	round 1	Metlakatla First Nation	7.2.5.2, Project Mechanisms section, first paragraph	Heritage	Should include mention and discussion of pre-construction, operation, and decommissioning phases of project.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1192.1	round 1	Metlakatla First Nation	7.2.5.2, Mitigation For Loss section, last paragraph	Heritage	Local users beyond Aboriginal groups (e.g. Dodge Cove inhabitants) should also be consulted about mitigation for non-protected heritage resources	Aurora LNG's public consultation activities, including with residents of Dodge Cove, are described in Section 13 of the Application, and Aurora LNG will continue to conduct ongoing public engagement throughout the project life cycle. Aurora LNG welcomes further discussions with Dodge Cove regarding non-protected heritage resources.
1193.1	round 1	Metlakatla First Nation	7.2.5.2 Table 7-7, first row, fifth column	Heritage	Pre-construction phase appears. As per other comments listed in this table, the pre-construction phase needs to be discussed throughout the document not just here.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.

1194.1	round 1	Metlakatla First Nation	7.2.5.2 Characterization of Residual section, second paragraph	Heritage	A general comment on mitigation strategy - if your avoidance strategy includes the creation of 'islands' or archaeological sites surrounded by otherwise developed or cleared land, these islanded sites should be subject to additional mitigation measures such as systematic data recovery as people will be drawn to these islands like magnets, thereby significantly increasing the likelihood of post-construction site disturbance through human-induced erosion and/or looting.	The Archaeology Branch (FLNRO) will determine the mitigation measures for protected archaeological sites, including sites surrounded by otherwise developed or cleared land. However, access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. Aurora LNG welcomes further discussion with Metlakatla First Nation during preparation of the Archaeological and Heritage Resources Management Plan.
1195.1	round 1	Metlakatla First Nation	7.2.5.3, Table 7-9	Heritage	A row must be added for the pre-construction phase, which must be assessed.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1196.1	round 1	Metlakatla First Nation	7.2.5.3, Table 7-9, second row	Heritage	As previously discussed, there are Operations related residual effects and this table and this chapter should discuss and assess them accordingly.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1197.1	round 1	Metlakatla First Nation	7.2.5.3, Table 7-9, third row	Heritage	As previously discussed there are Decommissioning and Abandonment related residual effects and the table and this chapter should assess and discuss them accordingly.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1198.1	round 1	Metlakatla First Nation	7.2.6, 7.2.7	Heritage	Metlakatla firmly disagrees with the conclusions in these two sections. There are cumulative effects at the broader RAA level and therefore a proper discussion of cumulative effects has not occurred. How many of each site type exist within the RAA (Borden block or coastal Tsimshian Territory) and how many of each have already been disturbed by development? Does the number of each site type or the number of remaining intact sites per site type suggest a cumulative effects concern? This must be properly explored and commented on.	In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
1199.1	round 1	Metlakatla First Nation	7.2.10	Heritage	Metlakatla has low confidence in the conclusions at this time because a proper RAA was not used for the study, nor were the cumulative effects of the development properly explored and discussed in this assessment.	The regional archaeology and heritage setting relative to the Project is addressed in the permitted archaeological impact assessment reporting, completed in accordance with regulatory guidelines. Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
1200.1	round 1	Metlakatla First Nation	7.3.1, Table 7-10	Heritage	Add rows for pre-construction, operations, and decommissioning phases to the table.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. There is no pre-construction phase within the scope of the environmental assessment; however, the term is used in Section 7 when referring to a mitigation measure that could occur prior to construction phase. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1201.1	round 1	Metlakatla First Nation	7.2.3.1	Heritage	On page 7-16, the archaeological potential model was not conducted under AIA permit 2013-0101. It was conducted under the Kleanza AOA in 2014. This AOA is discussed earlier in section 7.2.3.1 but not included in table 7-5 or referenced properly here.	Aurora LNG received a draft of Kleanza's AOA report which is dated to 2015; therefore, no change specific to citations or reference to this report is required. However, a correction has been captured in the errata document that clarifies the scope of work that Triton and Kleanza conducted in 2013 and 2015. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
1202.1	round 1	Metlakatla First Nation	7.2.3.1	Heritage	On page 7-17, paragraph 1, there is currently no clear understanding provided in this chapter how TK/TU information has been evaluated and defined as a cultural heritage resource, and how potential and residual effects interact specifically with TU/TK resources as well as project interactions described in subsequent sections below.	Section 7.2.3.1 of the Application lists the TK/TU studies that were available at the time of assessment. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. Sections 11.3 and 12.5.5 also consider Metlakatla First Nation's TK/TU information as it pertains to CEAA 2012 and Aboriginal Interests.
1203.1	round 1	Metlakatla First Nation	7.2.3.2	Heritage	Recent work by the MSS has identified a number of archaeology sites withint the shoreline of the PDA. Further work is required to delineate and assess potential impacts of the project on these archaeological features.	Aurora LNG looks forward to reviewing any new data that MSS has, and incorporating it in the Archaeological and Heritage Resources Management Plan, where applicable.
1204.1	round 1	Metlakatla First Nation	7.2.4, Table 7-6	Heritage	In table 7-6, construction potential effects, first row, an indirect impact to sub-surface archaeological sites includes change in water table as soils are removed and/or depressed by the addition of material; this should be included in the assessment.	As outlined in Section 4.6-1.1, existing hydrological regimes and natural flow patterns will be maintained where practicable, and stormwater collection, treatment, and disposal will be managed during the construction and operations phases. Accordingly, there is no anticipated effects to archaeological sites through change in ground water conditions.
1205.1	round 1	Metlakatla First Nation	7.2.4, Table 7-6	Heritage	In table 7-6, operations potential effects, fourth row, why is there no potential effect identified? Vessel wake discussed in 7.2.2.2 was identified as a concern to potentially impact archeological sites.	The potential for wake effects from vessels was considered in this assessment (Section 7.2.5.2). The conclusion is that wake waves generated by LNG carriers and associated escort tugs are not expected to have adverse effects on archaeological and heritage resources within marine intertidal areas. In the exposed or semi-exposed waters of Chatham Sound, wake waves generated by LNG carriers will generally be masked by natural background waves. This was determined based upon a report produced for LNG Canada that predicted that wake generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high (at the source vessel), which is within the size range of naturally occurring waves in the region.Shorelines along the shipping route from Prince Rupert Harbour to the Triple Island pilot station are adapted to moderate to high levels of wave exposure, and are not expected to be affected by vessel wake associated with the Project. This is consistent with the findings of the Environmental Assessment Certificate Application for the LNG Canada Export Terminal that determined that shipping traffic associated with that project would not result in new wave effects on coastal sites.
1206.1	round 1	Metlakatla First Nation	7.2.4	Heritage	First paragraph following table 7-6, page 7-20, Disposal at sea is identified in table 7-6 above as having the potential effect of the "loss of information about or alteration to site contents or context". What rational is provided to consider this effect as non-interactive? In our experience, dredging of intertidal sediments that are in association with a sub-surface archaeological site are monitored if the possibility for buried archaeological deposits are present. Erosion of the intertidal zone may include buried archaeological deposits. Sea level curves in the Prince Rupert region also suggest that sites older than 9,000BP are below our current sea level. See Letham et al. (2016) Postglacial relative sea-level history of the Prince Rupert area, British Columbia, Canada. Quaternary Science Reviews 153:156-191 for further information.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance. Dredging is considered interactive as it will result in ground disturbance, however disposal at sea is considered non-interactive as it is anticipated to cap rather than disturb sediments (Section 7.2.4). The archaeological assessment considered available, published data on sea-level curves for the region. All indicated post-Pleistocene relative sea levels to be above modern sea levels (e.g. Shugar et al. 2014. Post-glacial sea-level change along the Pacific coast of North America. Quaternary Science Reviews 97:170-192). The reference provided in the comment, published in November 2016, post-dates the Environmental Assessment.
1207.1	round 1	Metlakatla First Nation	7.2.5.3, Table 7-9	Heritage	In table 7-9, column 2 Magnitude, Construction, Metlakatla disagrees that mitigation in the form of data collection offsets resdiual effects for the permenant removal of an archaeological and/or heritage site. Often only a small percentage of data from an archaeological site can be rigorously collected given time and budget constraints. TU/TK should be evaluated to understand the magnitude of loss not only directly but indirectly to metlakatla.	Aurora LNG acknowledges this as an ongoing concern of Metlakatla First Nation, and is exploring additional opportunities to further address these concerns, and welcomes the opportunity to discuss this matter further. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1208.1	round 1	Metlakatla First Nation	Application, 8.2.3.2.3	Human Health	Consumptions rates of Dungeness crabs and horse clams were taken from a First Nations Food Nutrition & Environment Study (Chan et al., 2011). The study solicited information from First Nation communities across the province, including some along the BC coast. The Metlakatla FN did not participate in the Chan et al study. Please confirm/verify that the consumption rates taken from this study are relevant and applicable to the Metlakatla FN.	Refer to the document titled, "Supplemental Information for Traditional Marine Foods", which will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1209.1	round 1	Metlakatla First Nation	Application, 8.2.3.2.3	Human Health	The recommended maximum weekly intake value was estimated for each food type for a toddler and adult. Consumption of a food type up to this value consistently throughout the year is assumed to be safe (i.e. without a health concern). Please provide a sample calculation with the values for each input parameter, with justification for each value. Is it considered safe for an individual to consume up to the RMWI for multiple food types?	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1210.1	round 1	Metlakatla First Nation	Application, 8.2.5.1.2	Human Health	The Application notes that a key assumption related to air emissions is that the operations phase at full build-out has the greatest emission rates and emission volumes of airborne COPCs among all Project Phases. During construction and decommissioning, the site activities are quite different than during operations (movement of fill, paving, construction of facilities, installation of utilities, etc.); subsequently, the emission sources and airborne COPCs could be significantly different than during operations. Verify this assumption is correct given the different types of equipment, site activities, and potential for different airborne COPCs as a result of construction/decommissioning specific activities. Additionally, during construction, there would be days where emissions would be higher than others. An evaluation of the emissions should include average and peak emission days.	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) shows the relative emissions of sulphur dioxide, nitrous oxides, PM10 and PM2.5 for the construction and operations phases. Emissions of sulphur dioxide and nitrous oxides are substantially greater in the operations phase. The average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of substances belonging to the class of chemicals known as volatile organic compounds (VOC), which includes acrolein, benzene, 1,3-butadiene...etc.,,refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

1211.1	round 1	Metlakatla First Nation	Application, 8.2.5.2.1	Human Health	The Application indicates construction activities include the use of heavy equipment and vehicles during site clearing and grading, construction of new roads, and mobilization of materials to Digby Island. US EPA mobile source air toxics considers the following national and regional scale cancer risk drivers: acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. These substances should be included in the HHRA or a rationale provided as to why it is suitable to exclude these as airborne COPCs?	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of substances belonging to the class of chemicals known as volatile organic compounds (VOC), which includes acrolein, benzene, 1,3-butadiene...etc..., refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1212.1	round 1	Metlakatla First Nation	Application, 8.2.3.2.1	Human Health	The Application indicates 29 gridpoints were selected to represent human receptor locations. Do any of these correspond to the maximum points of impingement (highest air concentration predicted to occur over land and over water)? The MPOI may be important considerations for short-term exposures to airborne contaminants.	Among the 1,905 land-based gridpoints identified in the human health chapter, the sub-set of 29 gridpoints representing human receptor locations (i.e., populated areas) do not correspond to the maximum point of impingement (MPOI). The location of the MPOI for a criteria air contaminant is a function of its proximity toan emission source. Therefore, the MPOI for any given criteria air contaminant will likely be located immediately adjacent to the Aurora LNG fenceline, or another project within the Prince Rupert and Port Edward area. The location of the MPOI is not a human receptor location for one or both of the following reasons: 1. The location is over water. 2. The location is not populated, or may be zoned for non-residential land use (e.g., industrial land use). As part of the April 19, 2017 working group meeting, Aurora LNG has agreed to provide the map locations of the MPOI for 1-hour NO2. Refer to the document titled, "Maximum Points of Impingement for 1-hour Nitrogen Dioxide Concentrations", which will be filed with the BC EAO.
1213.1	round 1	Metlakatla First Nation	Application, 8.2.5.2.3	Human Health	The Application indicates the potential effects to human health from changes to air quality during construction and decommissioning phases of the Project would be substantially lower than the operations phase. Please verify this is correct since the emission sources during construction/decommissioning may be significantly different than during operations.	The information in the Application regarding changes to air quality between the three Project phases is correct. The emissions during the construction phase are primarily associated with diesel-powered equipment, but the emission volumes are deemed to be highly unlikely to change the ambient air quality of the airshed, and therefore, are not identified in the Application Information Requirements for the Human Health VC. The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of substances belonging to the class of chemicals known as volatile organic compounds (VOC), which includes acrolein, benzene, 1,3-butadiene...etc..., refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1214.1	round 1	Metlakatla First Nation	8.2.2.5.1 & Table 8.2-3	Human Health	The spatial boundaries established for air quality and harvested food quality are based on models used to assess air quality and sediment plume dispersion. For the assessment of human health from harvested food quality, were these boundaries used for the cumulative effects assessment? If yes, is this appropriate since marine food harvesting could occur throughout the region, thus exposure would occur from a number of locations.	The assessment of human health from marine harvested food quality applies the same spatial boundary established for air quality and harvested food quality based on models used to assess air quality and sediment plume dispersion including for the cumulative effects assessment. If an individual also harvests from multiple locations outside of the RAA (area within which the potential for cumulative effects are considered), exposure to chemical substances in those foods are considered to be independent and not affected by the Project on a cumulative basis.
1215.1	round 1	Metlakatla First Nation	Application, Table 8.2-11	Human Health	The Application indicates interactions between Project residual effects and residual effects of other projects are not expected. Please explain how the potential for an individual to harvest food from a number of sites, including at/near this Project then at other Project sites, was assessed taking into consideration the areal extent of traditional food harvesting areas.	A cumulative effects assessment evaluates project interactions that overlap (spatially and or temporally) with those of other known or proposed projects. In the case of marine harvested foods, no other past, present or reasonably foreseeable future projects were identified in the vicinity of the proposed Project dredge footprint and surrounding sediment plume area that would overlap spatially or temporally (i.e., no other dredging or similar activities were identified in the area of the predicted plume or within the same time period). If there are no spatial or temporal overlaps of activities from other projects that could affect marine food quality, the effects would be assessed independently for each project because the effects are not cumulative.
1216.1	round 1	Metlakatla First Nation	HH TDR, 4.1.2	Human Health	The TDR states that CCME ISQGs were used for screening purposes to select COPCs in lieu of environmental quality guidelines applicable to seafood quality for the protection of human health. Is this appropriate and protective of human health? There are instances where something is not toxic to sediment/aquatic life but would be toxic to human health (e.g. red tides).	As noted, there are no sediment quality guidelines for the protection of human health from any provincial, federal or international regulatory agency. Screening for chemicals is not intended to be an indicator that is protective of human health, since the purpose of screening is only to identify chemicals of potential concern. The risk assessment evaluates the exposure to chemicals of potential concern to quantify the health risk, through the application of health-based exposure benchmarks. There are many substances that exhibit various degrees of toxicity (or no toxicity) to animals and plants, which is why there are environmental guidelines specific to the protection of various forms of life (e.g., marine aquatic life, freshwater aquatic life, humans).
1217.1	round 1	Metlakatla First Nation	HH TDR, 5.1 and Table 2	Human Health	The TDR states health-based BC MOE AAQOs were used in this risk assessment. Air quality objectives are used to guide air-management decisions and may not be suitable to use in a human health risk assessment. TRVs used in most human health risk assessments typically consider "toxicity-based" and "persistence and bioaccumulation-based" criteria. Please provide a rationale for the use of each screening criteria in this risk assessment.	The BC Ministry of Environment indicates that "Air quality objectives are limits on the acceptable presence of contaminants in the atmosphere, established by government agencies to protect human health and the environment." http://www.bcairquality.ca/regulatory/air-objectives-standards.html Further guidance on the application of provincial air quality objectives for sulphur dioxide indicate that, "A provincial interim ambient air quality objective of 75 ppb (1-hour) was adopted in 2014 to provide a health-based tool". http://www.bcairquality.ca/pdf/so2_aqo-implementation_guide.pdf The use of the BC MOE AAQOs as guides for air management decisions does not exclude its application in health-based assessments.
1218.1	round 1	Metlakatla First Nation	HH TDR, 6.2.4, 6.3.2.1 and 6.3.2.2	Human Health	Please provide a sample calculation for the estimated daily intakes, non-carcinogenic and carcinogenic risk estimates, showing site-specific and assumed input values.	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1219.1	round 1	Metlakatla First Nation	9.5.2	Accidents or Malfunctions	Please indicate the way in which First Nations communities will be integrated into response planning.	As stated in Section 12.6 of the Application, 'Aurora LNG looks forward to continuing to consult with Aboriginal Groups about safety and emergency response strategies'. Aurora LNG is hopeful that such discussions will help identify meaningful ways in which Aboriginal Groups such as the Metlakatla First Nation may be integrated into Project-related response planning and preparedness.
1220.1	round 1	Metlakatla First Nation	9.7.3	Accidents or Malfunctions	Given the presence of SARA listed species and the potential for interactions with flare events, population effects may occur. A flare screen or other exclusion device should be added to project mitigation.	The assessment of an LNG Plant Malfunction on wildlife determined that potential residual effects on terrestrial wildlife (including SARA species) are not expected to have a population level effect and are predicted to be not significant. The mitigation measures that Aurora LNG have planned are intended to protect all terrestrial wildlife species, including those that are SARA listed. As such, Aurora LNG believes that no additional mitigation is warranted to protect SARA listed species from emergency flaring. Aurora LNG will continue to consult with Metlakatla First Nation on various aspects of the Project including the development of environmental management plans.
1221.1	round 1	Metlakatla First Nation	9	Accidents or Malfunctions	There is a general lack of clarity regarding which agencies will respond to an LNG incident on land and in the marine environment, and how these agencies will work with nearby (and potentially responding) First Nations such as Metlakatla. Though Metlakatla understands WCMRC and Coast Guard will often respond first to marine *oil* spills, what are the protocols for incidents with LNG escapement? Further development of emergency response planning between government agencies, First Nations, and the proponent is required.	As stated within Section 9.10.2 of the Application, "Since LNG evaporates quickly and does not leave a residue, a spill clean-up is not anticipated. If water freezes and results in damage to the environment, appropriate restoration programs will be deployed.' Emergency response service providers will be detailed within the Emergency Response Plan, to be finalized prior to operations. As per Section 12.6.1 of the Application, Aurora LNG will continue to consult with regulators, Aboriginal Groups, and interested stakeholders regarding safety and the development of the emergency response plan strategies.
1222.1	round 1	Metlakatla First Nation	10.2.1.2	Effects of the Environment on the Project	The application notes that vessel icing is an issue but preventative and response measure to manage this potential effect are not provided. Please indicate how vessel and berth icing and effects on weight, stability, seaworthiness, and berthing will be managed.	Potential structural icing on an LNG processing facility, marine terminal, or on LNG carriers or associated support vessels is addressed through facility design and by implementing a de-icing program where required during operations. The program would be developed during detailed design.
1223.1	round 1	Metlakatla First Nation	10.2.2.1	Effects of the Environment on the Project	The curve used to predict a 1;100-year flood is an historical record from the PRPA. It is generally recognized, in light of climate change, that the past is not a reliable predictor of the future and, in the case of rainfall events, a plus/minus 20% change is considered plausible. Please ensure that the facility design will accommodate a rainfall event equivalent to 1;100 value plus 20%. (165.6mm + 33.12 = 198.72mm) or provide a rationale for why this is not appropriate/necessary.	Climate change effects on precipitation during the life of the Project will be considered during final Project design. Section 10.2.2.1 of the Application acknowledges that this intensity-duration-frequency curve does not consider potential changes to rainfall patterns associated with climate change. As noted in Section 10.2.2.2 of the Application, a Stormwater Management Plan will be developed that will be designed to account for extreme weather events.
1224.1	round 1	Metlakatla First Nation	10.2.3.2	Effects of the Environment on the Project	Please indicate how the deck heights for the MOF and marine terminal platforms (9m and 12m respectively) were derived. If an extreme event at low tide plus storm surge generated an extreme water level of 8.06m (application p.10-8), how is a MOF deck height of 9 m sufficient to accommodate a similar storm at high tide accompanied by increased sea levels associated with climate change.	Aurora LNG notes that the wording in Section 10.2.3.1, p. 10-8 would benefit from additional clarification. The surge peaked at low tide; however, the peak total water level was attained six hours later (around high tide). As an erratum, Aurora LNG will revise the third from last sentence in the first paragraph on p. 10-8 to 'Abeysirigunawardena and Walker (2008) showed that an intense storm during the winter of 2003 generated a maximum surge of 73 cm at low tide, which produced an extreme water level of 8.06 m above Chart Datum six hours after low tide.' An errata document is being created that will capture this correction and it will be filed with the BC EAO.
1225.1	round 1	Metlakatla First Nation	10.2.6	Effects of the Environment on the Project	The Application has not considered tsunamis to pose a risk to the Project. Community members are nevertheless concerned by the damaging effect of or on project infrastructure by material put in motion by a tsunami.	Aurora LNG acknowledges Metlakatla First Nation's concerns regarding risks associated with tsunamis. The Application provides an assessment of the effect of tsunami on the proposed Project in Section 10.2.6. As stated in Section 10.2.6.4 'By adhering to the relevant codes and recommendations from the tsunami hazard assessment, the potential effects of tsunamis will be prevented, avoided, or reduced through design, construction and operational standards.'

1226.1	round 1	Metlakatla First Nation	11.3	CEAA 2012	Thank you for improving and updating table 11.3-3. We have identified a number of outstanding concerns with the table. Metlakatla believes that interactions for a number of the valued components will occur where they have been identified as having no interaction. For example under vegetation, a change in abundance may impact Aboriginal Socio-ec conditions; for visual quality, a reduction in visual quality may impact Aboriginal Health (people may not get out/use resources as much as a result of impact); and for infrastructure and services, a change in health care infrastructure and services may impact Aboriginal Health etc.	Change in Vegetation Abundance:Aurora LNG assumes that Metlakatla First Nation is asking that the change in abundance of vegetation species be incorporated into the assessment of effects on the environment on Socio-Economic Conditions because of the potential for a reduction in plant species that could be harvested for use by Metlakatla-owned or operated businesses. This effect has been considered in Section 11.3.8.5 (Changes to Aboriginal Socio-Economic Conditions as a Result of Changes to Harvested Foods as assessed in the Community Health VC, page 11-155). Aurora LNG acknowledges that this is an error in Table 11.3-3 and has corrected this in the errata document. If Metlakatla First Nation is asking for this interaction to be assessed in Section 11.3 because of the potential for effects on forestry (i.e., non-food harvest), this effect has been assessed in Section 6.4.5.2 under the assessment of effects for tenured land use and private property (see page-16.4-61 onward). Change in Visual Quality: The effects of a change in visual quality on people's use of the land and resources are assessed as part of the assessment of effects on Current Use. As described in Section 11.3.2.3 (page 11-29), Aurora LNG is of the opinion that there is an absence of a clear effect pathway from a change in visual quality to a change in Aboriginal Health. Change in Health Care Infrastructure: As per CEAA 2012 5(1)(c), the focus of the assessment is on effects to the environment on the various CEAA 5(1)(c) factors. Changes in health care infrastructure are not considered to be effects on the natural environment, but are rather social changes. The assessment of effects on health care infrastructure can be found in Section 6.3.5.5.
1227.1	round 1	Metlakatla First Nation	11.3.5.2	CEAA 2012	This section states that "unless available information indicates otherwise, resources harvested on or around Digby Island and in surrounding waters are not considered unique and can be harvested elsewhere within the LAA depending on harvesting protocols and availability of other locations". Metlakatla disagrees with this assumption. Digby Island is in close proximity to the community of Metlakatla and Prince Rupert and is some people's preferred location to gather resources. Nexen's assumption does not take into account the fact that harvesting resources elsewhere may have safety implications and cost implications (time, $). All conclusions associated with this assumption (including cumulative effects conclusions) need to be re-evaluated.	Please see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application. Aurora LNG believes that the assessment set out in the Application is fair and reasonable and that a re-assessment, as suggested in the comment, is neither warranted nor required.
1228.1	round 1	Metlakatla First Nation	Table 11.3-12	CEAA 2012	A key mitigation should include the development of a complaint mechanism for noise and vibration.	The following mitigation measures address this request: Mitigation measure 4.4.9: Nearby residents (i.e., within 1 km of activities) will be notified in advance of planned high disturbance noise-causing activities at the LNG facility. Mitigation measure 4.4.10: A process will be implemented to investigate all noise complaints in a timely manner Mitigation measure 4.4.13: A process will be implemented to address vibration complaints in a timely manner As outlined in Section 14.5 of the Application, the Noise Management Plan will describe requirements for notification of construction works to local residents, and a process outlining how noise complaints can be submitted and how they will be addressed. Aurora LNG requested specific feedback on proposed mitigation measures from Metlakatla First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1229.1	round 1	Metlakatla First Nation	11.3.6.3	CEAA 2012	For Aboriginal Socio-ec conditions, visual quality of harvesters and business owners/clients is impacted not only by carriers being docked, but by carriers transiting the shipping route. Visual quality assessments need to include the transiting vessels.	As discussed in Section 6.2.2.4 of the Application, the effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because the Prince Rupert Port is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which is proposing to use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not introduce new visual elements or be visibly prominent from most viewpoints along the proposed shipping route.
1230.1	round 1	Metlakatla First Nation	11.3.7.3	CEAA 2012	General comment: Throughout this section for quantitative and qualitative changes in currently harvested species (terrestrial wildlife species, marine mammal, marine birds species etc), Nexen identifies that changes resulting from the project will be below environmental and regulatory thresholds and will not impact the 'viability of populations'. Without having a better understanding of what the thresholds actually are and what Nexen means by 'population viability', Metlakatla has concerns around their ability to continue to harvest such resources. Does "viable population" take into account that a certain amount of species are being/will be harvested? Please define the thresholds that are referred to and clarify what is meant by population viability.	Section 11.3.8.3 (Metlakatla First Nation) indicates that the analysis under the identified measurable parameters includes summaries of "information and findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) Effects" (see pg. 11-123). Aurora LNG notes that the statements included under the "Quantitative and Qualitative Changes in Currently Harvested Species" measurable parameter referencing "environmental and regulatory thresholds" and "viability of the local or regional populations" for terrestrial wildlife and marine birds are information and findings related to the relevant VCs. As such, the relevant thresholds and the applicable definition for population viability are described in the associated VC. The marine mammals subsection in the "Quantitative and Qualitative Changes in Currently Harvested Species" section imports the findings of the Marine Mammals VC section of the Application (Section 4.10) and, consistent with the analysis in that section, refers to "long-term persistence" of species. Regarding "viability" as it relates to terrestrial wildlife and marine bird populations, the assessments of Wildlife Resources (Terrestrial) (Section 4.7) and Marine Birds (Section 4.11) define this as the long-term maintenance in abundance, richness/diversity, or distribution of relevant species through natural recruitment (i.e., species reproduction and immigration). Additional detail is provided in Sections 4.7.2.8 and 4.11.2.8, respectively (see pg. 4.7-17 and 4.11-14). In both contexts, the relevant VCs consider the long-term viability/persistence of individual species based on their current status within the LAA and RAA. This includes consideration of pressures on individual species, for instance, whether it is a species at risk or if it is used by Aboriginal Groups for traditional purposes.
1231.1	round 1	Metlakatla First Nation	Section 11 General	CEAA 2012	As stated in our screening comments, Metlakatla disagrees with the geographic extent that is used (LAA) in Section 11 for current use. Using the LAA as the geographic extent dilutes the impacts that will occur to the PDA for certain values. For example,wildlife resources/ hunting and terrestrial plants will be greatly impacted within the PDA but by using the LAA as the geographic extent, Aurora states that Meltakatla can go to other locations for these resources. This ignores the specific features of Digby Island that make harvesting there important and assumes these feautures are replicated throughout the territory. Metlakatla disagrees with the methodologies used in this chapter to characterize residual effects.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The LAA and residual effects characterization methods utilized for the assessment of Section 5(1)(c) Effects on current use were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. Such consultation included the pre-application workshop held on June 20 and 21, 2016 with Metlakatla First Nation, at which the proposed assessment methods and characterization criteria for socio-economic VCs and traditional use sections of the Application were discussed. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments", for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area , in Sections 11.3 and 12 of the Application.
1232.1	round 1	Metlakatla First Nation	11.3.7.3	CEAA 2012	Metlakatla disagrees with the summary of characterization of current use for hunting. Nexen identifies that given the wide distribution of other locations for hunting outside of the PDA, there is a moderate level of resilience. As mentioned in previous sections, there are proximity, safety, quality, quantity and rights issues that need to be taken into consideration and members can not realistically or easily "just go somehwere else" to access resources.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The methods utilized to characterize residual effects on hunting in the assessment of Section 5(1)(c) Effects were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. The specific characterizations for hunting presented in Section 11.3.8.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.8.2 (Existing Conditions for Metlakatla First Nation) and Section 5 (Metlakatla First Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). Based on available information, the context for hunting by Metlakatla First Nation members was assessed as having a Moderate resilience (pg. 11-131), meaning that "[t]he effect will occur to a component that is able to accommodate some change" (see pg. 11-39). Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments", for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application.
1233.1	round 1	Metlakatla First Nation	11.3.8.3	CEAA 2012	Metlakatla disagrees that once the combined magnitude, geographic extent, duration and context of the potential residual adverse effects described, that the overall effect is 'not significant'. Given the moderate magnitude, continuous frequency, irreversibility, permanent duration of impacts, and low resiliency, Metlakatla consideres these to be significant impacts.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. Aurora LNG acknowledges that Metlakatla First Nation may have differing views regarding significance and the associated threshold as it relates to predicted residual effects on Current Use. In the context of the Application, significance was evaluated against the thresholds established in Section 11.3.2.7 (pg. 11-42). For Current Use, the significance threshold is triggered "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activityis no longer considered viable within existing conditions". Based on the information contained in Section 11.3.8.2 (Existing Conditions for Metlakatla First Nation) and Section 5 (Metlakatla First Nation) of Appendix S.2 (Aboriginal Consultation) and the analysis in Section 11.3.8.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes), the Application concludes that Current Use of lands and resources by Metlakatla First Nation members will be able to continue with some modification and that Current Use of lands and resources for traditional practices by Metlakatla First Nation is expected to remain viable, and predicted effects of the Aurora LNG project are not anticipated to be significant (pg. 11-149).
1234.1	round 1	Metlakatla First Nation	11.3.8.4	CEAA 2012	Metlakatla identified a number of concerns in our comments with the acoustic environment assessment. Until those questions are answered to our satisfaction, there are remaining concerns related to the conclusions for magnitude and likelihood in the changes to aboriginal health as a result of changes to acoustic environment.	Aurora LNG acknowledges the concerns from Metlakatla First Nation regarding the acoustic environment assessment. The Metlakatla comments related to the acoustic environment are captured as comments 985.1 through 993.1 of this tracking table. Please refer to comments 985.1 to 993.1 for those responses.
1235.1	round 1	Metlakatla First Nation	11.3.8.5	CEAA 2012	Metlakatla is disappointed that no assessment took place for impacts to visual quality from key locations in the marine environment. Metlakatla members that work in the tourism industry could be impacted by the project as a result of visual quality changes and increases to industrial shipping. Tourists like to travel to and fish in pristine, wild environments. The addition of large industrial shipping operations takes away from the sensation of being in the wilderness and in a pristine environment. Please provide insight as to how this was incorporated into the assessment and how it may impact Metlakatla's socio-ec conditions.	Aurora LNG acknowledges Metlakatla First Nation's comment regarding the potential effect of changes to visual quality on certain enterprises of interest to Metlakatla First Nation, including tourism and fish guiding. Marine Viewpoints Aurora LNG received feedback from Aboriginal Groups in the Second Aboriginal Consultation Workshop (which took place March 16-17, 2016) regarding the proposed viewpoints to be used for the visual quality analysis. At that time, participants expressed the importance of including a viewpoint from the marine environment. As a result of this feedback, Aurora LNG included VP01 (see Fig. 6.2-4) in its Visual Quality assessment. This viewpoint was chosen over the proposed candidate viewpoint at Kinahan Island because it presented a more direct view of the Project components from the marine environment and therefore aligns with the conservative approach used to develop the Aurora LNG Application. Furthermore, following additional comments in the February 2017 Working Group meeting, and at the request of the BC EAO, Aurora LNG has undertaken further visual quality assessment from various other viewpoints. Please see the technical memo "Additional Visual Quality Renderings" that will be filed with the EAO. Use of a Pristine Environment Given the fact that the Project would operate within one of the more industrialized areas in the region, and that the shipping lane is currently used for similar large marine shipping activities, Aurora LNG is of the opinion that the areas likely to be affected by the Project are not currently pristine. As described in section 11.3-6 of the Application, Aurora LNG recognizes that Project effects on visual quality have the potential to affect Aboriginal owned tourism businesses by changing the experience of using the lands or waters (resulting in decreased demand or a relocation of associated practices to other, less affected, locations). As set out in section 11.3.8.5 of the Application, available information on Metlakatla First Nation economic enterprises (including tourism businesses) does not indicate that they would be affected by the predicted level of changes in visual quality - with vegetative and topographic screening and mitigation measures, the Project will not be directly visible from the communities of Dodge Cove and Crippen Cove, nor visible from Port Edward or to most residents of Prince Rupert. North of Digby Island, vegetation and topography are anticipated to screen Project components from views at Metlakatla residences. Some Project components may be visible from elevated locations within the Tsimpsean Peninsula. The Project will affect views from marine approaches to Prince Rupert Harbour, Mount Hays, and Mount Comblain, with the overall view being most noticeably changed from the priority viewpoint of Mount Hays. Project lighting will affect ambient light conditions within the PDA and will contribute to skyglow effects for the life of the Project. The Project will increase the proportion of industrialized landscape within the LAA, but this will not result in an overall change in visual character, which has already been affected by waterfront developments within the Port of Prince Rupert.

1236.1	round 1	Metlakatla First Nation	11.3.8.6	CEAA 2012	Metlakatla disagrees with a number of the findings in this section. We do not agree that the permanent and irreversible alteration of site contents and context is fully offset by data that will be gathered at the site. The archaeology sites have inherent value being left "as is", where people can visit them, learn about them in situ etc. Removing the site and collecting information does not fully offset the impact. Metlakatla therefore disagreed with the assessment that magnitude is "negligible". Metlakatla asserts that the magnitude will be greater than negligible and that this needs to be re-assessed. In addition to assessing loss of information about or alteration to site contents and context within the PDA, this impact should also be assessed within the RAA in order to provide the appropriate context. Please see Metlakatla's comments in the heritage section above relating to this issue. Finally, there are potentially more direct and indirect impacts to archaeological sites that occurs during the pre-construction, construction, and decommissioning phase than is captured in the EA. For example, adding excess material to the site can displace the water table, and potentially destroy preserved organic materials below the surface (example, wet site materials). These impacts haven't been assessed or considered. Please see comments in the Heritage resources chapter. These impacts need to be fully assessed in Chapter 7 and also in Chapter 11.	Aurora LNG acknowledges that heritage is an ongoing concern of Metlakatla First Nation, and welcomes the opportunity to discuss this matter further. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources.
1237.1	round 1	Metlakatla First Nation	11.4.1	CEAA 2012	The AltaGas project should be included in this table and assessment- the project was approved prior to this application being submitted.	As outlined in section 3.7.1 of the AIR, the Project and Activities Inclusion list was finalized within three weeks of submitting the final AIR on November 23, 2015. The Environmental Evaluation for the AltaGas Ridley Island Propane Export Terminal was submitted well after this cutoff date, in December 2016. On January 3, 2017, AltaGas announced it would proceed with the Project as it had received its approval under section 67 of CEAA 2012. Given the timing for these activities, the AltaGas project was not considered in the cumulative effects assessment conducted in the Application.
1238.1	round 1	Metlakatla First Nation	11.4	CEAA 2012	As it currently stands impacts to Metlakatla will be diluted by lumping Aboriginal Groups together for the cumulative effects assessment in Chapter 11. MSS has maintained that this information be disagregated during the AIR comment periods and also during our workshop meeting with Nexen in October 2016. In their dAIR comment responses Nexen affirmed that they would disaggregate FN assessments as long as they were provided with community-specific data. Metlakatla has provided Nexen with the relevant data for them to conduct a CE assessment on Metlakatla First Nation interests. If the issue was that Nexen didn't have enough community specific information from other communities, CE should still be fully assessed for Metlakatla First Nation.	As described in Section 11.4 of the Application (pg. 11-380), Aurora LNG undertook a combined cumulative effects assessment for all of the Aboriginal Groups due to the incomplete nature of the information available within the respective RAAs for CEAA Section 5(1)(c) Effects for those past, present and future projects listed in Table 11.4-1 of the Application. In particular, Aurora LNG notes data deficiencies related to the extent and duration of Section 5(1)(c) Effects from past, present and reasonably foreseeable future projects in the RAAs, and usage relevant to possible interactions throughout the RAAs. This comment and Aurora LNG's response was discussed as part of Technical Workshop #5. Additional detail regarding Technical Workshop #5 will be provided in Aboriginal Consultation Report #3.
1239.1	round 1	Metlakatla First Nation	12.5.1.1	Aboriginal Consultation	Nexen indicates that Metlakatla will complete a final version of a "Metlakatla First Nation Report" and provide it to Nexen. MSS notes that the final report requires collaborative effort from both Nexen and MSS to identify specific impacts on Metlakatla Interests from the project. The report will be finalized as soon as possible following when all necessary information is made available and collaborative efforts are complete.	Aurora LNG looks forward to ongoing collaboration and consultation with Metlakatla First Nation. This includes consultation undertaken at Workshop #5 which was held on March 20-21, 2017. The workshop provided a meaningful opportunity to discuss Application findings related to the assessment of CEAA 2012 5(1)(c) effects and Metlakatla First Nation's Aboriginal Interests. In addition, it was an opportunity for Metlakatla First Nation to request any additional information needed to finalize the report.
1240.1	round 1	Metlakatla First Nation	12.5.5.3	Aboriginal Consultation	Harvesting of deer from Digby Island was excluded from the list of modern harvesting activities on Digby Island. Metlakatla members regularly acccess Digby Island for deer hunting. Impacts on deer and reduced access to Digby Island will adversely effect members' ability to harvest this resource.	The following statement is included in the summary of past use on page 12-104: "Aurora LNG understands that Metlakatla First Nation members historically hunted or trapped several species on Digby Island, including black bear, deer, ducks, geese, mink, and waterfowl." To avoid redundancy, Aurora LNG chose to include this statement in the summary of present use on page 12-105: "Aurora LNG assumes that, where possible, Metlakatla First Nation members continue to harvest all the species described in the past use section and in the same locations." Please note that this information forms the basis of the assessment of effects on harvesting-related rights (see Section 12.5.5.6, page 12-112 for a list of species harvested by Metlakatla First Nation within the PDA, including deer).
1241.1	round 1	Metlakatla First Nation	12.5.5.4 and General statement for all analysis of impacts to Metlakatla Interests	Aboriginal Consultation	In the final paragraph of this section, Nexen describes their approach to predicting the "degree that the exercise of the Aboriginal Interests may be adversely affected", taking into consideration, "the relative importance of the Project vicinity" and the "availability of other areas... where the meaningful exercise of the Aboriginal Interest could reasonably occur". Nexen's assumption that traditional practices associated with Digby Island can be transferred to another avaialable location is fundementally incorrect. Necessity or preference for a specific location for traditional use such as on or surrounding Digby Island relies on a number of factors including: ease/safety/cost/ability to access the site; knowledge and familiarity of specific locations; historical and current family/clan/tribe associations to specific locations; quality/quantity/unique attributes of resources available at the site; timing and seasonality; traditional right to access resources as per Tsimshian governance systems; competition for resrouces; etc. Furthermore, throughout Nexen's assessment, Nexen calculates that the PDA is only "xxx percent of Met territory". Such a statement is incredibly coarse and misleading. Notwithstanding the restrictions on Metlakatla people to "go elsewhere" for traditional practices, as discussed above, "elsewhere" would have to be a comparable ecological and geographic site with similar relative cultural significance to Digby Island (e.g. flat, nearshore island with mix forest and bog ecosystems, supporting similar species, within an easy boat or paddle from Prince Rupert and Melakatla Village and with a central role in Coast Tsimshian history), which the remaining percentage of Metlakatla territory is not. Given the above, Metlakatla requests that Nexen re-assesses the impact of the project on Metlakatla interests*without the assumption that Metlakalta practices at and surrounding Digby Island can be transferred to another location.*	Further information that provided context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1242.1	round 1	Metlakatla First Nation	12.5.5.5 and all subsequent sections listing mitigations for impacts on Metlakatla Interests	Aboriginal Consultation	Mitigation measures listed by Nexen such as: ongoing consultation; progressing economic accommodation negotiations; provinding EA Capacity funding; and, following direction of government agencies, are not migitations. "Migitation Measures" are defined in the BC EAO Environmental Mitigation Policy (2014) as "a tangible conservation action taken to avoid, minimize, restore on sites, or offset impacts on environmental values and associated components, resulting from a project or activity. MSS requests that Nexen *re-evaluate impacts to Metlakatla interests applying only those mitigations that meet the definition above (additional migitations can be developed collaboratively). If no such mitigations are available, or do not completely mitigate for the impact, residual impacts must be clearly identified, characterized, and carried forward to conclusions and potential cumulative effects assessments.*	The definition quoted by Metlakatla First Nation focuses on environmental mitigation. While environmental effects are a key component of potential effects on Metlakatla First Nation Aboriginal Interests as assessed in Section 12.5.5, effects on Aboriginal Interests tend to benefit from different, and sometimes less measurable, mitigation measures than those used for environmental effects. For example, if the potential effect relates to Metlakatla First Nation's ability to make decisions related to their use of land or marine areas (see Sections 12.5.5.5, 12.5.5.8, and 12.5.5.9), then ongoing and meaningful consultation between Metlakatla First Nation and Aurora LNG can enable Metlakatla First Nation's to influence land and marine use decisions within the Project vicinity. Aurora LNG requested and received specific feedback on proposed mitigation measures from Metlakatla First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1243.1	round 1	Metlakatla First Nation	12.5.5.6 and all subsequent sections concluding on impacts on Metlakala interests.	Aboriginal Consultation	Given the flaws in logic assessing impacts to Metlakatla noted above in relation to section 12.5.5.5, this conclusion is unfounded. Assessing only impacts to the PDA in relation to the whole of Metlakatla territory; relying on mitigations that are not mitigations; and downplaying the relative importance of Digby Island result in a vast under-estimation of project impacts.	Aurora LNG believes that the assessment reasonably and fairly represents the importance of Digby Island to the exercise of Metlakatla First Nation Aboriginal Interests under the subheadings, especially taking into account the "Importance of the Project Vicinity" included in the assessment for each Aboriginal Interest. In addition, Aurora LNG requested and received specific feedback on proposed mitigation measures from Metlakatla First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application. This memo will be filed with the BC EAO.
1244.1	round 1	Metlakatla First Nation	12.5.5.6	Aboriginal Consultation	In this Section, Nexen lists findings for all VCs from Part B. Metlakatla has identified issues with each of the assessments of part B VCs. Before carrying forward the conclusions of Part B to Part C, Nexen must first resolve the identified issues and questions. Metlakatla recommends reassessing impacts to Metlakatla harvesting rights once the identified issues from Part B have been resolved as a result of application review.	Aurora LNG acknowledges that Metlakatla First Nation has issues with the assessment of part B VCs, however, the assessment set out in the Application was developed in accordance with the requirements of the AIR and informed by pre-application consultation with Metlakatla First Nation. Overall the assessment was reasonable. As a result, the re-assessment, as suggested, is neither warranted nor required.
1245.1	round 1	Metlakatla First Nation	12.5.5.6	Aboriginal Consultation	Nexen's assessment of loss of one hour of fishing time in 24hours as a result of an LNG vessel as "low to medium moderate" is underestimated. Most fishermen are not fishing 24 hrs/day, and most likely are in a specific location to catch a specific tide, a specific pulse of fish, or to fish at a particular time of day or during a particularly favourable weather window. Further, commercial fisherman may only be legally able to fish for very limited periods of time coinciding with openings. For example. salmon fishermen may be relying on fishing for only a few hours to provide a great amount of their annual income. Therefore, effects of losing an hour of fishing time could range from low impact to very high impact on a fisherperson.	See the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
1246.1	round 1	Metlakatla First Nation	12.5.5.6	Aboriginal Consultation	Though areas of predicted air quality exceedances may not contain "human receptors" as defined by Nexen, they do contain "humans", including members of the Metlakatla Nation working on or near Fairview and Ridley Islands, as well as transiting the waters between Digby, Kaien and Ridley Islands. Further, changes in air quality will be experienced by Metlakatla members in the LAA--though they may not surpass provincial standards, the community has indicated any change of air quality is of potential major concern to members. Further consultation is required to conclude on the seriousness of effects on air quality changes for Metlakatla.	As identified by Metlakatla First Nation, the potential change in air quality has been incorporated into the assessment of potential effects on the experience of harvesting resources in Section 12.5.5.6, along with noise and visual quality effects. The Air Quality and Human Health assessments concluded that there will be no notable short-term (1 hr and 24 hr) or long-term (annual) effects on the health of people in Dodge Cove, Prince Rupert, Port Edward, Georgetown Mills, and Metlakatla village from exposure to airborne chemicals of potential concern, this conclusion is in regard to the general population, not just special receptors. As such, Aurora LNG does not anticipate that Metlakatla First Nation members using the marine environment in the Project Vicinity or working on or near Fairview Terminals or Ridley Island will experience a notable change in air quality as a result of the Project.
1247.1	round 1	Metlakatla First Nation	12.5.5.6 and other sections concluding the impacts to Metlakatla interests	Aboriginal Consultation	Though Metlakatla agrees that the relative importance of the project area must be considered when assessing the seriousness of impacts on Metlakatla harvesting (and other interests), Nexen's assessment of importance misses or underestimates key factors contributing to the importance of the Island to Metlakalta. The ease of safe access, historical significance, relatively pristine aesthetic experience, incremental loss of other locations in the harbour, variety of resources that can be harvested in one location, etc, all heighten the role of Digby Island and elevate its importance. Along with elminiting the "go elsewhere" assumption (as requested above), Nexen should re-assess the impacts on Metlakatla interests with a more accurate description of the relative importance of the Island to the Nation.	Aurora LNG appreciates this information from Metlakatla First Nation further describing the importance of Digby Island to Metlakatla First Nation. While the specific reasons identified in this comment have not been explicitly articulated to Aurora LNG prior to submission of the Application for review, Aurora LNG believes that the information that was included in Part C regarding particular importance of the Project Vicinity adequately represents Metlakatla First Nation's views. Specifically, the following statements, including direct quotes from Metlakatla First Nation's Project-specific study and other publicly available documents, were included throughout Part C:Metlakatla First Nation has described Digby Island as the "geo-political centre" of its traditional territoryMetlakatla First Nation has indicated that Tree Nob Group of islands is "critically important" for harvesting Metlakatla First Nation has stated that Digby Island's "importance cannot be overstated" Aurora LNG understands that the channel between Digby and Kaien and travelways to Tree Nob Group of islands are important and well-used by Metlakatla First Nation boaters. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments". Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, the re-assessment, as suggested, is neither warranted nor required.

1248.1	round 1	Metlakatla First Nation	12.5.5.7	Aboriginal Consultation	Potential effect mechanisms: additional project effect mechanims exist, such as those precipitating from a loss of access to and quantity of traditionally harvested goods (leading to decrease in physical and mental health) and loss of knowledge of placenames/attributes/history/governance of Digby Island. Additional assessment should be done in conjunction wtih Metlakatla to understand and describe these potential effects, develop mitigations, and reach more rigorous conclusions.	Aurora LNG acknowledges the potential effect mechanisms described by Metlakatla First Nation, and believes they have been appropriately included in the Application. These topics are addressed in the assessment of effects on Metlakatla First Nation in the following sections of the Application:Loss of Access to Harvested Foods: Section 12.5.5.7, starting on page 12-128. Section 12.5.5.6, starting on page 12-118. Loss of Quantity of Harvested Foods: Section 12.5.5.7, page 12-126 acknowledges to importance of resource harvesting and points the reader to Section 12.5.5.6 to reduce redundancy. Effects on quantity of harvested resources are also assessed in Section 11.3.8.3. Loss of Knowledge of Placenames/Attributes/History of Digby Island: Section 12.5.5.7, starting on Page 12-129. Loss of Knowledge of Governance of Digby Island: Section 12.5.5.8, starting on page 12-136. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On March 20, 2017, Aurora LNG held Technical Workshop #5 with Metlakatla First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Metlakatla First Nation opinions, concerns and feedback. Aurora LNG requested and received specific feedback on proposed mitigation measures from Metlakatla First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90. Given the assessments listed above, Aurora LNG believes that the assessment set out in the Application is fair and reasonable. As a result, the re-assessment, as suggested, is neither warranted nor required.
1249.1	round 1	Metlakatla First Nation	12.5.5.7	Aboriginal Consultation	Though reference to the Heritage Act allows Nexen to conlude no cumulative effects on archaeological resources will result from this project, the effect of removing archaeological resources from the Prince Rupert harbour must be considered through the lens of the Metlakatla First Nation, not the provincial Archaeological Branch. For Metlakatla, the cumulative loss of significant archaeological resources in the territory, especially those that are accessible, intact, and in the vicinity of significant historical cultural locations in Prince Rupert Harbour is highly significant and requires substantial effort for avoidance, mitigation, and potential accommodation.Conclusions as to the significance of impacts to archaeology should be re-assessed to incorporate the Metlakatla perspective.	Aurora LNG acknowledges that Metlakatla First Nation may disagree with the finding that the Project will not result in cumulative effects on archaeological resources. Aurora LNG has worked closely with Metlakatla on archaeological matters to date and welcomes further discussion with Metlakatla First Nation during preparation of the Archaeological and Heritage Resources Management Plan.
1250.1	round 1	Metlakatla First Nation	12.5.5.7	Acoustic Environment	Further discussion is required with Metlakatla First Nation to characterize, describe and communicate potential noise effects for a fulsome understanding and accurate conclusion on the potential effects of noise from construction and operations of the project on Metlakatla members' daily activities.	During construction and operations noise levels during operations are not anticipated to exceed Health Canada or BC OGC noise guidelines and acoustic levels will meet established Health Canada guidelines. However, Aurora LNG acknowledges that noise levels will be above existing conditions sound levels, and will be perceptible to traditional users outside the PDA. Aurora LNG is committed to working with Metlakatla First Nation to continue developing a shared understanding of how potential Project effects may interact with the exercise of their Aboriginal Interests, and what mitigations may be available to help address those concerns
1251.1	round 1	Metlakatla First Nation	12.5.5.8	Aboriginal Consultation	Though important to recognize that this project may impact traditional governance, it is beyond the ability of Nexen, as well as the ability of MSS staff to be able to accurately describe and characterize impacts of the project on traditional governance systems. Further consultation and mitigation options must be explored with Metlakatla leadership.	Aurora LNG would look forward to receiving the views and opinions of Metlakatla leadership on how the Project may affect traditional governance.
1252.1	round 1	Metlakatla First Nation	14	Environmental and Operational Management Plans	The EMPs are deficient in detail per requirements in the AIR, which states that "The Application will provide a list and**comprehensive description** of the Environmental Management and Operational Plans for construction and operations of the proposed Project which will be refined during the Assessment of each VC." (bold underline added for emphasis). The Application, however, does not provide "comprehensive descriptions" of the EMPs. The brief descriptions largely identify information that is required for a "comprehensive description" without actually providing the description that the AIR demands. Further, as the Application states, "The EMPs describe the protection measures implemented onsite to avoid or reduce potential adverse effects." Since the EMPs are not provided - even in a preliminary form - we are therefore being asked to conclude on the significance of residual effects without the protection measures described in the EMPs. The brief descriptions and references to the list of relevant mitigation measures is not sufficient to determine adequacy for the purpose of this assessment. A key importance of an EMP is for reviewers to understand how the mitigation measures will be implemented and how they may collectively prevent significant harm to the sustainability of the VC. The EMP should also be very clear as how specific potential effects will be mitigated, including additional mitigation options and risk management procedures. The current descriptions don't explain how the EMPs relate to the results of the effects assessments (apart from simply listing related effects in a table). In the absence of comprehensive EMPs to review, the Working Group and decision makers are not able to determine whether the impacts are going to be reasonably addressed with what has been provided.	Section 14 of the Application provides a comprehensive list of proposed management plans to be developed as Project design details become available and the conditions of an approval are presented to the proponent. The proposed contents of these plans are substantively presented in the form of the many mitigation measures that have been developed for each VC and are summarized in Section 16. These mitigation measures, as well as design mitigation presented in the Project Overview, form the basis of the assessment of residual effects that is, in general, highly confident. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs.
1253.1	round 1	Metlakatla First Nation	14	Environmental and Operational Management Plans	Please provide clarity as to when an appropriate level of detail will be provided and confirm that sufficient time be provided for the Working Group to review and comment before the assessment period ends.	Detailed management plans will be developed as Project design details evolve and according to conditions of a Project approval. Requirements regarding timing of these plans will be directed according to conditions of a Project approval and discussions with the applicable regulatory authorities. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs.
1254.1	round 1	Metlakatla First Nation	15.2.1	Follow-up Programs and Compliance Reporting	A complete follow up program is not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the follow up program to be provided in the future is not sufficient for this assessment (per the AIR). Please provide a complete proposed follow up program for the heron rookery.	Aurora LNG is committing to maintaining setbacks to decrease the extent of sensory disturbance in the vicinity of active nesting sites for great blue heron and to reduce the potential for flushing during the nesting and rearing period. Aurora LNG acknowledges that Develop with Care recommends as a best management practice that excessive noises should not occur within 1,000 m of a great blue heron colony during the nesting window (BC MOE 2014). As per mitigation 4.7.4, high-disturbance Project-related activities (e.g., blasting, pile driving) will be avoided where practicable during the breeding window (i.e., January 15 through September 15) within 500 m of the great blue heron rookery at Dodge Cove. To address the uncertainty over the degree to which high disturbance activities occurring within 1,000 m of the heron rookery may result in disturbance displays by nesting herons (as per provincial guidelines), Aurora LNG is committing to monitoring for changes in breeding activity at the rookery if high disturbance activities for Project construction occur within 1,000 m of the rookery during the breeding window (January 15 to September 15 for great blue heron). Given the geography of the area and the fact that there is a ridge of land that visually separates the rookery from proposed road corridor it is unlikely that road construction activities will cause a change in breeding activity. Monitoring protocols will follow the Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies (Vennesland and Norman 2006). Monitoring and adaptive approaches will be described in detail in the Wildlife Management Plan. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding development of the Wildlife Management Plan. Reference: British Columbia Ministry of Environment (BC MOE). 2014. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: April 2016. Vennesland, R. G. and D. M. Norman, 2006. Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies. The Heron Working Group.
1255.1	round 1	Metlakatla First Nation	15.2.2	Follow-up Programs and Compliance Reporting	A complete follow up program is not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the follow up program to be provided in the future is not sufficient for this assessment (per the AIR). Please provide a complete proposed follow up program for Acidification and Eutrophication.	The acidification and eutrophication follow-up and monitoring programs are expected to be developed on a regional level and the plan is to consult with Aboriginal Groups, MOE and other local industry to finalize those programs. It is expected that Aboriginal Groups will be involved in the implementation of those programs. Please see the "Additional Information about Eutrophication and Acidification in Freshwater" technical memo for additional details on future monitoring programs. This technical memo will be filed with the BC EAO.
1256.1	round 1	Metlakatla First Nation	15.2.3	Follow-up Programs and Compliance Reporting	A complete follow up program is not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the follow up program to be provided in the future is not sufficient for this assessment (per the AIR). Please provide a complete proposed follow up program for the Marine Sediment Deposition.	Aurora LNG is committed to developing and implementing a Marine Water Quality Monitoring Program to monitor turbidity and total suspended solids associated with dredging activities, to characterize water quality parameters in effluent discharges as per permitting requirements, and to monitor the implementation and effectiveness of mitigation measures. The plan will include water quality thresholds, monitoring frequency, and specific monitoring locations. This plan, as well as details specific to monitoring potential sediment deposition, will be developed in accordance with industry best management practices and standards, applicable regulations, and conditions of the Environmental Assessment Certificate and relevant permits. The plan will be developed in consultation with applicable regulators, Aboriginal Groups, and specific stakeholders.It is standard practice for these management plans to include (at least) the following information: background on the need for the program or planregulatory context consultation and engagementobjectivesmonitoring and field methodsreporting requirements In addition, Aurora LNG will implement an adaptive management framework as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
1257.1	round 1	Metlakatla First Nation	15.3	Follow-up Programs and Compliance Reporting	Complete monitoring programs are not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the monitoring programs to be provided in the future is not sufficient for this assessment. This is a deficiency per the AIR. Please provide complete proposed monitoring programs at a sufficient level of detail.	As outlined in Section 14.2 of the Application, each Environmental Management Plan (EMP) will include requirements for monitoring (e.g., compliance and/or effectiveness) and reporting. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs. The implementation of EMPs will be overseen by environmental professionals to confirm compliance with monitoring and reporting requirements. EMPs, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
1258.1	round 1	Metlakatla First Nation	15.3	Follow-up Programs and Compliance Reporting	The six topics for monitoring programs (still to be provided) do not cover some components that should be expected to include compliance monitoring and reporting, such as noise, wildlife (marbled murrelet and bats), marine mammals, freshwater & marine fish habitat (not just monitoring of the offsetting plan), social values, and archaeology. All these components warranted EMPs to mitigate impacts, so some form of compliance monitoring and reporting should be expected. When complete monitoring programs are provided, they should include proposed monitoring related to all EMPs.	As outlined in Section 14.2 of the Application., each EMP will include requirements for monitoring (e.g., compliance and/or effectiveness) and reporting. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs. The implementation of EMPs will be overseen by environmental professionals to confirm compliance with monitoring and reporting requirements.
1259.1	round 1	Kitsumkalum First Nation		General	It is Kitsumkalum's understanding that there has been no modeling of dredge for the water intake or outfall pipes? What is the justification of this?	Sediment transport modeling was not completed to predict sediment dispersal and deposition associated with trenching and burial activities during installation of the seawater intake and outfall pipes. Based on preliminary design and engineering, the intake and outfall pipes will be trenched and buried through the intertidal zone, and laid directly on the seafloor through the subtidal zone. However, no trenching and burial of the intake pipe (proposed at Casey Cove) is anticipated to be required. This is because the intake pipe is assumed to connect to a pump station constructed as part of the MOF, and the point of connection will be located within the subtidal zone, where the pipe will be laid directly on the seafloor. Based on the currently-proposed alignment of the outfall pipe, approximately 100 m of the 230 m long pipe will be buried through the intertidal zone, through areas composed primarily of cobble and gravel (i.e., not soft sediment). Based on the substrate type and the relatively low volume of material that will be disturbed during trenching activities (compared to the volume of material that will be disturbed during dredging activities), trenching and burial activities associated with the installation of the outfall pipe through the intertidal zone are not expected to generate elevated levels of TSS of magnitude or duration likely to result in residual adverse effects to marine fish health (see Section 4.9.5.5 for an assessment of potential health effects to marine fish associated with construction activities, including installation of seawater intake and outfall pipes). Therefore, sediment transport modeling was not completed. Furthermore, efforts will be made to conduct trenching and burial activities during low tide (i.e., in the dry); this will further reduce the amount of sediment likely to become suspended into the water column during trenching and burial activities.
1260.1	round 1	Kitsumkalum First Nation		General	The proponent seems to rely on permits, rather than commitments. Kitsumkalum expects the proponent to step up and exceed expectations, not continually aim to meet bare minimums. This is a recipe for failure.	As well as the applicable authorizations (including permits) listed in Table 1-23 of the Application, Aurora LNG is committed to numerous mitigation measures to manage potential effects of the Project, as summarized in Table 16-1 of the Application. Please see the "Revised Mitigation Measures Table" technical memo which categorizes these mitigation measures to indicate whether they are outside of permitting requirements (i.e., a legal requirement, industry standard/best management practice and/or Aurora LNG additional mitigation measure). The technical memo will be filed with the BC EAO.
1261.1	round 1	Kitsumkalum First Nation		General	It is our understanding that actual fish habitat restoration and offsets are only looked at as a number so far, and that no actual proposed areas have been brought forward. Off setting is particularly difficult in this region and project success is debatable. Rock reefs often impact mud habitats, artificial channels often need maintenance. Kitsumkalum is skeptical of the ability of the project to offset the 1000s of meters of habitat loss.	Aurora LNG acknowledges the comment and is committed to developing adequate, effective offsets that counterbalance residual serious harm to fish as per the Fisheries Act. As stated in the Conceptual Fish Habitat Offsetting Plan (Appendix V), the offsetting philosophy and ideas presented are intended to demonstrate Aurora's approach to identifying effective offsets and concrete ideas for counterbalancing harm. They provide a transparent starting point for constructive discussions about habitat offsetting, with the ultimate goal of developing widely endorsed, effective, appropriately located and well-designed offsets. Through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets.

1262.1	round 1	Kitsumkalum First Nation		General	At working group meeting #4 it was discussed that emissions plume exceedances were modelled primarily outside of residential areas and "would only have potential to affect those who were working on Ridley Island, and likely for short duration" This is worrisome as although the duration and exposure may be limited at current build out, the island does have expansion plans. with workers potentially working in the plume regularly. We feel this is something that requires attention.	The locations where 24-hour PM10 were above the BC ambient air quality objectives were associated with the Fairview Terminal Phase I (for Base and Application Case) and Fairview Terminal Phase II (for the Cumulative Effects Assessment Case) and the Ridley Terminal, which is zoned as industrial use land and where there are no residences. At these locations, the concentration ratios for the Base Case (existing conditions) are already above 1.0. The concentration ratios for the Application Case illustrate that the Aurora LNG Project has a marginal influence on 24-hour PM10 concentrations at the Fairview and Ridley Terminals. The Aurora LNG Project is a minor contributor of PM10 at these industrial locations. 1-hour nitrogen dioxide concentrations are also above the BC ambient air quality objective during the Cumulative Effects Assessment Case at the Fairview Terminal (associated with Phase II of that project). It is noted that at these industrial sites, occupational exposure limits would apply to employees on-site, which is addressed by WorkSafeBC. While the BC Ambient Air Quality Objectives for 24-PM10 is 50 ug/m3, (for non-work related exposures) the WorkSafe BC 8-hour time-weighted average PM10 guideline is 3,000 ug/m3. For 1-hour nitrogen dioxide, the BC ambient air quality objective is 0.001 ppm or 188 ug/m3. However, the applicable WorkSafe BC exposure limit is a ceiling limit (i.e., the maximum concentration allowable at any time) and is 1 ppm or 1,880 ug/m3. The 24-hour PM10 and 1-hour NO2 concentration is expected to be well below the WorkSafe BC occupational exposure limits at the Fairview Terminal during both Phase I and Phase II of that project.
1263.1	round 1	Kitsumkalum First Nation		General	Environmental and socio-ec effects from the 400 man floating camp (proposed to house initial construction workers) have not been assessed. At minimum a technical memorandum assessing effects to VCs such as marine fish and fish habitat, marine use and navigable waters, and marine water quality should be prepared.	Please see the separate technical memo titled "Floating Camp Review" which will be filed with the EAO.
1264.1	round 1	Kitsumkalum First Nation		General	Generally there are many of the project components that have not been described with enough detail such that project effects are not clear. For example the site, containment and discharge to the environment (of salt and water) for terrestrial storage of marine sediments containing dioxin/furans is unknown; description of water temperature fluctuations associated with water tower cooling system discharge to the marine environment; description and quantities of intake and effluent from desalination plant; and, description and containment of soils overburden storage site (and water discharge quantities / quality). Without these descriptions it is difficult to agree with several of the characterizations of effects.	Details on the assessment of Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1265.1	round 1	Kitsumkalum First Nation	AS3.3	Aboriginal Consultation	Table AS3-3 does not include all of the key concerns raised during the pre-application stage.	Table AS3-3 is a high-level summary of the key concerns raised by all members of the working group during the pre-Application stage of the environmental assessment related to all sections of the Application. The table was not intended to represent all concerns raised by Kitsumkalum First Nation. The full list of concerns raised by Kitsumkalum First Nation at the time of filing the Application is found in Table 8-1 of ACR #2 (see Appendix S.1). Table 12.3-4 of the Application includes Aurora LNG's understanding of key issues raised by Kitsumkalum First Nation during the pre-Application phase of the environmental assessment. This table was provided to Kitsumkalum First Nation for review in advance of a pre-submission workshop. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss thecharacterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution withKitsumkalum First Nationfor the issues/concerns recorded during all phases of the EA (in table format), including those identified inAboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5.The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1266.1	round 1	Kitsumkalum First Nation	Section 3, page 5	Air Quality	"Emissions of VOC's are not modelled as Canada and BC have not established objectives for total VOC's...are not considered further in this assessment." This statement is partially correct in that there are currently no ambient air quality objectives for specific VOCs like benzene in BC or nationally; however, it is quite common to model VOC's and in both national and provincial Environmental Assessments (EA's) to adopt suitable values from other representative jurisdictions. For example, the TransMountain Expansion Project which recently was approved by the NEB, and the Canadian and BC governments (EAC Certificate was issued) and TransMountain agreed to adopt ambient air quality objectives from regulators outside of BC. In addition, TransMountain agreed to comply with ambient objectives from Alberta for benzene, toluene, ethyl benzene and xylenes (BTEX), and H2S and mercaptans objectives and guidelines from Ontario. TransMountain incorporated these objectives into their engineering design process and dispersion modelling was conducted routinely to inform engineering design and site ambient air quality monitoring locations. In addition to adopting suitable ambient objectives and guidelines into the EA process, potential health effects from the Project and Cumulative Cases can be more rigourously examined in the Human Health Risk Assessment (HHRA). The natural gas or fuel gas being combusted by the compressor gas turbines (16), power generators (6), heaters (4), thermal oxidizers (4), flares (3) and camp site power generators (2) contains air toxics like BTEX and other contaminants and the combustion process will create other toxics like benzo (a) pyrene and formaldehyde. The Aurora project will consume a huge daily volume of feed gas estimated to be 104 million cubic meters per day. Section 1.2.7.2 (Natural Gas Pre-treatment and Liquids Extraction, page 1-37) of the EAC Application indicates that C5+ and BTEX compounds will be removed from the feed gas before the liquefaction process but will not remove any contaminants from the feed gas for use in the on-site stationary combustion equipment listed above. Section 3.2 of the AQ TDR identifies the major fugitive and incomplete combustion sources and primary VOC emitters for the Project. There are several speciated VOC calculation tools and emission factors available from respected regulators such as CARB, US EPA, USAF, TCEQ and others which Stantec have previously referenced in similar air quality assessments for other oil sands and upgrader projects. *Question: Will Aurora amend the air quality assessment to include: (1) predicted concentrations for all fugitive, combusted and non-combusted VOC, PAH and heavy metals in their assessment of Project effects and (2), include the same calculated emissions in combination with emission estimates from other proposed LNG projects in the RSA in the CALPUFF dispersion model for a Cumulative Case (as listed in Table 15 of the AQ TDR) to provide a more representative analysis of potential air quality/human health effects for the Application and CEA Cases?*	Refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Other substances (e.g., PAHs, heavy metals) were not identified by regulators and stakeholders during the development of the Application Information Requirements as health concerns associated with air quality. While the TransMountain project may have included PAHs (as benzo-a-pyrene) and heavy metals in the Screening Level Human Health Risk Assessment, the risk quotients and incremental lifetime cancer risk associated with inhalation of heavy metals and benzo-a-pyrene were 3 to 8 orders of magnitude (i.e, 1,000 to 100,000,000 times) below the levels that would constitute a significant health risk in a highly populated and industrialized region (i.e., Burrard Inlet and Metro Vancouver) for which the air quality is already affected by industry. These values do not support the need to evaluate heavy metals in the air.
1267.1	round 1	Kitsumkalum First Nation	Section 4.3, page 13, Table 6	Air Quality	Multiple references to "with consideration given" to other monitoring data. It is not clear exactly how measured CAC data from multiple stations is used to calculate Baseline values. This should be clarified.	With respect to the baseline air quality, the phrase 'with consideration given' means that the stations referred to were studied to determine if their data differed meaningfully from the data used to determine baseline. The baseline is determined entirely on the primary station cited, with the other stations merely being reviewed for consistency.
1268.1	round 1	Kitsumkalum First Nation	Section 4.3, page 13, Table 7	Air Quality	Baseline values given in this table do not all agree with those given in Detailed Model Plan (Appendix 1) submitted to MOE. For example, PM2.5 24-hour and Annual values are less than specified in Detailed Model Plan Table 2.	In the intervening time period between approval of the Detailed Model Plan and completion of the assessment, better information on local air quality became available. Discussions with the Ministry of Environment resulted in three parameters having increased baseline values and two having reduced baseline values. These changes are small and did not result in any material changes to the modelling results or the assessment conclusions.
1269.1	round 1	Kitsumkalum First Nation	Section 7.4.2, page 43	Air Quality	End of second paragraph states "most effects to community receptors are attributed to future regional sources." As stated in the TDR, there are multiple future regional sources, and so it is not clear whether one of those sources or the Project itself is the largest contributor to effects on community receptors. All future regional sources are bunched into one group. We would like to know the relative importance of the Project relative to other individual projects.	The relative importance of the Project compared with other individual projects is described in detail in Section 7.4.2 of Appendix A (Air Quality TDR). The CEA Case Attribution section breaks down the contribution of the CEA case at eight locations by 1) the Base Case, 2) the Project Alone Case, and 3) Other Future Sources. Determining which future project is responsible at each receptor is a matter of reviewing the isopleth maps for the parameter in question and studying Table 15 (to determine which project was included in the modelling) and Figure 3 (to determine the included projects location). For example, studying Figure 5-49 shows the SO2 maxima for the CEA Case is at Fairview Terminal.
1270.1	round 1	Kitsumkalum First Nation	Many locations	Air Quality	No frequency of exceedance plots. Only one reference to FOE values on page 42 of TDR. Statement on page 49 that characterizes exceedances of PM10 and NO2 as "short term in duration, infrequent" are not backed up by actual published values. In Appendix 1 page 22 is states that "frequency counts of hourly exceedance will be reported". This is not done in the TDR. On page 4.2-37 of EA FOE for PM10 and NO2 are mentioned in the text for CEA case and Application case only. There needs to be a more explicit discussion of frequency of exceedance.	The dispersion modelling indicated that there are predicted exceedances of PM10 and NO2 adjacent to, and primarily attributable to emissions from, facilities other than the Aurora LNG Project. Frequency of exceedance plots for PM10 for Base Case, Application Case and CEA Case have been provided as Figures 1, 2, and 3 of the "Air Quality Figures (#1270.1)" technical memo. The maximum PM10 concentrations for the Base Case, Application Case and CEA Case (i.e. where exceedances are shown to occur) are predicted adjacent to the Prince Rupert Grain Terminal. The maximum frequency of exceedance for the Base Case, Application Case and CEA Case is 7.5%, 7.6% and 7.8% of the time, respectively. A frequency of exceedance plot for 1-hour NO2 for the CEA Case has been provided as Figure 4 of the "Air Quality Figures (#1270.1)" technical memo. The maximum NO2 concentration for the CEA Case (i.e. where exceedances are shown to occur) is predicted adjacent to the Fairview Terminal. The maximum frequency of exceedance for the CEA Case is 7.9% of the time (28.7 days where the daily hourly maximum exceeds the AQO of 188 ug/m3). The "Air Quality Figures (#1270.1)" technical memo will be filed with the BC EAO. The "Air Quality Figures (#1270.1)" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Air Quality Figures (#927)."
1271.1	round 1	Kitsumkalum First Nation	Many locations	Air Quality	The scale of the figures does not allow the reader to see isopleths close to the Project or close to CAC maxima. Would be helpful to see some zoomed in figures to see these areas more clearly.	The scale of the figures and the selected isopleth interval is chosen to balance the need for detail over a large area without cluttering the figure with unnecessary detail. There are 71 isopleth maps in the Air Quality Technical Data Report (Appendix A of the Application). If the Kitsumkalum Indian Band would like to provide a list of figures and specific geographic areas of interest, some revised maps with a larger scale can be provided.
1272.1	round 1	Kitsumkalum First Nation	Page 15, Table 5	Air Quality	This Table shows that precipitation values derived from WRF were low compared to normal precipitation. Appendix 3 Table 7-2 also shows that WRF precipitation is ~25-30% too low compared to actual precipitation over the modelled years. This will have effects on deposition rates and ambient concentrations. Why not use precipitation data from Prince Rupert Airport and convert daily values to hourly? What is the effect on calculated deposition rates that are used to assess acidification and eutrophication of using precipitation rates that are too low?	Table 7.2 shows that precipitation at Prince Rupert Airport and Prince Rupert Mont Circle are under-predicted by 25% and 30% respectively. Experience with like projects in a similar setting shows that this range of under/over prediction are common and expected. This information has no meaningful effect on the spatial pattern shown in Figure 7-9. The overall effect of this discrepancy on the effects assessment regarding acidic deposition is small. Prince Rupert Airport precipitation was not used as input to the CALMET model as the final approved Detailed Model Plan stated that precipitation from the WRF model would be used. The WRF precipitation data was determined to be representative and have the advantages of spatial variation and accounting for orographic effects (increased precipitation at high elevations).
1273.1	round 1	Kitsumkalum First Nation	Section 4.2, page 4.2-43	Air Quality	A commitment by the proponent is made to participate and contribute to regional ambient air quality monitoring programs. In our opinion it is very important to have ongoing continuous monitoring of CACs considering the modelling suggests that exceedances of PM10 and NO2 are likely. The details of this monitoring need to be established.	Details of Aurora LNG's participation in regional ambient air quality monitoring programs will be established prior to the commencement of operation of the Project. It is expected that the program will be consistent with any requirements that may be outlined in potential EAC conditions and in the process of obtaining a Permit under the Environmental Management Act, Waste Discharge Regulation.
1274.1	round 1	Kitsumkalum First Nation	Section 3, page 9	Air Quality	Fugitive dust from construction activities are considerable from the handling and processing of materials, but was determined negligible based on precipitation data and peat moss composition of the materials moved. More clarification should be given on the precipitation in the area and its contribution to eliminating fugitive dust emissions. There is a potential for dust events during periods of no precipitation especially during the summer. As most emission factors for fugitive dust are based on moisture content and silt content, these parameters should be determined to support the exclusion of fugitive dust during construction.	Measures are proposed to reduce, avoid, or mitigate coarse fugitive particulate emissions from construction. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as limiting vehicle speed, and dust suppression. Coarse particulate matter emissions are easily managed in this setting, and are generally not an issue. Consistent with the final approved Detailed Model Plant (Appendix 1, Air Quality - TDR: Appendix A of the Application), the assessment focuses instead on fine particulate matter (PM2.5) from combustion sources.
1275.1	round 1	Kitsumkalum First Nation	Section 3.1, page 9	Air Quality	The load factor was described as the ratio of actual engine fuel consumption to maximum rated output. It is unclear how the load factor for each equipment was calculated based on the engine power in horsepower (hp) and fuel consumption in litres per hour per unit (L/hr/unit).	The load factor for each engine was calculated based upon the ratio of actual engine power output to maximum rated engine output. The average engine power output was calculated based upon the fuel consumed, energy content of the fuel, and thermodynamic efficiency of a typical engine, assumed to be 35%. Load Factor = (average power output / maximum power output) Average power output of the engine was calculated as: Average Power Output (bhp) = (L/h of diesel) * (1 USG/3.785 L) * (137,000 BTU/USG of diesel) * (0.000393 bhp-h/BTU) * (thermodynamic efficiency of 0.35)
1276.1	round 1	Kitsumkalum First Nation	Section 3.1, pages 12, 13, 20	Air Quality	The emission factor for NOx is 2.6 g/hp-hr for all diesel equipment in Table 3-2 and Table 3-5 of the TAR. While there was no clear indication on the origin of the emission factor, NOx emission factors for equipment with power rating from 100 hp to 750 hp appears to be consistent with Table A4. in the US EPA publication "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition, NR-009d" and accounting for the Transient Adjustment Factors (TAFs) provided in Table A5 of the same document. However, equipment with power rating less than 100 hp would have a higher emission factor based on Table A4. The emission factor for CO is either 3.7 g/hp-hr or 2.6 g/hp-hr for all diesel equipment. It is not clear how the CO emission factors were derived as they are not comparable to CO emission factors provided in Table A4 and TAFs provided in Table A5.	The emission factors that were used for estimating emissions from the construction equipment are obtained from the emission limits in The Off-Road Compression-Ignition Engine Emission Regulations (SOR/2011-261, SOR/2005-32). As more than 90% of diesel consumption (based upon total hp-hours) is associated with diesel equipment with engines larger than 100 hp, the emission calculations were simplified and only adopted emission standards for engines greater than 100 hp. Aurora LNG has not yet started detailed construction planning and the exact composition and engine size of the construction fleet has not yet been determined. Based upon the estimated construction period for the Project and the typical lifetime of heavy duty construction equipment, it is anticipated that the construction fleet would consist of primarily Tier 4 compliant construction vehicles (i.e. better than Tier 3 assumed for calculation purposes) but may also contain some Tier 3 or Tier 2 compliant engines for select specialized equipment. The actual emissions from the diesel construction equipment are anticipated to be less than the estimate presented in Appendix 2 of the Air Quality TDR (Appendix A of the Application).
1277.1	round 1	Kitsumkalum First Nation	Section 4.1, 30	Air Quality	Manufacturer performance data was used to estimate NOx emissions from compressor gas turbine drivers. Although the accuracy of the data maybe higher, there is a potential for underestimating NOx emissions as manufacturer data maybe based on optimal operation of equipment. Emission factors are recommended to provide a more conservative estimate of emissions.	The manufacturer performance data are in fact performance guarantees warranted by the various turbine manufactures. The manufacturer guarantees are a conservative representation of NOx emissions from Project gas turbines as actual emissions are typically less than the guaranteed upper limit. Project NOx emission estimates from the proposed gas turbines are conservative as they are based upon the adoption of manufacturer guarantees and the assumption that all turbines operate continuously at 100% of their maximum rated capacity.
1278.1	round 1	Kitsumkalum First Nation	Section 4.2.1, page 35	Air Quality	The estimated emissions in tonnes per day of PM10 is less than PM2.5 in Table 4-8. How is this possible?	In Table 4-8, PM10 is listed as 0.004 t/d, and PM2.5 is listed as 0.0044 t/d. In fact, all PM emitted by gas turbines is <2.5 um in diameter, and therefore PM2.5 is equal to PM10. The discrepancy is due to the PM10 emission number being rounded to three decimal places, and the PM2.5 being rounded to 4 decimal places.

1279.1	round 1	Kitsumkalum First Nation	Section 4.7, page 48	Air Quality	The text in section 4.7 indicated 206 Q-Flex LNG carriers will visit the terminal per year, which is contrary to 256 carrier visits indicated in Table 4-29. Clarification in which number was used in the calculation is required.	The correct number of Q-Flex LNG carriers that were assumed to visit the terminal per year is 256. The value of 206 noted in the text in section 4.7 of the Air Quality Technical Data Report is a typographic error. The calculations were correctly completed using 256 Q-Flex LNG carrier visits per year. An errata document is being prepared that will capture this correction and it will be filed with the BC EAO.
1280.1	round 1	Kitsumkalum First Nation	Section 4.7, page 49	Air Quality	The load factor was calculated based on actual speed and maximum speed rather than engine output. The calculation is likely not an accurate estimate of the vessels' load factor, and updating the calculation is recommended.	The required power output for the main engine of the vessel is a function of vessel speed. The calculated load factor for the main engine is correctly calculated as the ratio of actual speed to maximum speed to the power of 3. The equation is obtained from Section 2.5 (page 2-11) of ICF International (ICF) report titled "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report. April 2009.". Revised calculations are not required.
1281.1	round 1	Kitsumkalum First Nation	Section 4.7, page 49	Air Quality	The emission factors of NOx, SO2 and PM2.5 were recommended by the BC MOE. Clarification and reference should be included for these emission factors.	During consultation with the BC MOE, Aurora LNG were advised of the MOE's preference that Aurora LNG adopt the same emission factors for LNG vessel emissions as used in the Prince Rupert Airshed Study (PRAS). The emission factors presented in Table 4-30 of Appendix 2 (Air Quality TDR) were selected based upon MOE recommendations to ensure consistency with the PRAS.
1282.1	round 1	Kitsumkalum First Nation	Section 2.4, page 3	Greenhouse Gases	Aurora LNG indicates that "inherent uncertainty in estimating emission rates from the Project…the emissions estimates are conservatively high to capture worst-case full build-out conditions." In Section 1.2, Proposed Project Description (page 1-3) ,the Project includes three LNG storage tanks and based on 4 production trains will produce 24 MTPA of LNG at full build-out. Although Aurora acknowledges that the Project's 4 trains may be built over two phases, Aurora is not asking for approval related to Phase 1 only, it is seeking approval for both Phases. As such, the suggestion that the GHG emissions estimate is conservatively high and represents worst-case, full build-out conditions is neither justified, nor supported. It represents a minimally reasonable approach. *Questions: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high? Has Aurora committed to GHG emission intensity < 0.28 tCO2e/tCO2e LNG produced?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo “Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate”, which will be filed with the BC EAO.
1283.1	round 1	Kitsumkalum First Nation	Section 4, page 5	Greenhouse Gases	As noted above, the suggestion that the GHG assessment is conservative based on go/no go decision with respect Phase 2 and market demand is irrelevant and not supported by the Project Application. This is not a conservative assumption - it is a minimally reasonable approach. *Question: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high?*	The GHG assessment is not conservative based on proceeding with Phase 2 of the project. The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case emissions, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. This presents the worst case scenario for project emissions. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo “Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate”, which will be filed with the BC EAO.
1284.1	round 1	Kitsumkalum First Nation	Section 5, page 26	Greenhouse Gases	"For the purpose of adhering to a conservative approach, the following assumptions apply: During operations, terminal liquefaction capacity is assumed to be 94.5%, which means that the facility is operating on average about 345 days a year at maximum capacity. Power for the entire facility is conservatively assumed to be produced onsite, including the power for the compressor gas turbines. There is no electricity consumption through BC Hydro. Therefore, emission estimates are conservative as GHG emissions from power generation onsite are included in the assessment, compared to when lower GHG intensity grid power is imported from BC Hydro." Section 1.2.5.3 Power Supply of the Proposed Project Overview (page 1-29) indicates that a ~250 MW power generation facility will be installed onsite and the preliminary design indicates that it will be a combined cycle natural gas power plant. The power plant will operate 24/7/365 and the liquefaction trains will operate 345 out of 365 days at maximum capacity. The proponent again suggests that the GHG assessment is conservative and may be over-estimating GHG emissions but fails to acknowledge the Project description that forms the basis for the Application. These are not conservative assumptions - they appear to be based on a minimally reasonable approach. Q*uestion: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high?*	The Project design includes GHG emissions from natural gas fired compressor turbine drives and power generation turbines. It has been assumed that all power requirements will be generated onsite and no electricity will be imported from the BC Hydro grid. Therefore, emission estimations are conservative in that GHGs will be released from power generation onsite instead of importing low GHG intensity grid power. As the facility design advances through detailed engineering, efficiencies and optimum equipment selections are expected to result in reduced overall project operation emissions.
1285.1	round 1	Kitsumkalum First Nation	Section 5.1, page 28	Greenhouse Gases	As noted above, the suggestion that the GHG assessment is conservative based on onsite power generation and not grid power reflects the preliminary design philosophy in the Application and would be mis-stated as an over-estimation of effects. Questions: Can Aurora describe why the GHG emission estimates for the power generation are conservatively high? Is Aurora committing to using grid power from BC Hydro, and if so, to what extent?	The Project design includes GHG emissions from both natural gas fired compressor turbine drives and power generation turbines. It has been conservatively assumed that all power requirements will be generated onsite and no electricity will be imported from the BC Hydro grid. Therefore, emission estimation in the Application are conservative (i.e., "worst case") in that GHGs will be released from power generation onsite instead of importing low GHG intensity grid power. As the facility design advances through detailed engineering, efficiencies and optimum equipment selections are expected to result in reduced overall project operation emissions. Discussions are still being held between Aurora LNG and BC Hydro to understand the extent in which the Project can be connected to the BC Hydro grid.
1286.1	round 1	Kitsumkalum First Nation	Section 6, page 39	Greenhouse Gases	As noted above, the suggestion that the GHG assessment is conservative yet reflects the preliminary design philosophy in the Application cannot be characterized as an over-estimation of effects. Aurora has not committed to emit fewer GHG emissions through FEED design so the GHG assessment represents a minimally acceptable and non-conservative approach. *Questions: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high? Has Aurora committed to GHG emission intensity < 0.28 tCO2e/tCO2e LNG produced?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro As the facility design advances through detailed engineering, efficiencies and optimum equipment selections are expected to result in reduced overall project operation emissions. The use of a 1.82% mol CO2 content in the main gas supply is conservative as this represents the higher end of CO2 content expected by the Project. In comparison to other recently approved LNG projects in BC, this CO2 content is as much as 1% higher. This conservative assumption has been applied until such a date that agreements can be made with a transmission project which will act as the main gas supply to the Project. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo “Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate”, which will be filed with the BC EAO.
1287.1	round 1	Kitsumkalum First Nation	Section 4.3.2.4, page 4.3-5 and Section 4.3.2.8, page 4.3-10	Greenhouse Gases	"As stated in the CEA Agency (2003) document, GHG assessments cannot address the significance of a single project's potential effect on climate change, as the effect on climate change cannot be accurately quantified or measured. Although it is understood that there is a relationship between GHG emissions from anthropogenic sources over the past 100+ years and a changing climate as an effect thereof, effects on climate change cannot be addressed in this GHG assessment. The science of climate change has not advanced to the point where a clear cause and effect relationship can be established between Project specific releases and measurable changes to global climate." This CEAA document is out of date with respect to the advancement of our our knowledge of the the effects of humans on climate change. It is not uncommon in EA's in Canada to assess Project effects on climate change. For example, Sections 6.4 (Project Effects) and 8.2 (Cumulative Effects) Assessment of GHG's of the Air Quality and Greenhouse Gas technical Report for the TransMountain Pipeline Project included a a summary of the Projects effect on climate change. https://transmountain.s3.amazonaws.com/application14/V5C_TECH_REPS/0730.html. Aurora LNG should undertake a similar assessment to report the effects of the Project's GHG emissions (i.e., construction, operations and marine) and cumulative effects on climate change. *Question: What are the quantified effects of the Project on climate change and the cumulative effect of the proposed LNG plants in BC on climate change?*	In relation to guidance on how Canadian projects are to evaluate their potential impact on climate change, CEA Agency 2003 is still the most current guidance from the relevant regulatory authorities. As outlined in the approved AIR, the cumulative environmental effect related to GHGs is measured at the global level by international bodies such as the Intergovernmental Panel on Climate Change (IPCC) and is associated with global climate change. Thereby, the evaluation of cumulative effects of proposed LNG facilities in BC to global climate change is not within the scope of this assessment.
1288.1	round 1	Kitsumkalum First Nation	Section 4.3.2.5, page 4.3-7	Greenhouse Gases	Aurora LNG indicates that "inherent uncertainty in estimating emission rates from the Project…the emissions estimates are conservatively high to capture worst-case full build-out conditions." In Section 1.2, Proposed Project Description (page 1-3) ,the Project includes three LNG storage tanks and based on 4 production trains will produce 24 MTPA of LNG at full build-out. Although Aurora acknowledges that the Project's 4 trains may be built over two phases, Aurora is not asking for approval related to Phase 1 only, it is seeking approval for both Phases. As such, the suggestion that the GHG emissions estimate is conservatively high and represents worst-case, full build-out conditions is neither justified, nor supported. It represents a minimally reasonable approach. *Questions: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high? Has Aurora committed to GHG emission intensity < 0.28 tCO2e/tCO2e LNG produced? In the event that Phase Two does not proceed, what are the total GHG emissions for Phase One and the GHG intensity?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo “Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate”, which will be filed with the BC EAO.
1289.1	round 1	Kitsumkalum First Nation	Section 4.3.5.2, page 4.3-21	Greenhouse Gases	"The GHG Management Plan will also contain a Best Achievable Technology analysis." Table 28 on page 38 of the TDR indicates that 99% of the GHG emissions from operations will be discharged by stationary combustion sources and thermal oxidizers for acid gas. *Questions: Explain what is meant by 'Best Achievable Technology' analysis? Does Aurora mean Best Available Control Technology? What opportunities does Aurora currently understand are available to control GHG emissions and what level of reduction is Aurora committed to achieve?*	The GHG Management Plan will contain discussion that aligns with guidance from the BC Ministry of Environment on " Best Achievable Technology" (BC MOE 2015) and guidance from the Ministry of Natural Gas Development (MNGD) entitled "Best Available Techniques Economically Achievable (MNGD 2014). As the facility design advances through detailed engineering, efficiencies and optimum equipment selections are expected to result in reduced overall project operation emissions. Commitments cannot be made at this time, but these Best Achievable Technologies will be identified and discussed in the GHG Management Plan. British Columbia Ministry of Environment (BC MOE). 2015. Ministry of Environment FactSheet – Waste Discharges. Best Achievable Technology. Ministry of Natural Gas Development(MNGD). 2014. Best Available Techniques Economically Achievable Guideline.
1290.1	round 1	Kitsumkalum First Nation	Section 4.3.5.2, page 4.3-26	Greenhouse Gases	"Further, if future technology advancements in GHG emission reductions become available and are considered economically feasible, a reduced GHG intensity is expected." *Question: What reduced level of GHG emission intensity is Aurora committed to for Phases one and two?*	Commitments cannot be made at this time as to the level of reduction expected from future technology advancements. The statement quoted in this comment aligns with one of the intents of the BC Ministry of Natural Gas Developments (MNGD) guidance entitled "Best Available Techniques Economically Achievable" (MNGD 2014) and the Air Quality Mitigation #4.2.10 noted in the Application. Ministry of Natural Gas Development(MNGD). 2014. Best Available Techniques Economically Achievable Guideline.
1291.1	round 1	Kitsumkalum First Nation	Section 4.3.5.3, page 4.3-28	Greenhouse Gases	In Table 4.3-13, Aurora reports that the estimated GHG emissions for the Project will total 925,970 t CO2e which as avery large amount of emissions. In Table 4.3-15 on page 4.2-28, Aurora ranks these GHG construction emissions to be "Low" in terms of magnitude. *Question, what metric is Aurora comparing these construction GHG emissions to arrive at this determination? How does Aurora define the magnitude of Low, Medium and High GHG emissions in terms of values and what is the basis for these values?*	In the absence of provincial and federal GHG policy and legislation related to a quantitative definition of magnitude in environmental assessments, the construction GHG emissions were evaluated in the context of the provincial and national inventory reports (PIR and NIR, respectively). The Project, under the full build-out scenario, which includes four trains, will release approximately 925,970 tonnes of CO2e into the atmosphere over the entire construction period. Approximately 46% of the Project's GHG emissions are estimated to come from land clearing activities, 48% are from site preparation (fleet emissions) and on-shore construction, and 1% and 5% are from marine construction and vehicle traffic respectively. Construction emissions are not captured in the PIR and NIR. However, land clearing emissions are included. Land clearing makes up 46% (419,345 tonnes of CO2e) of the total construction emissions. Site preparation, which includes land clearing and decay, will take place over four years. Therefore, if assumed to be evenly distributed, emissions impacting the PIR and NIR would be approximately 104,836 tonnes of CO2e/year. Compared against the PIR and NIR totals, it is estimated that site preparation (land clearing and decay) activities would increase 2014 PIR and NIR totals by 0.17% and 0.01%, respectively. Therefore, the magnitude has been considered to be low. This assessment considers a low magnitude to be a measurable change from the existing conditions (i.e. increase 2014 PIR and NIR totals by 0.17% and 0.01%, respectively). However based on CEA Agency guidance (2003) and professional judgment the change is considered small in comparison to PIR and NIR totals.
1292.1	round 1	Kitsumkalum First Nation	Section 4.3.6, page 4.3-29	Greenhouse Gases	Aurora cites a report from Global Advisors that exporting BC LNG is expected to have an overall positive effect on global GHG levels as LNG fuel would displace coal and oil as fuel, which emit higher GHG's, Whereas, combustion of LNG may have this desirable outcome, it is not clear whether this statement is true if the LNG plant GHG operational emissions from cooling, compression and liquefaction, and acid gas incineration and power generation are accounted for. *Question: Confirm the global benefit of using BC LNG still exists if proper accounting of operational GHG emissions includes those related to producing the LNG at Aurora.*	The Global Advisors Report can't be directly connected with Aurora LNG as it was published before the submission of this Application. The Application limited its reference to the Global Advisors Report as it was only known that "if LNG exported from BC manages to reach a lower life cycle intensity than other fuel sources around the world, then exporting BC LNG could have an overall positive effect on global GHG levels." The Project's GHG intensity (0.28 t CO2e/t LNG produced) closely reflects the Global Advisors GHG intensity for BC "Clean" LNG with no carbon capture and storage (0.27 t CO2e/ t LNG produced). Conclusions of the Global Advisor Report "shows that 'clean' natural gas from BC could result in significantly reduced global GHG emissions depending on which scenario is achieved. " (Globe Advisors. 2014)

1293.1	round 1	Kitsumkalum First Nation	Section 4.3.7.1, page 4.3-29	Greenhouse Gases	Lost in the discussion is the fact that as AB is trying to reduce GHG emissions from the early retirement of its coal fired power plants, BC may potentially approve several LNG plants that create as much as or more GHG emissions that are being retired in AB. The outcome of this could be either no change in GHG emissions in AB and BC when Canadian commitments in international agreements were to reduce GHG emissions.	It is outside of the scope of this assessment to provide commentary on provincial and/or national policy or targets.
1294.1	round 1	Kitsumkalum First Nation	4.3, Table 4.3-3	Greenhouse Gases	Clarification is required to understand the value of the requested evaluation of upstream GHG emissions if it is in fact not to be incorporated into the assessment of Project GHG emissions.	Following receipt of the letter from ECCC to the BC EAO regarding the Project Upstream Greenhouse Gas Assessment (dated December 1, 2016), Aurora LNG and the BC EAO agreed on the delivery date of Feb 22, 2017 for the report. The Feb 22, 2017 delivery date was agreed to by the BC EAO to provide sufficient time for review of the material. The Aurora LNG Project Upstream Greenhouse Gas Assessment has been delivered to the BC EAO.
1295.1	round 1	Kitsumkalum First Nation	4.3	Greenhouse Gases	As it is clear that the Aurora LNG Project will not be in compliance with the provincial intensity benchmark of 0.16 tonnes of C02e/tonne of LNG, and may or may not reach within the intensity limits of 0.16-0.23 tonnes of C02e/tonne of LNG (for reduction in carbon tax levy), it is not clear how Nexen will offset the non-compliance. As with other VCs where offsetting is required these offsetting plans (even if preliminary) are presented in the assessment to understand how significant effects can be balanced. Although a Condition of the potential EAC will be the submission of a GHG Management Plan to the EAO (and other relevant agencies), again the contents of this plan are unknown and it is difficult to understand the true significance of the effects of GHG emissions. Suggest, at minimum, that GHG Management Plan include an GHG emissions offsetting plan and the development of these plans be a transparent process among all affected stakeholders.	Section 4.3.5.2 of the Application states "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislation and will contain continuous assessment of monitoring and management requirements applicable to the mitigations listed in Table 4.3-12 (e.g., requirements of a fugitive emission survey program). The management plan will also contain a Best Achievable Technology analysis." Compliance with the provincial intensity benchmark of 0.16 tonnes of CO2e/tonne of LNG produced will be clarified in the annual reports submitted to the Climate Action Secretariat during the operation phase of the project. Each year, the project will be able to choose if it will purchasing credits, offsets or investing in a technology fund.
1296.1	round 1	Kitsumkalum First Nation	4.3 (page 4.3-12)	Greenhouse Gases	It is again a case of project splitting whereby the GHG intensity benchmark is based only on the "production emission" and does not include natural gas production or transmission of upstream of the facility. The Project will in fact not be a Project without the upstream and mid stream components. Although Nexen is following guidance from CEA and the Province (in their assessment methods), there is little hope for Canada or the Province to meet their Agreement targets (in the time frame) if we continue to ignore a holistic view of the LNG industry.	Following receipt of the letter from ECCC to the BC EAO regarding the Aurora LNG Project Upstream Greenhouse Gas Assessment dated December 1, 2016, Aurora LNG and the BC EAO agreed on the delivery date of Feb 22, 2017 for the report. The Aurora LNG Project Upstream Greenhouse Gas Assessment has been delivered to the BC EAO.
1297.1	round 1	Kitsumkalum First Nation	4.3 (Talbe 4.3-9)	Greenhouse Gases	As stated in the responses from the proponent to WG members associated with the screening review: "As indicated in the Application, it is not anticipated that waste management will interact with GHGs in a substantial manner. The primary basis for this conclusion is that Aurora LNG intends to avoid open burning of accumulated waste during all phases of the Project. Therefore, based on the avoidance and minimization of burning of accumulated waste, it is not anticipated that waste management contribute to GHGs in substantial manner. To reflect this commitment, the list of GHG mitigations has included a mitigation to "Minimize open burning of accumulated waste materials from the construction camp" (Mitigation 4.2.6) which will be managed through the Solid Waste Management Plan. This indicates that burning of waste during the construction phase may occur, but Aurora LNG plans to minimize this activity, where possible and safe to do so." Even with a timber salvage plan, how does Nexen propose to eliminate the wood waste from clearing of a 773 ha area (the PDA)? if not by burning?	The construction GHG inventory conservatively includes burning of biomass to account for debris, stumps, and unused portions of the salvaged timber. However, the Project intends to avoid the burning of biomass where practical and safe to do so.
1298.1	round 1	Kitsumkalum First Nation	4.3 (page 4.3-20	Greenhouse Gases	Kitsumkalum does not agree with the exclusion of LNG carrier emissions from the Project's operational total (emissions). The proponent could calculate the percentage of emissions attributable to their LNG carriers transiting, at minimum, from Triple island to the berth and assess this as part of the total project GHG emissions and operational intensity calculation.	Shipping activities are quantified and presented in Table 4.3-14 of Section 4.03 of the Application. These totals include emissions from LNG carriers (international) and domestic boats. In the GHG assessment, Project operation emissions are compared to PIR and NIR totals to determine the impact or percent contribution. However, the PIR and NIR totals do not include international shipping activities. Therefore, this assessment has excluded them in this comparison. Further, the GHG emission intensity presented in the Application does not include international shipping emissions as these would not be included in future compliance reporting obligations and would not be included in annual operation GHG intensity calculations.
1299.1	round 1	Kitsumkalum First Nation	4.3 (Table4.3-12	Greenhouse Gases	Kitsumkalum would like to participate in the development of the GHG Management Plan. As proposed in Table 4.3-12 many of the proposed mitigations that are to be a part of the GHG Management Plan are standard best practices, Kitsumkalum is looking for innovative and adaptive management strategies such that Nexen will be viewed as taking steps above and beyond industry standards to reduce their GHG footprint.	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Greenhouse Gas Management Plan.
1300.1	round 1	Kitsumkalum First Nation	4.3	Greenhouse Gases	Kitsumkalum agrees with screening comments from WG members regarding the need to quantify the GHG emissions associated with Project decommissioning. Generally, and without FEED information, many of the emission rates / quantities associated with construction activities are but estimates. Estimates for decommissioning activities could be made.	The construction emission inventory was prepared based on Project estimates of equipment usage in conjunction with emission factors that apply to current mobile equipment. The decommissioning phase will be more than 30 years in the future. Therefore, not only are Project equipment estimates more difficult but emission factors for equipment that will operate at the time of decommissioning are currently unknown (i.e., current generation of equipment will be retired). Emissions calculations for the decommissioning phase are therefore not possible at this time. Given the nature of the decommissioning phase activities, it is expected that equipment usage will be for a shorter period of time and less intensive than the construction phase. However, future decommissioning requirements are unknown so this may be incorrect. Mobile equipment will likely consume fuel more efficiently and emissions may differ from current depending on technologies employed. These factors suggest that during the decommissioning phase of the Project, GHG emissions should be less than the construction phase.
1301.1	round 1	Kitsumkalum First Nation	4.3 (Table 4.3-15)	Greenhouse Gases	It is unclear how a Project Residual Effects on GHG Emissions can have a negligible magnitude from decommissioning and abandonment activities If GHG emissions have not be quantified for those effects.	Based on the assessment conclusion that construction emissions will have a "low" magnitude of GHG emissions and that decommissioning activity is expected to be a shorter period with less GHG emissions than the construction phase, it was qualitatively determined that decommissioning will have a negligible magnitude of GHG emissions. As identified in the Application, only land clearing emissions during the construction phase will impact the PIR and NIR emission totals. During the decommissioning phase, little-to-no land clearing is expected. Therefore, the decommissioning phase will have limited impact to the PIR and NIR emission totals.
1302.1	round 1	Kitsumkalum First Nation	4.3	Greenhouse Gases	Kitsumkalum would like to see commitment from the Proponent (and in the form of a Condition the potential EAC) to assess every five years the feasibility of using electricity for LNG production activities (and where feasible a move away from NG to electric drive power). This would also include a commitment to develop and build power drives such that they may be switched from NG driver to electric drive.	Aurora LNG acknowledges the intent of this comment. The Aurora LNG project is proposed in phases with two LNG trains planned for the first phase and subsequent phases based on market demand. If there are no power options available and the facility design is based on the current gas turbine scenario and the Project takes a final investment decision to move forward, it is very unlikely that Aurora LNG would consider retrofitting the constructed portions of the facility with e-LNG at a later date. Given the very high capital costs, very long lead order time, and the numerous linked aspects of changes in design involved and that all of the facility plans and operations procedures would be based on a defined set of hardware. However, it may be feasible to consider e-LNG for subsequent phases of the Project. This would need to be reviewed at that time based on the latest information available. The current Project design proposes the use of gas turbines for both LNG trains and onsite power generation. At this time, this is the only technically feasible option given the limitations of the BC Hydro grid to accommodate new industrial power demand. Aurora LNG is continuing discussions with BC Hydro and other potential power providers to determine if "e-LNG" is a feasible option. If Aurora LNG is able to secure sufficient reliable power for e-LNG in advance of detailed design, then this option will be reviewed in detail and may be considered a viable option at that time.
1303.1	round 1	Kitsumkalum First Nation	4.3 and 14.4	Greenhouse Gases	None of the proposed mitigation measure and to be part of the GHG Management Plan to lessen or manage GHG project effects will meaningfully reduce the Project GHG emissions intensity. Kitsumkalum is looking for substantial commitments from the proponent to reduce their intensity level (without the use of credits or offsets).	The Project will comply with the Greenhouse Gas Industrial Reporting and Control Act and will meet the GHG intensity benchmark through optimizing facility design and operation and if required through a combination of purchasing credits, offsets or investing in a technology fund. Discussions are underway with BC Hydro to understand the extent the Project could connect to the lower GHG intensive grid. These actions will reduce the overall GHG intensity of the Project.
1304.1	round 1	Kitsumkalum First Nation	4.4.1	Acoustic Environment	" noise is defined as unwanted sound and has the potential to affect the health and well-being of humans." What about fish, birds, animals, Bats etc. ? You mention a link between this section and different wildlife sections, but why then use this definition?	Noise effects on wildlife are considered in Section 4.7 of the Application (Wildlife Resources). Noise effects on marine mammals are considered in Section 4.10 of the Application (Marine Mammals). Noise effects on marine birds are considered in Section 4.11 of the Application (Marine Birds). The definition of noise in the Acoustic Environment (Section 4.4 of the Application) is in the context of assessing noise effects on humans.
1305.1	round 1	Kitsumkalum First Nation	4.4.2.1	Acoustic Environment	We have continually been fed the lines world class and world leading technology. And that LNG in BC will be a world leader. How do the thresh holds listed for noise and vibration compare to other world standards such as those in the E.U. ? If this project is to be world class, we expect the highest standards to be met! Please clarify how the project will be a world leader in this section and all sections!	The noise thresholds applied in the Application are based on the BC OGC noise guideline and Health Canada Noise Guidance. The Health Canada noise guidance is based on domestic and international scientific research pertaining to the human health impacts of noise. The noise thresholds are based on available information and knowledge acquired from Canadian and international sources. The vibration thresholds are based on a Canadian guideline (Environment Canada Environmental Code of Practice for Metal Mines) and municipal guideline (City of Toronto Construction Vibration Limit), which are considered the most applicable available guidance.
1306.1	round 1	Kitsumkalum First Nation	4.4.2.5	Acoustic Environment	Administrative boundaries lists jurisdictions but as mentioned in previous comment, world leading standards must be met.	The noise and vibration assessments are based on the most applicable Canadian guidance.
1307.1	round 1	Kitsumkalum First Nation	table 4.4.8	Acoustic Environment	The table says that flaring will not result in any change in noise level? Is this correct? I would imagine this would be quite noisy? And have a hard time believing that there is no noise associated with flaring. My BBQ makes noise and it burns significantly less fuel than a flaring event.	A normal operating flare has two noise mechanisms: combustion roar and gas jet noise. Combustion roar noise is typically in the lower frequency region of the audible frequency spectrum while gas jet noise occurs in the higher frequency spectrum. A flare with a stack tip design that results with low velocity and low level of turbulence will mix slowly with ambient air and burn relatively quietly. A flare with high velocity and high level of turbulence will burn much faster and emit higher combustion noise. The LNG facility will be designed and operated such that planned flaring will not result in any regulatory noise exceedances during normal operation. The flare will be designed to handle the emergency discharge/relief which is typically a high flow scenario, infrequent and of short duration. The emergency discharge can create some noise effects at nearby receptors but it is expected to be in compliance with the regulatory limits. There will be flaring events during the commissioning, start up and regular maintenance while the facility operation is optimized. Flaring events are controlled temporary, short term and intermittent.
1308.1	round 1	Kitsumkalum First Nation	4.4	Acoustic Environment	I am curious about many of the items listed as not contributing to increased sound levels. This seems counter intuitive. If one person whispers it is almost imperceptible but if 1000 people all whisper at the same time there becomes a very noticeable level of white noise. Is this accounted for and how?	The assessment indicates that there will be a measurable change in sound level at some receptor locations (Section 4.5.5.2 of the Application, Table 4.4-20, Table 4.4-21, Table 4.4-22). The assessment accounted for the cumulative effects of multiple noise emissions within a time period. Section 5.1.2 in the Acoustic Environment Technical Data Report (Appendix C of the Application) summarizes the noise emission sources during the construction and operation phase of the Project. Construction Year 1 and Year 5 were selected on the basis of highest construction equipment activities during marine based and land-based construction, respectively. During the operations phase, full build-out of the LNG processing facility was represented in the assessment. It includes the operations of all four LNG trains and the associated facilities (i.e., power plants, utilities, storage) to enable a conservative assessment.
1309.1	round 1	Kitsumkalum First Nation	table 4.4-9	Acoustic Environment	"High disturbance Project related activities (e.g. blasting and pile driving) will occur between the daytime hours of 7 a.m. and 10 p.m. Mitigation Mechanism: Reduce noise generating activities during the night time" I would suggest that the project re-consider these timelines. If not, I would like to volunteer the Nexen executives and proponents to live full time within earshot while a project conducts blasting and pile driving until 10PM. I can not imagine this for families with children and a reasonable bed time, elderly or other sensitive people.	Piling work will be required for foundation work during marine and land-based construction. Typical piling activities use impact type hammer equipment with sound power level in the order of 120 dBA. Vibratory pile hammers contain a system of counter-rotating weights, powered by hydraulic motors, and designed in such a way that horizontal vibrations cancel out, while vertical vibrations are transmitted into the pile. Vibratory hammer piling equipment is typically quieter than impact type hammer piling equipment. Drill or screw piling are a steel screw-in piling and ground anchoring system used for foundations. Screw piles are installed using various earth moving equipment fitted with rotary hydraulic attachments. In comparison to impact type hammer, drill piling and vibro-hammer piling are quieter options. The geo-technical conditions will determine the most suitable piling methods and, as outlined in mitigation measures 4.4.2 and 4.4.3, where conditions permit the quieter piling options will be used. As per mitigation measure 4.4.1, high disturbance project related activities (e.g., blasting, pile-driving, will occur between the daytime hours of 7 a.m. and 10 p.m.
1310.1	round 1	Kitsumkalum First Nation	Page 4.4-35	Acoustic Environment	"The assessment of compliance with the BC OGC Noise Guideline is performed for the operations phase only. BC OGC does not provide compliance criteria for construction noise assessment. Therefore, results from the construction phase scenarios are not compared to the noise thresholds from the Health Canada Noise Guidance." It is unfortunate that there are no compliance criteria during construction. Due to the long construction time though, some compliance criteria must be developed. The proximity to residences and extensive build time could potentially make living in the area during construction a disturbing undertaking. Once again, we expect the project to be world leading, so please illustrate to us how you plan to be world leading.	The Application contains a typo. The paragraph should be revised to ""The assessment of compliance with the BC OGC Noise Guideline is performed for the operations phase only. BC OGC does not provide compliance criteria for construction noise assessment. Therefore, results from the construction phase scenarios are not compared to the noise thresholds from the BC OGC Noise Guideline." An errata document is being created that captures these corrections and it will be filed with the BC EAO. Health Canada noise guidance does provide recommendations on noise criteria for construction activities. The Application compares the construction noise effect to the Health Canada guidance in Section 4.4.5.2 of the Application (Table 4.4-14 and Table 4.4-15).
1311.1	round 1	Kitsumkalum First Nation	page 4.4-37	Acoustic Environment	"An option to use a vibro-hammer pile or drill pile will be considered for the land-based piling operation where geotechnical conditions permit." this should read Vibro type installation should be used at all locations where possible.	Piling work will be required for foundation work during marine and land-based construction. Typical piling activities use impact type hammer equipment with sound power level in the order of 120 dBA. Vibratory pile hammers contain a system of counter-rotating weights, powered by hydraulic motors, and designed in such a way that horizontal vibrations cancel out, while vertical vibrations are transmitted into the pile. Vibratory hammer piling equipment is typically quieter than impact type hammer piling equipment. Drill or screw piling are a steel screw-in piling and ground anchoring system used for foundations. Screw piles are installed using various earth moving equipment fitted with rotary hydraulic attachments. In comparison to impact type hammer, drill piling and vibro-hammer piling are quieter options. The geo-technical conditions will determine the most suitable piling methods and, as outlined in mitigation measures 4.4.2 and 4.4.3, where conditions permit the quieter piling options will be used. As per mitigation measure 4.4.1, high noise effect activities such as pile driving will be undertaken during daytime hours.

1312.1	round 1	Kitsumkalum First Nation	Table 4.5-15	Water Quality	Prince Rupert airport is listed as not having cumulative effects on fresh water? De-icing, emissions, spills etc. Would all have impact. Is the above comment only because they do not share the same creeks and drainages? This may need to be considered as it would cumulatively affect the islands water.	The Prince Rupert airport will have environmental management plans in place to manage de-icing and spills. Project related effects to freshwater are evaluated due to LNG facility emissions of nitrogen and sulfur compounds, or due to project related water releases. For freshwater, cumulative effects of other regional industry or business is limited to the contribution of air emissions and related to deposition into water courses. Airplane emissions were accounted for in the air quality model under the cumulative emissions application (CEA) case by adding a background term to the model.
1313.1	round 1	Kitsumkalum First Nation	4.5	Water Quality	"The Freshwater Quality Assessment focuses on potential acidification and eutrophication effects related to air emissions from the proposed LNG facility." Why only air emissions? Water quality from the massive settling ponds that will need to be created during grubbing and clearing, potential to stir up legacy contaminants when grubbing, and other factors need to be addressed. Spills, waste management, and others may affect water quality	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4. Runoff and discharges to marine water are assessed under Project Mechanisms for Change in the Physical or Chemical Composition of Marine Waters (Marine Water Quality VC, Section 4.5.15.3). It is noted in this section that "The soils storage area will be re-vegetated, where possible, and drainage patterns will be established to manage runoff to the marine environment." As noted in Mitigation 4.5.8 (Table 4.5.26, Section 4.5.15.3), the project will be designed to maintain discharges to the marine environment within regulations and guidelines for the protection of aquatic life so runoff from the soils storage area is not predicted to cause effects to the freshwater or marine ecosystems.
1314.1	round 1	Kitsumkalum First Nation	4.5	Water Quality	Report does not seem to include the extreme flashiness of creeks and systems caused by the extensive clearing of the site! The bogs, holding capacity and complexity will be removed. Streams and drainages will become extremely "flashy" resulting in high levels of erosion and water quality and quantity issues. not to mention potential habitat issues and loss.	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4. Aurora LNG will limit disturbance to riparian areas, to the extent possible, and will not disturb watercourses or associated riparian areas outside of the PDA. Exclusion fencing will be installed where needed to delineate the areas to be protected. Erosion and Sediment Control facilities will capture diverted site run-off for settlement or testing prior to discharge into existing watercourses/marine environment. An environmental monitor will be onsite during all instream works to monitor for potential harm to fish (or fish habitat) and to evaluate or correct installed erosion control measures. The soils storage area will be re-vegetated, where possible, and drainage patterns will be established to manage runoff. The systems put in place to mitigate sediment and erosion control will account for potential high flow events. Project activities that result in a change or loss of fish habitat will be mitigated through the fisheries habitat offset plan, as required under the Fisheries Act.
1315.1	round 1	Kitsumkalum First Nation	4.5.2.7	Water Quality	Likelihood of residual effects. Wording of Low - freshwater quality can largely be avoided or mitigated these should read will largely be avoided and mitigated. Similar issues for med and high.	Edits to the Application are not possible during the Application Review stage. As these suggested revisions are largely editorial in nature, this comment is noted.
1316.1	round 1	Kitsumkalum First Nation	4.5.3.2	Water Quality	water chemistry was taken for hardness nutrients…… but were pollutants such as LEPH's PAHs etc. looked at as potential background. Or are we to assume that **any future levels found are caused by some form of project impact?**	Full chemical datasets are provided in Appendix E Surface Freshwater Technical Data Report of the Application. Parameters include total and dissolved metals, nutrients, organic carbon, and physical parameters. PAHs and LEPH's were not measured as part of the freshwater assessment as there is expected to be no input of these contaminants. The future monitoring programs are anticipated to include a more detailed baseline collection program and these additional parameters may be considered during that time.
1317.1	round 1	Kitsumkalum First Nation	4.5.3.2	Water Quality	wouldn't the leading cause of acidity be organic matter and not geological and soil characteristics? Soil characteristics is misleading and while it includes the decomposing organic material, it does not solely refer to the organics. Nor is the actual cause discussed. It seems to be only speculated. It should be determined why and how before approving a project that could potentially shift a number of ecosystems!	Section 4.5.3.2 provides an overview of current conditions for freshwater systems. The pH in lakes and streams can vary due to influence from numerous factors including surficial geology, sediments and soils, rainfall, and historical pollution sources. Regions with high precipitation often have dilute waters with acidic to circum-neutral pH.
1318.1	round 1	Kitsumkalum First Nation	4.5.3.2	Water Quality	13 out of 39 lakes are high, moderate or sensitive to acid inputs. This is 33%! This seems to be downplayed a fair bit throughout the rest of the document. This was also brought up at the working group.	Section 4.5.3.2 of the Application provides an overview of current conditions for freshwater systems. Lakes with a natural acid neutralizing capacity less than 50 µeq/L are considered acid-sensitive due to limited acid buffering capacity. Lakes located in areas of high precipitation, such as those found in coastal British Columbia (BC), have rainwater-diluted ion chemistry, leading to low buffering capacity and alkalinity, and are therefore considered acid sensitive.
1319.1	round 1	Kitsumkalum First Nation	Table 4.5.6	Water Quality	Waste management was not included as a potential change in physical composition of surface water. If rain water typically falls over an acidic forest floor, then seeps through soil, vegetation, organic matter and wetlands prior to reaching streams and tributaries prior to flowing out to the ocean, and now Nexen is proposing to remove all the vegetation on a large site and that water will likely flow over hard surfaces and be deposited directly to creeks, and ocean. I would disagree. there will be some changes to local water qualities and changes to the chemistry of those watercourses. both in flow volumes and in chemical composition. the flashiness, reduced flows (due to less reserve) etc. is not addressed here.	The potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4 of the Application. Runoff and discharges to marine water are assessed under Project Mechanisms for Change in the Physical or Chemical Composition of Marine Waters (Marine Water Quality VC, Section 4.5.15.3 of the Application). It is noted in this section that "The soils storage area will be re-vegetated, where possible, and drainage patterns will be established to manage runoff to the marine environment." As noted in Mitigation 4.5.8 (Table 4.5.26, Section 4.5.15.3 of the Application), the Project will be designed to maintain discharges to the marine environment within regulations and guidelines for the protection of aquatic life. Runoff from the soils storage area is therefore not expected to cause effects to the freshwater or marine ecosystem.
1320.1	round 1	Kitsumkalum First Nation	4.5.5	Water Quality	Why is water quality in relation to waste management, not included in water quality? This does not seem to make sense	The assessment of potential Project effects on freshwater quality focused on effects of acidification and eutrophication, as inputs from effluent discharges to freshwater are not planned. Potential effects of soil erosion on the freshwater ecosystem are assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4 of the Application. Runoff and discharges to marine water are assessed under Project Mechanisms for Change in the Physical or Chemical Composition of Marine Waters (Marine Water Quality VC, Section 4.5.15.3 of the Application). It is noted in this section that "The soils storage area will be re-vegetated, where possible, and drainage patterns will be established to manage runoff to the marine environment." As noted in Mitigation 4.5.8 (Table 4.5.26, Section 4.5.15.3 of the Application), the Project will be designed to maintain discharges to the marine environment within regulations and guidelines for the protection of aquatic life. Runoff from the soils storage area is therefore not expected to cause effects to the freshwater or marine ecosystem.
1321.1	round 1	Kitsumkalum First Nation	Table 4.5-15	Water Quality	Prince Rupert airport is listed as not having cumulative effects on fresh water? De-icing, emissions, spills etc. Would all have impact.	The Prince Rupert airport will have environmental management plans in place to manage de-icing and spills. Project related effects to freshwater are evaluated due to LNG facility emissions of nitrogen and sulfur compounds, or due to project related water releases. For freshwater, cumulative effects of other regional industry or business is limited to the contribution of air emissions and related to deposition into watercourses. Airplane emissions were accounted for in the air quality model under the cumulative emissions application (CEA) case by adding a background term to the model.
1322.1	round 1	Kitsumkalum First Nation	Table 4.5-11	Water Quality	Mitigation number 4.2.3 Use of busses where feasible. These should be powered by LNG then to further help reduce emissions. A commitment should be made.	In Table 4.2-10, measures are proposed to mitigate emissions by using buses, where feasible (4.3.3). They are contained in Section 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Specific measures such as the use of LNG as fuel will be evaluated at the construction procurement stage based on the availability of LNG fuel, LNG buses, and other factors.
1323.1	round 1	Kitsumkalum First Nation	Table 4.5-11	Water Quality	mitigation 4.2.5 burning of biomass should read: must use air curtain burners to avoid excessive ash and emissions. There are several local operations that provide this service.	Measures are proposed to reduce, avoid, or mitigate emissions from the burning of biomass. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as salvaging timber, avoiding biomass burning, and reducing or postponing biomass burning consistent with the Open Burning Smoke Control Regulation (BC Reg. 145/93 and BC Reg. 41/2016 amendments). Air curtain burners are an effective technology and will be considered during the FEED process as part of the land clearing procurement process.
1324.1	round 1	Kitsumkalum First Nation	page 4.5-27	Water Quality	Wording like "only three lakes are predicted to have exceedances" shows the leading nature of the report. This is not objective scientific writing. It is like saying we only destroyed one town. One is not acceptable especially if it is your town. Call the facts as they are. three lakes are predicted to have exceedances and let the data speak for its self. There are many other leading comments through out the document. this is pulled forward in section 4.5.37 as "no critical load exceedances were predicted for 87% ...." but conversely that means 13% will have exceedances. These are supposed to be Impact studies, **not Non impact studies.**	Edits to the Application are not possible during the Application Review stage. All data was presented in appendices and tables within the Water Quality Technical Data Report (Appendix E of the Application) with the intent of providing transparent and scientifically based results.
1325.1	round 1	Kitsumkalum First Nation	4.5.6.3	Water Quality	"there is medium likelihood of a residual cumulative effect for eutrophication" and "Adverse effects may be difficult to avoid" If this was said about impacts to the Nexen CEO's backyard or where his/her kids play and areas they use for recreation, would they think this was an ok project to go ahead?	The likelihood scale (low, medium, high) is used to indicate the probability that emissions will interact with aquatic systems. Since it will be hard to avoid facility air emissions being deposited into aquatic systems and this will occur to some extent, it was rated as medium. For eutrophication, Dodge Cove Reservoir (LAK11) had a predicted exceedance to nutrient nitrogen loading limits and Lake 05 is modeled to exceed lower bound nutrient nitrogen limits. The modeling used several conservative assumptions for air quality, water quality, and soil quality. As a result, predicted or modeled exceedances are not an indication that effects will occur in these lakes, but that they may occur.
1326.1	round 1	Kitsumkalum First Nation	4.5.9	Water Quality	Follow up programs, Kitsumkalum requires the results and data from all follow up programs. Not through public links that must be searched regularly, but we require to be updated and informed as new material is added to these reports.	The water quality follow-up and monitoring programs are expected to be developed on a regional level and the plan is to consult with Aboriginal Groups, MOE and other local industry to finalize those programs. It is expected that Aboriginal Groups will be involved in the implementation of those programs. Please see the "Additional Information about Eutrophication and Acidification in Freshwater" technical memo for additional details on future monitoring programs. This technical memo will be filed with the BC EAO.
1327.1	round 1	Kitsumkalum First Nation	4.5.13.1	Water Quality	the "detailed sediment sampling program ran from Jan 15- feb 3 2016". To be clear this is one field shift, to collect all your "detailed" data. Was this enough sampling to fully characterize and be statistically significant?	A detailed sediment sampling program was carried out at the three proposed dredge footprints (Berth 1, Berth 2 and the MOF). A total of 192 samples were collected to characterize physical parameters, metals, PAHs, PCBs, and PCDD/Fs in marine sediment. This included 28 surface samples (0-0.07 m depth), 102 large interval core samples (0-1.5 m depth, divided into 0.5 m intervals), and 62 small interval core samples (0-1.0 m depth, divided into 0.2 m intervals). Sediment samples were collected over two field programs; a 5 day field program (December 15 to 19, 2014) and a 16 day field program (January 15 to February 3, 2016). The field program design was reviewed and approved by Environment and Climate Change Canada (ECCC) prior to sampling. The sampling programs also met ECCC disposal at sea evaluation criteria for number of samples required based on dredge volume. The field programs yielded a comprehensive and statistically robust dataset.
1328.1	round 1	Kitsumkalum First Nation	page 4.5-52	Water Quality	marine sediment screening results are present but I do not see reference to the results or data.	Table 4.5-22 on page 4.5-52 of the Application, which lists marine sediment screening criteria and guidelines, forms part of the methods section for collection of baseline data. The sediment results, with discussion of screening, are presented in Section 4.5.13.3 of the Application.
1329.1	round 1	Kitsumkalum First Nation	4.5.13.3	Water Quality	"dredge areas is generally good" once again, subjective language. Dredge materials passed or failed CCME guidelines. XX percent of the samples were found to exceed.... should be the wording. We do not trust wording like generally good. It infers that some are bad. Especially when Kitsumkalum was not permitted on field studies. Your wording in the conclusion is more appropriate, that the chemistry met the BC regulations.....	The text "sediment quality in the proposed dredge areas is generally good", is an overview statement to provide general context for the reader on sediment conditions. Table 4.5-24, which follows this text, provides a detail breakdown of screening results by parameter.
1330.1	round 1	Kitsumkalum First Nation	4.5.15.3	Water Quality	TSS run-off entering the marine environment. This will likely be a large amount (locally) as the project is proposing to grub and strip a enormous area of wet boggy land. Extreme sediment and erosion control methods must be employed to avoid impacts from TSS.	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4 of the Application. Aurora LNG will reduce disturbance to riparian areas, to the extent possible, and will not disturb watercourses and riparian areas outside the PDA. Exclusion fencing will be installed where needed to delineate the protected areas. Erosion and Sediment Control facilities will capture diverted site run-off to manage discharge into existing watercourses/marine environment. An environmental monitor will be onsite during all instream works to monitor for potential harm to fish and to evaluate and manage erosion control measures. The soils storage area will be re-vegetated, where possible, and drainage patterns will be established to manage runoff to the marine environment. The systems in place to mitigate sediment and erosion control will account for high flow events.
1331.1	round 1	Kitsumkalum First Nation	4.5.15.3	Water Quality	"Loss of sediment from dredge equipment is estimated at 3% of the total volume dredged" On quick calculation that is approximately 15,792 cubic meters. I am not a dredge expert but that seems like a lot of TSS depending on particle size and suspension times! The section then goes on to say disposal of the 562,000 cubic meters of dredge "may" affect water quality. It is hard to believe anything other than it will affect water quality at least on the short term!	In the final paragraph of Section 4.5.15.3 of the Application, it is noted that "During disposal of the dredged sediment at sea, there would be elevated TSS levels in the water column following each disposal event". Dredgate disposal is therefore acknowledged as a project mechanism for change in water quality. This effect is characterized in detail, with the support of sediment plume modelling, in Characterization of Residual Effects component of Section 4.5.13.3 of the Application.
1332.1	round 1	Kitsumkalum First Nation	page 4.5-62	Water Quality	The operations section: Projects keep touting "best available technology" We expect this to apply to all aspects of the project and would like the following outlined more concisely: What kind of wastewater treatment is proposed? Is deep discharge the best available technology? Really? By seeing that desalination is part of the plan, is a closed loop system now out of the question. It was my understanding that best practices did not include changing ocean temperatures and that most facilities were trying to do away with the old flush through systems.	Aurora LNG has acknowledged and committed to adhere to wastewater regulatory requirements prior to discharging to the marine environment. There are various wastewater treatment technologies available that Aurora LNG will assess prior to selecting the treatment technology for the Project. During operations, water will be recirculated /recycled throughout the facility, where feasible. This includes process water and water in the cooling system. Water is lost from the closed loop system through evaporation. Therefore, "makeup water" is required to replenish or "top up" the water supply for the process units. Makeup water is also required to dilute and flush the system for mineral concentrations that increase due to the water evaporation. It is expected that approximately 50% of the process water will evaporate. The desalination plant is not a closed loop system. The desalinated sea water will supply potable water, demineralized water, power plant cooling water, utility water and firewater for the facility. Included in this is the makeup process water that will be required throughout operations. Please also see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1333.1	round 1	Kitsumkalum First Nation	page 4.5-63	Water Quality	Storm water run off will require large settling ponds and monitoring to ensure water quality, buffering and slow release. It is not as simple as "discharging into vegetated areas and natural drainages."	Stormwater discharges from the facility site will be captured and managed. The discharges will meet applicable guidelines, regulations and permit requirements before discharge to the marine environment. Complete plans for stormwater management will be produced during detailed Project design. Please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1334.1	round 1	Kitsumkalum First Nation	page 4.5-64	Water Quality	Soils storage area: we have major concerns over this. How it will be managed and the shear volume of moss, bog and organic debris that will be piled to drain. Major systems and management plans are required to even consider this. I have personally seen first hand how awful spoil areas can be if not managed correctly.	The soils storage area(s) will be designed by appropriately qualified engineers, and constructed by experienced contractors. Drainage from the storage area(s) will be managed to meet applicable regulations, guidelines and permit requirements. Please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1335.1	round 1	Kitsumkalum First Nation	Table 4.5-26	Water Quality	4.5.1 needs to read, minimum 30 meter buffer. Discussion of wind firmness, assessment for longevity of buffers, etc. it is not as simple as just leave a buffer and walk away. There needs to be assurances that the buffer will be able to withstand the storm events that are so common in the area.	As part of the delineation of the riparian zones during pre-construction works, vegetation stability and windthrow assessments will be completed. Riparian areas are regulated under the Riparian Areas Regulation (RAR) which is a provincial legislation to protect riparian areas during residential, commercial, and industrial development. Best management practices will also follow those outlined in Ministry of Environment guidance documents including Environmental Best Management Practices for Urban and Rural Land Development: Aquatic and Riparian Ecosystems, and Standards and Best Practices for Instream Works.

1336.1	round 1	Kitsumkalum First Nation	Table 4.5-27	Water Quality	4.5.2 needs to include operations, not just construction.	This comment is unclear. Table 4.5-27 shows model inputs for sediment dispersion and deposition predictions.
1337.1	round 1	Kitsumkalum First Nation	page 4.5-78	Water Quality	Deep outfall pipes and non recycled cooling water does not sound like best available technology.	Aurora LNG has acknowledged and committed to adhere to wastewater regulatory requirements prior to discharging to the marine environment. There are various wastewater treatment technologies available that Aurora LNG will assess prior to selecting the treatment technology for the Project. During operations water will be recirculated /recycled throughout the facility, where feasible. This includes process water and water in the cooling system. Water is lost from the closed loop system through evaporation therefore "makeup water" is required to replenish or "top up" the water supply for the process units. Makeup water is also required to dilute and flush the system water mineral concentrations that increase due to the water evaporation. It is expected that approximately 50% of the water will evaporate. The desalination plant does not exclude a closed loop system. Desalinated sea water will supply potable water, demineralized water, power plant cooling water, utility water and firewater for the facility. Included in this is the makeup water that will be required throughout operations. Please also see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1338.1	round 1	Kitsumkalum First Nation	Table 4.5-29	Water Quality	WCC is not included in the cumulative effects of water quality. Why?	The assessment concluded that there is no potential for spatial overlap between marine water quality effects from the Aurora LNG Project and the proposed WCC LNG development. Project interactions with the marine environment were considered, to determine potential for spatial overlap. Aurora LNG and WCC LNG will, if constructed, discharge waste water to the marine environment. Wastewater discharges will be subject to permit restrictions, limiting the quality and quantity of waste, the discharge rate, and the size of the waste discharge initial dilution zone. WCC LNG may also require dredging, which will be subject to the same mitigation measures used for Aurora LNG (e.g. silt curtains), to limit sediment dispersion. Considering the wastewater regulatory restrictions, mitigation measures for dredging, and the distance of over 9 km between the two projects, no potential for spatial overlap was identified.
1339.1	round 1	Kitsumkalum First Nation	Figure 4.5-12	Water Quality	Cumulatively there is a lot of dredge! Depending on project schedules there is huge potential for adverse effects to marine life due to WQ issues. Although as stated there is low likelihood of spatial overlap of TSS plumes, the cumulative effects to Marine life may be large. If multiple dredge programs occur simultaneously, the area of refuge for marine life will become limited. the overall suspension of contaminants becomes much more substantive and impact to local food harvest becomes dangerous. Therefore it is hard to understand the determination that the likelihood of residual cumulative effects as low. this needs to be re-visited.	Individual dredging programs will result in increased TSS in the surrounding water. However, without spatial overlap, simultaneous programs will not act cumulatively to further increase TSS, and associated contaminant concentrations in water. Potential cumulative effects of dredging and disposal at sea on marine fish health are assessed in Section 4.9.6.6 of the Marine Fish and Fish Habitat VC. The assessment considered the possibility that construction schedules of future proposed projects may overlap temporally with that of Aurora LNG, and the potential residual cumulative effects on marine fish health are characterized accordingly. In the event that construction schedules do overlap, a relatively larger area of the RAA would be affected by elevated TSS concentrations. However, potential cumulative effects would be limited to the Prince Rupert area, where most of the projects are proposed, and at the Brown Passage disposal at sea site. Vast areas of marine habitat within the RAA would be unaffected by elevated TSS concentrations; therefore, suitable habitats are not expected to be limited for marine species that avoid localized areas of elevated TSS.
1340.1	round 1	Kitsumkalum First Nation	4.5.17.2	Water Quality	see comment above. Just because spatial overlap is likely minimal, does not address cumulative impact to the environment.	Individual dredging programs will result in increased TSS in the surrounding water. However, without spatial overlap, simultaneous programs will not act cumulatively to further increase TSS, and associated contaminant concentrations in water. Potential cumulative effects of dredging and disposal at sea on marine fish health are assessed in Section 4.9.6.6 of the Marine Fish and Fish Habitat VC. The assessment considered the possibility that construction schedules of future proposed projects may overlap temporally with that of Aurora LNG, and the potential residual cumulative effects on marine fish health are characterized accordingly. In the event that construction schedules do overlap, a relatively larger area of the RAA would be affected by elevated TSS concentrations. However, potential cumulative effects would be limited to the Prince Rupert area, where most of the projects are proposed, and at the Brown Passage disposal at sea site. Vast areas of marine habitat within the RAA would be unaffected by elevated TSS concentrations; therefore, suitable habitats are not expected to be limited for marine species that avoid localized areas of elevated TSS.
1341.1	round 1	Kitsumkalum First Nation	Section 4.5.13.1	Water Quality	The Canadian Council of Ministers of the Environment (CCME) has not established interim sediment quality guidelines (ISQGs) and probable effects levels (PELs) for Total PAHs in sediments; however, ISQGs and PELs are available for 18 individual PAHs. These benchmarks should be used in Table 4.5-22 and carried forward to the effects assessment.	In the Marine Sediment and Water Quality Technical Report (Appendix F of the Application), sediment data were screened against the CCME guidelines for individual PAHs. Of the 192 samples tested, all were below the Disposal at Sea total PAH screening criterion, and only four samples had individual PAH concentrations above CCME ISQG. Given the limited number of individual PAH exceedences, the total PAH criterion, which encompasses 16 high priority PAHs was considered more appropriate for the effects assessment.
1342.1	round 1	Kitsumkalum First Nation	Section 4.5.13.1	Water Quality	The CCME has not established ISQGs and PELs for Total PAHs in sediments; however, other sources of "threshold effects" and "probable effects" type benchmarks have been developed for use in risk and/or impact assessments. For example, MacDonald *et al.* (1996) provides threshold effects levels (TELs) and probable effects levels (PELs) of 1.684 and 16.77 mg/kg dry weight, respectively. These benchmarks should be considered for use in the effects assessment. MacDonald, D.D., R.S. Carr, F.D. Calder, E.R. Long, C.G. Ingersoll. 1996. Development and evaluation of sediment quality guidelines for Florida coastal waters. Ecotoxicology. 5: 253-278.	The Disposal at Sea total PAH screening criterion encompasses 16 individual PAHs considered relevant to environmental effects in the marine environment. Therefore this criterion was considered the most appropriate for total PAH screening in the effects assessment.
1343.1	round 1	Kitsumkalum First Nation	Appendix F (5.3)	Water Quality	It is stated that concentrations of arsenic and copper were routinely above ISQGs, but at naturally occurring concentrations for the area. This statement should be verified by comparing to the distribution of concentrations in reference areas within the RAA.	The assessment of dredge material focused on sediment sampling within the dredge footprint and followed the Disposal at Sea evaluation criteria for characterizing sediments. Elevated arsenic and copper levels in soils of the Skeena Region are documented in the Ministry of Environment Protocol 4: Determining Background Soil Quality. These documented levels are similar to those found in sediment from the assessment area. Elevated levels of copper and arsenic were found at all depths sampled, (down to 15 m below seabed), indicating that these metal concentrations predate industrial activity.
1344.1	round 1	Kitsumkalum First Nation	4.5.15	Water Quality	Residual effects of re-deposition on benthic invertebrates during and post- dredging activities have not been included in the effects assessment. This information needs to be provided.	The potential for marine fish and invertebrates to be crushed or buried by marine sediment during dredging activities is assessed under the 'change in mortality risk' effect (Section 4.9.5.4 of the Application). The potential for health effects to marine fish and invertebrates due to exposure to elevated TSS concentrations during dredging activities is assessed under the 'change in health' effect (Section 4.9.5.5 of the Application).
1345.1	round 1	Kitsumkalum First Nation	4.5.15.3	Water Quality	Limited information on the proposed mitigation for the sanitary wastewater effluent management during construction and operations is provided in the application. Specifically, no details on the expected capacity or treatment level of the wastewater facility are provided. More detailed information is required to conclude that no residual effects will occur.	As stated in Section 4.5.15.3 of the Application (Characterization of Residual Effects – Waste Management), waste water outfall designs and locations will comply with federal and provincial legislation designed to protect water quality. Sanitary wastewater will meet effluent permit requirements, including dechlorination of any chlorinated wastewater. Mitigation 4.5.8, Table 4.5-26 also states that waste discharges to the marine environment will comply with the Fisheries Act, Canadian Environmental Protection Act, Canada Shipping Act 2001, and the BC Environmental Management Act (Waste Discharge Regulation). Specific details on waste volumes and contaminant concentrations are not yet available and will be determined during Front End Engineering Design. However, Aurora LNG is legally obliged to abide by all waste discharge regulations, designed to protect the marine environment. Environmental effects from waste discharge are therefore predicted to be not significant. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1346.1	round 1	Kitsumkalum First Nation	4.5.15.3	Water Quality	Limited information on the proposed mitigation for the desalination wastewater effluent management during operations is provided in the application. Specifically, no details (or predictions) on the volumes of wastewater generated nor the feasibility of meeting water quality guidelines (WQGs) are provided. More detailed information is required to conclude that no residual effects will occur.	Desalination waste water will meet CCME and BC regulatory water quality guidelines (WQG) outside of the initial dilution zone. These guidelines allow a maximum temperature change of $\pm 1^0$C from ambient at any time, location, or depth and a maximum rate of change $<0.5^0$C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1347.1	round 1	Kitsumkalum First Nation	Section 4.5.15.3	Water Quality	Limited information on the proposed mitigation for the cooling water effluent management during operations is provided in the application. Specifically, no details (or predictions) on the volumes of wastewater generated nor the feasibility of meeting WQGs for temperature are provided. More detailed information is required to conclude that no residual effects will occur.	Cooling water discharge will meet CCME and BC regulatory water quality guidelines for temperature, outside of the initial dilution zone. These guidelines allow a maximum change of $\pm 1^0$C from ambient at any time, location, or depth and a maximum rate of change $<0.5^0$C per hour. The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However,under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of cooling water discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1348.1	round 1	Kitsumkalum First Nation	Table 4.5-26	Water Quality	Mitigation measure 4.5.5 is to use silt curtains, "where practicable, to reduce the spatial extent of suspended sediments in the water column during dredging activities." The description of how the silt curtains will be implemented is very brief. The use of silt curtains for mitigating the effects of elevated TSS on marine water quality should be described in more detail. In addition, there appears to be a contradiction between the statements in Table 4.5-26 that "there is a moderate likelihood of success with this mitigation measure" and "this mitigation measure is effective in the short-term." If success is only moderately likely than the mitigation measure will not always be effective.	The manner in which silt curtains are employed is dependent on numerous factors, including water depth, currents, tides, wave height, wind direction and speed, and the nature of the work conducted within the curtains. As such, specific details on silt curtain use cannot be provided until these factors are established on a site-specific basis. Silt curtains will be used, where practicable, to isolate the work site from the surrounding marine environment, during dredging. Strong currents, high winds and waves, and frequency of marine traffic into/out of the work site may prevent placement of silt curtains, and or limit their effectiveness. Fluctuating water depth due to tidal patterns may also alter the area over which silt curtains can be employed. Use of silt curtains was classed as having a moderate likelihood of success due to the limiting factors listed above. The classification of "effective in the short-term" refers to the duration over which the measure is employed, and not the likelihood of success. The modelling of TSS plumes does not incorporate the use of silt curtains.
1349.1	round 1	Kitsumkalum First Nation	Table 4.5-26<	Water Quality	Mitigation of TSS dispersion during infrastructure (i.e., non-dredging) construction is not discussed in the table of mitigation measures proposed to avoid or reduce change in physical or chemical composition of marine waters. An assessment of mitigation during infrastructure construction needs to be added to this list.	In Section 4.5.15.3 of the Application, under Characterization of Residual Effects - General Construction Activities, it is stated that "The volume of sediment disturbed by marine construction will be much lower than for dredging, and mitigation measures (e.g., silt curtains) will be used where practical to limit sediment dispersion"
1350.1	round 1	Kitsumkalum First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.1 - "Pre- construction rare plant surveys will be conducted in the PDA, near known locations of rare plants" How is this a mitigation to avoid or reduce change in the Abundance of Plant species of Interest when it is known and assumed that all vegetation within the PDA will be removed? The rationale for selection of this mitigation measure states that it will increase the confidence in the location and extent of the occurrence of rare plants? we questions the reasoning behind this because confirming that rare plants exist and then clearing them away so that construction can occur is not mitigation for reducing or avoiding a plant species of interest. It's simply identifying where something is so that it can be documented and subsequently destroyed.	A pre-construction survey is required to reconfirm the full extent of each known occurrence as a precursor to plant relocation, which is the subsequent pre-construction mitigation measure. If additional plants are detected at the time of the pre-construction survey, contingency measures would be implemented such as relocation or collection of seed or propagules of those newly identified plants to reestablish populations off-site, or to augment existing off-site populations.
1351.1	round 1	Kitsumkalum First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.3 -"The red-listed non vascular plant, Sphagnum majus and blue listed non-vascular plant, Sphagnum centrale will be translocated from the known locations within the PDA" - Kitsumkalum sees translocation of this species of moss as a poor mitigation measure. The likelihood of failure is too great to suggest this as a viable mitigation. What evidence does Aurora LNG have that this mitigation is viable? and what kind of monitoring measures is Aurora LNG prepared to put forth to monitor the success or failure of this measure?	The BC Conservation Data Centre's Guidelines for Translocation of Plant Species at Risk (Maslovat 2009) notes that, "in some cases, translocations may be the only viable option. For example, translocation can be a useful tool to mitigate threats to plants in development areas where no other option is feasible." Avoidance is not feasible for Sphagnum centrale and Sphagnum majus because they are located within the PDA. If the Project proceeds, the risks of attempting translocation are limited because the populations would otherwise be lost as a result of clearing within the PDA. Aurora LNG considers this a potentially-viable mitigation measure considering the successful research trials and methods of peatland restoration and moss propagation that have been developed in conjunction with the horticultural/agricultural sector and oil & gas sectors in North America and Europe. Examples of research institutes with publications that address the restoration of Sphagnum spp. include, but are not limited to the following: Peatland Ecology Research Group at the University of Laval, http://www.gret-perg.ulaval.ca/ See: Quinty, F. and L. Rochefort, 2003. Peatland Restoration Guide, second edition. Canadian Sphagnum Peat Moss Association and New Brunswick Department of Natural Resources and Energy. Québec, Québec. Peatland Restoration program at the Northern Alberta Institute of Technology http://www.nait.ca/70709.htm See: Sobze, J., M. Gauthier and R. Thomas 2012. Peatland Restoration – Harvest and Transfer of Donor Material. Technical Note. Available at: http://www.nait.ca/docs/1_Donor_Site_Harvesting_and_Moss_Transfer.pdf Aurora LNG will monitor the performance (survival, establishment, and growth) of the translocated populations during the growing season according to the Guidelines for Translocation of Plant Species at Risk (Maslovat 2009) . Translocation results will be made available to the BC Conservation Data Centre in order to increase collective knowledge of the species.
1352.1	round 1	Kitsumkalum First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.6 - "An invasive Plant Management Plan will be implemented - The Weed Control Act and Regulations prohibit the spread of noxious weeds on highways and prohibits…" Kitsumkalum does not consider this a "mitigation" this is a baseline and bare minimum practice. Aurora LNG has to do this because it is the law. It should therefore not be considered mitigation bit rather a requirement of development. Mitigation should include what is above and beyond requirements.	This comment cites the rationale for the mitigation measure, not the mitigation itself: The mitigation is to develop and implement an Invasive Species Management Plan.

1353.1	round 1	Kitsumkalum First Nation	4.6	Vegetation and Wetland Resources	In the Summary section under "Likelihood of Residual Effects For Change in Abundance of Plant Species of Interest" it is stated that "the translocation (of plant species of interest) will be successful". This is in direct relation to Sphagnum majus and Sphagnum centrale. Kitsumkalum disagrees with this conclusion. There is no evidence presented in the document that supports this statement.	The full statement in the Summary Section says, "There is a medium likelihood that residual effects to plant species of interest will occur and that the translocation will be successful. Although Sphagnum majus and Sphagnum centrale are known to be present within the PDA and disturbance cannot be avoided, their translocation to outside the PDA is expected to be successful in mitigating the effect. Potentially suitable habitat (i.e., bogs) is present within the terrestrial LAA, which will increase the likelihood of successful translocation (Maslovat 2009)." Section 4.6.2.7 defines Medium likelihood as " Medium—Adverse interactions between the Project and vegetation and wetland resources may be difficult to avoid or mitigate, and adverse residual effects are likely". So while the translocation mitigation is expected to be successful, the medium likelihood rating accounts for some uncertainty. The assumption is that if the species can be relocated to a suitable habitat (which is known to exist) then it is reasonable to assume it will be successful.
1354.1	round 1	Kitsumkalum First Nation	Table 4.6.11	Vegetation and Wetland Resources	Mitigation 4.6.10 - This is monitoring not mitigation. It is stated that soils will be monitored and adaptive management will be provided if necessary. What does this mean? What adaptive management? If vegetation and soils are effected from NO2 and SO2 atmospheric concentrations and soil acidification or soil eutrophication occur to levels that are unacceptable what actual mitigation measure outside of "monitoring" will occur?	Monitoring the predicted areas of exceedance (for acidification or eutrophication) to determine whether any adverse effects are detectable is the first step to determine whether any additional mitigation is required.The following factors are uncertain:whether potential effects will be observable and measurable,the timeframe within which effects from this mechanism could be detectable,the degree to which they could occur, andthe rate of change observed in soils and/or ecological communities. Therefore, monitoring is required before further mitigation measures are evaluated and applied. It is expected the monitoring effort will be regionally focused to encompass all of the potential airshed contributors and coordinated through the BC Ministry of Environment. In establishing that regional monitoring effort, it is assumed that the Ministry will determine the monitoring criteria and outline a suite of potential mitigation measures to address expected outcomes based on the monitoring results.Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Precise adaptive management measures cannot be defined ahead of time without knowing what the issue(s) are.
1355.1	round 1	Kitsumkalum First Nation	Table 4.6.11	Vegetation and Wetland Resources	Mitigation 4.2.8 - "An Air Quality Management Plan" is cited as a mitigation measure. It is Kitsumkalum' view that Management Plans are not mitigation measures but rather a Management Plan would list mitigation measures within it. Therefore what exactly is the mitigation measure in this case? is it the "Project Specific Program" to reduce air emissions? if so, what is the "Project Specific Program" exactly? How will it reduce Air Emissions? Those would be the mitigations measures....Please be specific about what exactly the mitigation measure is going to be.	See table 4.2-10 of the Application for specific mitigation measures that would be included in the Air Quality Management Plan. The intent of listing mitigation measure 4.2.8 in this vegetation and wetlands section is to acknowledge that mitigation measures within the Air Quality Management Plan would contribute to reducing effects (due to emissions) on vegetation.
1356.1	round 1	Kitsumkalum First Nation	4.6	Vegetation and Wetland Resources	Under the heading "Characterization of Residual Effects for Change in Abundance or Condition of Ecological Communities of Interest" The conclusion is made that the implementation of the mitigation measures in table 4.6-10 will reduce potential edge effects to "negligible magnitude". Kitsumkalum would like to see the detailed reasoning behind this conclusion. How did Aurora LNG come to this conclusion?	The reasoning behind the conclusion of negligible magnitude is based on first identifying the potential mechanisms that could affect ecological communities at the edges of the PDA, and then identifying a feasible mitigation measure for each potential effect-mechanism.Examples of effect mechanisms that were considered include the following: creation of additional edge by windthrow; deposition/aggradation due to erosion processes; or, changes in soil moisture levels due to stormwater flows. Examples of corresponding mitigation measures include the following: windthrow management (windfirming treatments) of remaining stands; application of erosion and sediment control measures; and maintaining pre-existing surface hydrology patterns While there may be some changes to soil moisture, soil temperature, air temperature, or light levels within communities located at the edge of the PDA, given the feasible mitigation/management measures identified in Tables 4.6-10 and 4.6-11 of the Application, any remaining changes to abiotic factors are not anticipated to result in measurable effects to ecological communities of interest due to edge effects. The characterization of residual effects is thus predicted to be negligible (see Table 4.6-5 of the Application for the definition of negligible in this context).
1357.1	round 1	Kitsumkalum First Nation	4.6	Vegetation and Wetland Resources	It is stated that the residual loss of old-growth forest is low in magnitude. If the old growth forest that the project will be effecting is considered in terms of the PDA (10%), the residual loss of old-growth forest is high and long term. The Characterization of Residual Effects does not consider the PDA. It gives thresholds in consideration of the entire RAA which produces a skewed conclusion of what is actually going to happen on the ground. In our view this is unacceptable. If the project is going to cut down 100% of the old growth forest within the PDA, regardless of what populations are present in the RAA or LAA, this will have a high residual effect that is long term in duration. This is of particular interest to traditional users in that the "go elsewhere to get your resources" argument does not hold well with. If people wanted to use the resources on the PDA they will no longer be able to because it will be gone. Therefore the residual effect of the loss of this resource, within that geographical extent, is high and long term. The assessment of residual effects, in this particular case, is flawed.	The government of BC has developed the approved Great Bear Rainforest Order (GBRO), which establishes explicit retention targets for old growth forest within the landscape units that this Project intersects. The GBRO is based on a regional ecosystem management approach, which means natural resources such as old growth forests are managed on a regional scale, such as the landscape units identified in the GBRO. These landscape units are considerably larger than the PDA, or LAA. The Application aligns with the ecosystem management approach in effect within the region, and uses the retention targets contained in the GBRO to guide characterization of the magnitude of Project effects (See table 4.6-5 in the Application re: old growth magnitude criteria relative to the GBRO thresholds for the relevant landscape units.) The GBRO represents an approved Ministerial Order which allows for up to 40% loss of old growth forest from the specified landscape units which correspond to the Project's RAA. The loss of old growth forest due to the Aurora LNG Project is far below such allowable thresholds set for other (timber harvest) industries within the region. Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include assessment on vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address the site-specific loss of vegetation resources for traditional use within the PDA. See also the technical memo titled, Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. This technical memo will be filed with the BC EAO.
1358.1	round 1	Kitsumkalum First Nation	Table 4.6.13	Vegetation and Wetland Resources	Mitigation No. 4.6.15 - a Wetland Monitoring Program is not a mitigation; it is a Monitoring Program. What exact mitigations are Aurora LNG proposing? If the monitoring program finds that the wetland functions have not been adequately replaced or met, what actual mitigations is Aurora planning on?	Mitigation measure 4.6.15 specifically refers to monitoring the performance of restored, enhanced, or created wetlands that are established according to the Project's approved Wetland Compensation Plan. This monitoring is intended to determine whether or not the compensatory habitat is functioning as intended. In the event that restored, enhanced, or created wetland habitat is determined, through monitoring, to be not functioning as intended, then adaptive management would be applied. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Precise adaptive management measures cannot be defined ahead of time without knowing what the issue(s) regarding function is, but potential examples could include such management measures as: adjustment to wetland hydrology through grading or channel design; replanting with more-suitable plant species; controlling herbivory; or removing invasive plant species. The precise measures would depend on the stressors and/or monitoring plan results.
1359.1	round 1	Kitsumkalum First Nation	Table 4.6-14	Vegetation and Wetland Resources	How are Operations not applicable to the residual effects on the change in Abundance of Plant Species of Interest and Wetland Function in the PDA, TLAA, VALAA and/or RAA .	During operations, no plant species of interest or wetlands will remain in the PDA; they will have been removed during construction. During operation of the Project, no residual effects on plant species of interest or wetland functions are anticipated in the remaining study boundaries, thus the use of N/A in the residual effects summary table. Effects on wetlands due to acidification/eutrophication are addressed under changes to condition of ecological communities of interest, for which there are residual effects during the operations phase; these are characterized in Table 4.6-14 of the Application.
1360.1	round 1	Kitsumkalum First Nation	Section 4.6	Vegetation and Wetland Resources	"Old-growth forests are relatively undisturbed and common in the RAA; they are considered resilient because they can recover from perturbation, albeit taking over 200 years to develop". The last part of this statement is key to concerns Kitsumkalum has when reading that the old growth forest loss that will occur is expected to be low in magnitude. The time it takes to re-establish vegetation populations to existing levels should be considered when evaluating residual effects.	The duration of an effect is one attribute that is used to characterize residual effects, while magnitude is another attribute. See Table 4.6-5 of the Application for definitions of each characterization. All characterizations in Table 4.6-5 are considered for each measurable parameter that contribute to each residual effect. The duration of effects on old growth forest are considered long-term, but of low magnitude according to the definitions of each term provided in Table 4.6-5.
1361.1	round 1	Kitsumkalum First Nation	Section 4.6.6.5	Vegetation and Wetland Resources	Under Cumulative Effects Mitigation it is stated that it is expected that future projects will be held to the same standards as past and present projects, including compensation required for ecologically important wetlands and offsetting. This is not adequate mitigation. Specific mitigations are needed in order for this project to go forward in relation to all of the other projects and development which have occurred or will possibly occur within the RAA.	Please see Table 4.6-13 of the Application for the full suite of mitigation measures intended to avoid, limit, and/or offset the loss of wetland functions for this Project. These Project-specific mitigation measures will also directly reduce potential for cumulative interactions.
1362.1	round 1	Kitsumkalum First Nation	Section 4.6.7.1	Vegetation and Wetland Resources	Kitsumkalum strongly disagrees with the conclusion that the project residual effects to vegetation and wetland resource will not be significant based on the reasoning that plant species of interest are viable within the RAA and traditional use plants are abundant elsewhere. The "can be found elsewhere" reasoning is not acceptable. It is our opinion that the vegetation and wetland resources within the PDA will be significantly altered because the project will destroy them. The fact that they can be found elsewhere in the RAA is irrelevant to us when considering what will be lost within the boundaries of the PDA. Although something may be present elsewhere, does not reflect if someone has access to it elsewhere, knows where it is, or is allowed to access it elsewhere due to territories and house groups.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4, of the Application and include assessment of vegetation gathering. Effects on First Nations harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address the site-specific loss of vegetation resources for traditional use within the PDA. Please also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. This technical memo will be filed with the BC EAO.
1363.1	round 1	Kitsumkalum First Nation	4.11	Water Quality	Kitsumkalum is has considerable concern to the potential for severe impacts to the disturbance of Great Blue Heron habitat in Delusion Bay estuary. The Riparian buffer between the habitat and the flares is considered insufficient. Operations and construction have the potential to exclude or seriously reduce the success of overwintering, breeding and juvenile survival of this blue listed species of special concern.	Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). Maintenance and emergency gas flaring is not expected to occur during normal operating procedures but only occasionally during emergency and upset conditions and during controlled events such as startup, shutdown, venting and purging (see Section 1.2.5.1 of the Application). As the flare stack is located approximately 3 km from the heron rookery in Dodge Cove, interaction with nesting birds is expected to be negligible. Mitigations for great blue heron presented in the Application focus on measures to protect herons during breeding, the most sensitive timing period. The setback distances defined in mitigation measures 4.7.4, 4.7.6, and 4.7.18 are intended to reduce disturbance at active nests sites as well as surrounding habitat use for fledging and foraging. The marine riparian disturbance buffer of 30 m will be applied during all phases of the Project and is expected to further reduce potential for disturbance of herons foraging in Delusion Bay during Project operation.
1364.1	round 1	Kitsumkalum First Nation	4.11	Marine Wildlife - Marine Birds	Kitsumkalum considers the entire Delusion Bay Estuary to be rare, sensitive and critical habitat to a myriad of Marine species. The Marine Riparian zone is considered insufficient in width and the location of the flaring structures will cause unacceptable disturbance or avoidance of this otherwise productive habitat.	Section 1.2.5.1 of the Application describes the proposed flare system design. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). As per mitigation 4.7.20, maintenance flaring events will be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. Additionally, the marine riparian disturbance buffer of 30 m will be applied during all phases of the Project to retain shoreline habitats and limit noise and light dispersal, and is expected to further reduce potential for disturbance marine species using shoreline and nearshore habitats in Delusion Bay.
1365.1	round 1	Kitsumkalum First Nation	4.7	Wildlife Resources (Terrestrial)	Kitsumkalum considers the Marine riparian management zone associated with Delusion Bay to be too narrow to provide a sufficient buffer between construction and operations. The inherent richness of the estuary and edge effect are favoured habitat for many species. The conceptual layout of project components at full build-out (figure no. 1-2) does not provide a depiction of a realistic concept to support terrestrial wildlife species. Species such as Western screech owl and Little brown Myotis are expected to favour these habitats . The project does not depict a concept that considers natural breaks in terrain or an effort to protect or maximize cover.	Habitats surrounding Delusion Bay were rated as having high or moderate suitability for western screech-owl and little brown myotis under existing conditions, however Delusion Bay was rated as Nil suitability for both species to support breeding activity (Section 4.7.3.2 of the Application). The assessment for change in habitat identifies that the change in area of preferred habitat (i.e., high or moderate suitability) from clearing within the PDA will results in a 17% change from existing conditions for western screech-owl and little brown myotis (Table 4.7-13) with indirect effects extending beyond the PDA boundaries (Table 4.7-14). As described in Section 4.7.5.2, the assessment of change in habitat was considered conservative because it assumed that all vegetation will be removed from within the PDA. Collectively, the riparian reserve zones, management areas, and marine riparian disturbance buffer will result in the retention of mature and old forested habitat; these areas are not predicted to continue to serve as preferred habitat for either species during operations (e.g., Figure 4.7-10 and Figure 4.7-11), but will reduce noise and light disturbance effects to adjacent habitats, including Delusion Bay. The riparian buffers also maintain connectivity between forested and wetland communities northwest of the PDA and Delusion Bay. These corridors will facilitate access to upland and intertidal habitats for species that rely on them for breeding, roosting, foraging, and staging activities.
1366.1	round 1	Kitsumkalum First Nation	4.8	Freshwater Fish and Fish Habitat	In table 4.8-13 the proponent describes the area of fish habitat to be lost in the PDA to be 10,857 m². This would require an off-setting replacement at 2x which is 21,714 m² of similar fish habitat. Kitsumkalum has considerable doubt that this can be achieved in the region and an even lesser degree of confidence that said off-setting will be successful.	Offsetting for serious harm in the marine and freshwater environments will be considered collectively by Aurora LNG. This is because the freshwater habitats affected by the Project will affect anadromouos fish species (e.g., pink and coho salmon) that use freshwater and estuarine habitats for spawning and rearing. While efforts will be made to maximize the amount of freshwater habitat created or enhanced to offset the loss of fish habitat in watercourses within the PDA (i.e., "like-for-like" habitat replacement such as those on Digby Island presented in the Conceptual Fish Habitat Offsetting Plan [Appendix V]), the overall objective of the offset plan will be to maximize fish productivity for CRA fish species affected by the Project. Thus, where opportunities exist to create, restore, or enhance habitats used by juvenile salmon in estuarine or marine environments, particularly where options in the estuarine or marine environments have lower risks, uncertainties, or time lags than options in the freshwater environment, these projects will be included in the detailed offset plan with the objective of providing a net gain in production in the regional fishery. Through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets.
1367.1	round 1	Kitsumkalum First Nation	4.8	Freshwater Fish and Fish Habitat	Further to table 4.8-13, the riparian habitat to be lost is 218,830 m², replacement at 2x would be 437,664 m². Kitsumkalum considers this to be near impossible to duplicate or offset this unique island wetland complex. In addition, to apply a minimum DFO standard 15 m riparian zone is unacceptable. The complex moss -forest environment acts as a buffer to provide a moderated slow release of the ~ 3 meter annual rainfall received by his maritime island. It would be more appropriate to apply a minimum 30 meter riparian management zone on either side of the streams and inter-tidal zones of the Delusion Bay Estuary. It may be important to reserve more fore-shore habitat to prepare for the future rise in sea-levels, this may be as much as 2 meters during the life of the project. This needs to be world leading not minimum legal requirement setting.	Potential effects of the Project on fish and fish habitat, including riparian habitat, that result in serious harm to fish will be offset as per the requirements of the Fisheries Act and associated permitting. Replacement of 218,830 m2 of riparian habitat at a 2:1 ratio is not likely possible in the LAA; however, riparian areas next to watercourses that no longer exist do not provide services to the watercourses that have been removed (e.g. shade, leaf litter, insect input) and will not be accounted for in the fina offsetting calculations. Riparian area measurements have been applied as per the Riparian Management Area Guidebook (Ministry of Forests, 1995). Aurora LNG has provided a conservative protection of a minimum of 15 m riparian reserve zone (RRZ) on all streams, including non-fish bearing, where MFLNRO guidelines do not specify an RRZ. Offset riparian habitat will be a component of the detailed habitat offset plan developed for the project. The area of riparian habitat offsets proposed will be proportionate to that which will provide full riparian function to instream freshwater habitat and marine habitat designed to offset the predicted loss in fisheries productivity resulting from the project. Discussion on the foreshore habitat is addressed in the Marine Fish and Fish Habitat section (4.09) of the Application.
1368.1	round 1	Kitsumkalum First Nation	4.8	Freshwater Fish and Fish Habitat	Kitsumkalum considers the potential for serious and irreversible harm to the watershed of Delusion Bay and the valuable contribution to the productivity of this small Estuary to the function of the greater Skeena River estuary.	Aurora LNG acknowledges that Kitsumkalum First Nation considers Delusion Bay a valuable contributor to the function of the greater Skeena River estuary. Aurora LNG believes that the annual contribution of fish from the watercourses within the PDA to the CRA fishery of the Skeena River estuary is negligible in comparison to the annual contribution other tributary watersheds and the mainstem habitats make to the Skeena River estuary. This is because the majority of streams within the PDA on Digby Island are short (<500 m), small (S3 or S4), with non-fish-bearing reaches above impassable barriers, and water quality that is less than optimal for salmonids (i.e., low pH). Therefore, Aurora LNG believes that effects of the Project on watercourses within the PDA are likely to have a negligible effect on annual production of the CRA fishery in the Skeena River estuaryAurora LNG will, through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, provide habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the Project.

1369.1	round 1	Kitsumkalum First Nation	4.8	Freshwater Fish and Fish Habitat	Kitsumkalum considers the freshwater invertebrate productivity to be essential to sustain fish health and productivity. A baseline invertebrate inventory for the streams affected in the PDA would be appropriate to provide an indicator for stream health. This should be initiated pre- construction and for reasonable increments throughout the project operations up to and including de-commissioning.	Aurora LNG acknowledges that freshwater invertebrate production is essential to fish health and productivity. However, Aurora LNG believes that it is not necessary to collect baseline invertebrate data or monitoring invertebrates in streams throughout the life of the Project. This is because Aurora LNG has committed to mitigation measures that avoid, eliminate, or reduce potential effects to CRA fish species e.g. salmon and charr, as a result of changes in water quality, stream flow, and sedimentation. By doing so, Aurora LNG believes that these mitigation measures will equally protect freshwater invertebrates and their habitat. Additionally, changes in water quality that would cause a change in the abundance, distribution, or species composition of freshwater invertebrates are not anticipated. Aurora LNG will engage with appropriate regulatory agencies and Aboriginal Groups identified in Schedule B of the Section 11 Order(as amended) to develop the environmental effects monitoring plans required for freshwater and marine environments.
1370.1	round 1	Kitsumkalum First Nation	4.8	Freshwater Fish and Fish Habitat	Kitsumkalum is concerned about the potential for harm to the Delusion Bay estuary habitat. We would suggest that a baseline condition assessment be initiated and monitored over the life of the project to assess the productivity and condition of this transition zone between fresh and salt water.	Aurora LNG acknowledges that Kitsumkalum is concerned about the potential for harm to Delusion Bay estuary habitat. However, changes in water quality and stream flow that would cause a change in the productive capacity of the Delusion Bay estuary are not anticipated due to retained marine riparian buffer and because all discharged water will meet regulatory requirements. As such, Aurora LNG does not believe a baseline condition assessment needs to be initiated in Delusion Bay. During construction and operation specific water quality parameters (e.g., total suspended solids, total nitrogen) will be recorded to support permitting.
1371.1	round 1	Kitsumkalum First Nation	4.8 p. 4.8-53	Freshwater Fish and Fish Habitat	In Additional Mitigation measures: to transport salvaged fish outside the PDA is unacceptable. The final paragraph about surface water quality changes is vague and lacks a level of description to provide assurance that fish and fish health will be protected. It is well known that clear-cut, clearing and grubbing produce a flashy hydrological response in a watershed. Kitsumkalum is very concerned that an industrial disturbance this close to critical fish and fish habitat will cause serious and permanent damage to the fresh water and estuary environment. Settlement ponds, ditching and filter fabric systems will require careful design and engineering to mimic the natural buffering of this coastal ecosystem.	Aurora LNG will transport and release fish salvaged from affected watercourses within the PDA to the nearest watercourses with similar water quality (e.g., temperature and salinity) and habitat (e.g., pools for rearing). However, transport and release of fish to watercourses outside of the PDA may be required if similar water quality and habitats are not present. The selection of potential release areas will be determined in advance of any fish salvage conducted with consideration of the water quality and habitat conditions as well as the distance and access that may affect the time required to hold fish in tanks or tubs before release. Riparian buffers (15 m minimum on both sides of the streams) will be left adjacent to all watercourses remaining within the PDA after construction and impact to the upstream watershed will be minimized, where possible. These measures will reduce the potential effect of sediment reaching the streams and the estuary, and minimize the reduction in freshwater run-off reaching the estuary; no change in any water quality parameter is expected to occur. Aurora LNG agrees that careful planning will be required in developing a detailed water management plan and erosion and sediment control measures. FEED will provide input to the Marine and Freshwater Resources Management Plan and Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
1372.1	round 1	Kitsumkalum First Nation	4.8 table 4.8-15	Freshwater Fish and Fish Habitat	Kitsumkalum finds this description to be inadequate for such a critical piece. Include " and excessive grease" behind leaks in the opening sentence. Remove**" where possible"** with respect to fueling construction vehicles. We require more information for the proponents fuel management safety systems such as: Spill response capacity must be adequate to contain/ control all volumes of hydrocarbons on site. Spill capacity must be adequate to contain/ control Spills to the ditches, ponds and silt fences for site water management systems. All machinery will be supplied with spill kits and additional spill containers will be onsite at strategic locations. All crew members will be trained and understand spill response equipment and their use. We would expect to see a detailed description of spill capacity for all Marine operations including fuel storage and adequate containment for these storage stations.	Aurora LNG acknowledges the wording suggestions and have revised Mitigation No. 4.8.10 as follows: All construction equipment onsite will be kept clean, free of leaks, excess oil, and grease. Refuelling or servicing of construction equipment will take place at least 30 m away from any watercourse or waterbody; exceptions may be made for large or immobile construction equipment in which case drip trays or bermed areas will be utilized so that any spillage will not enter the waterbody. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. The mitigation has been revised to clarify the intent of the "where possible" wording as relocation of such equipment for fueling purposes may cause more environmental disturbance. Measures related to the use of fuels and machinery on site will be included inthe Marine and Freshwater Resources Management Plan. The plan will address spill containment capacity, number, type, and size of on site spill kits, and training for all personnel on site. All site personnel will review, understand, and follow all of the management plans while working on site. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan.
1373.1	round 1	Kitsumkalum First Nation	4.9.5.1	Marine Wildlife - Marine Birds	The Marine Fish and Fish Habitat VC was reviewed alongside the Marine Water Quality VC in order to understand whether effects related to exposure to TSS were addressed. Section 4.9.5.1 lists the assumptions underlying the effects assessment. To assess effects related to TSS exposure, factors including dredge volume, disposal volume, and dredge rate were used to predict concentrations and spatial extent of TSS exposure. However, assumptions around exposure duration were not explicitly stated here and need to be provided.	The amount of time TSS levels are anticipated to exceed guidelines for the protection of aquatic life associated with dredging and disposal at sea activities was included in the model as part of the sediment dispersion modeling exercises. As described in Appendix G (Technical Data Report - Aurora LNG: MOF and Terminal Dredge Modelling), elevated TSS levels are expected to persist in Casey Cove for the duration of dredging activities (dredging in Casey Cove is anticipated to run for approximately 20 hours per day for approximately 48 days), with levels returning quickly to baseline conditions upon cessation of dredging activities. At South Digby Island, elevated TSS levels are expected to persist for the duration of dredging activities (dredging is anticipated to occur for ten hours per day for approximately 13 days at Berth 1 North, 17 days at Berth 1 South, and 11 days at Berth 2), with levels returning quickly to baseline conditions upon cessation of dredging activities. As described in Appendix H (Technical Data Report - Aurora LNG: Disposal at Sea Modelling), elevated TSS levels are expected to persist at Brown Passage during and immediately following each disposal event, with levels returning to baseline conditions relatively faster in shallower waters than in deeper waters. Disposal of dredged materials from the MOF is anticipated to require 124 disposal events (once every 8 hours, for approximately 41 days); disposal of dredged materials from Berth 1 North is anticipated to require 18 disposal events (once every 16 hours, for approximately 11 days); disposal of dredged materials from Berth 1 South is anticipated to require 23 disposal events (once every 16 hours, for approximately 15 days); disposal of dredged materials from Berth 2 is anticipated to require 15 disposal events (once every 16 hours for approximately 9 days). Dredging and disposal at sea activities will be limited to the DFO least risk timing window (November 30 to February 15) and will take place over two years. The amount of time marine fish may be exposed to elevated levels of TSS during dredging and disposal at sea activities was considered in the assessment of potential changes in marine fish health (Section 4.9.5.5 of the Marine Fish and Fish Habitat VC). In addition to the duration of dredging and disposal at sea activities themselves, and associated TSS levels, other factors such as species, life stage, and the behaviour of the individual may also influence exposure duration. For example, some species (such as pelagic fish), may choose to move away from or avoid areas of elevated TSS (Kjelland et al. 2015), resulting in relatively short-duration exposure. Other species (such as demersal fish, species with lower motility, or sessile invertebrates) may remain near the dredge or disposal areas, resulting in exposure to elevated TSS for relatively longer duration (up to a maximum of approximately 2.5 months, the length of the DFO least risk timing window). Reference: Kjelland, M.E., Woodley, C.M., Swannack, T.M. and D.L. Smith. 2015. A review of the potential effects of suspended sediments on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. Environment Systems and Decisions, 35(3): 334-350.
1374.1	round 1	Kitsumkalum First Nation	4.9.5.5	Marine Wildlife - Marine Birds	The Marine Fish and Fish Habitat VC was reviewed alongside the Marine Water Quality VC in order to understand whether effects related to exposure to TSS were addressed. While estimates of exposure concentrations are stated in section 4.9.5.5, the application is less clear on exposure durations. Newcombe and Jensen (1996) provide a means for estimating severity of effects for estuarine fish (models 4 and 5) based on exposure concentration and exposure duration. These models could be used to estimate the likelihood and degree of residual effects to fish health. Newcombe, C. P. and J. O. Jensen. 1996. Channel suspended sediments and fisheries: a synthesis for quantitative assessment of risk and impact. North American Journal of Fisheries Management 16(4):693-727.	Duration of effect was considered in the Application. Specifically, duration is one of the metrics by which every residual effect is characterized (please see Table 4.5-5). Aurora LNG considered adopting quantitative thresholds for some of these metrics, including duration. Ultimately, however, the thresholds used were adopted because they can be applied consistently to all four potential effects and across different mechanisms within the same potential effect. In contrast, quantitative thresholds - such as the Newcombe and Jenson (1996) approach, are highly context specific. There are several reasons why the model predictions in the reference cited in the comment are not appropriate to an EA context and in particular for those in the Skeena estuary. First, Newcombe and Jensen (1996) (N&J) highlight the great variability among species, and importance of life-stages and particle size. They base their meta-analysis on studies that were (1) species-focused, (2) typically from highly controlled laboratory studies, and (3) "adequately documented". They implicitly assume information is available on several variables that are required to apply their linear models. That is, the N-J approach is of most use in data-rich, species-specific applications, where fish are exposed to steady elevations of TSS, non-stop, for a prolonged duration. In the context of an EA, where many species, life-stages and biophysical scenarios are involved, information on key variables is lacking, and (in this case) TSS plumes are highly variable over time and space, the approach is far less viable or practicable. Indeed, N-J recognize that the response of fish in wild populations exposed to episodic pulses of elevated TSS (as would be the case here) may not fit with their model predictions since, for example, wild fish are likely to actively avoid TSS plumes.
1375.1	round 1	Kitsumkalum First Nation	Table 4.9-2	Marine Fish and Fish Habitat	There is no reference to potential effects of "Ballast Water" on marine habitat, fish, and invertebrate species in the subtidal, tidal, and beach zones. In addition to the initial listing of species that have been reported to be introduced to the BC coast by ballast water releases, there should be a ballast water management and release monitoring approach. The Proponent needs to state whether the International Maritime Organizations (IMO's) "International Convention for the Control of Ship's Ballast Water and Sediments"[1] will be adhered to. As outlined in these guidelines all ships that are exchanging ballast water must: 1. Exchange water outside the Canadian EEZ (200 Nautical Miles offshore or if not possible due to storm at an absolute minimum of 50 Nautical Miles offshore), ballast water treatment and a ballast water exchange monitoring plan; 2. Carry a ballast water record book; 3. Possess a ballast water management certificate.	As per Mitigation Measure No. 4.5.7 (Section 4.5.15.3, Table 4.5-26 of the Water Quality VC), vessels transiting to and from the Aurora LNG marine terminal will adhere to the Vessel Pollution and Dangerous Chemicals Regulations and the Ballast Water Control and Management Regulations under the Canada Shipping Act (2001). The Ballast Water Control and Management Regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Therefore, no adverse effect on marine water quality as a result of ballast water discharge is expected. Subsequently, no adverse effects to marine fish and fish habitat are expected.
1376.1	round 1	Kitsumkalum First Nation	Table 4.9-3	Marine Fish and Fish Habitat	Under the "Potential Project Effects" column, there is no mention of one of the greatest and likely dangers for fish and fish habitat of this project, the accidental release of larger amounts of bunker oil as well as the continuous release of smaller amounts of oil and exposure to antifouling paint as part of normal operations. These effects, and their effect mechanism, measurable parameters and rationale for measurable parameters should be listed here even if they have also been listed elsewhere in the Application.	The potential effects of accidents or malfunctions are assessed in the Section 9 of the Application, separately from those associated with Project construction and routine operations in order to avoid repetition. Section 9.8 considers On-shore Hazardous Spill, while Section 9.9 considers Vessel Grounding or Collision, which includes consideration of the potential release of hazardous materials to the marine environment. The proposed Project and associated marine transportation does not include the 'continuous release of smaller amounts of oil'. Any release of oil or other hazardous material would be considered an accident or malfunction, not a routine operations activity.
1377.1	round 1	Kitsumkalum First Nation	4.9.2.5	Marine Fish and Fish Habitat	It is uncertain whether the spatial boundaries are also based on oil dispersion models taking currents and wind into consideration in case of a bunker oil spill. Clarification is necessary.	Spatial boundaries for the Marine Fish and Fish Habitat VC were developed to assess potential effects resulting from Project construction, routine operations, and decommissioning, and reflect the areas within which such effects could be measurable. A bunker fuel spill is considered an unlikely event and would constitute an accident or malfunction. It is standard EA methodology to consider potential effects of accidents and malfunctions separately from other Project-related effects. For a discussion of the potential effects of bunker fuel spill on marine fish and fish habitat, please see Section 9.9 of the Application.
1378.1	round 1	Kitsumkalum First Nation	Table 4.9-5	Marine Fish and Fish Habitat	Within the "Magnitude" row and under the "Quantitative Measure…" column we recommend quantifying statements in the following way: For "Low", we suggest quoting how much change from existing conditions is needed to define change. As an often accepted value we are suggesting a 20% change from existing conditions for all measurable parameters such as water quality parameters.	Aurora LNG appreciates the suggestion to adopt specific thresholds for the magnitude levels, and this approach was given serious consideration during the refinement of these criteria. Ultimately, there were two main reasons why a qualitative approach was adopted: The degree of deviation from baseline conditions required to meet the different levels ('negligible', 'low', 'moderate', 'high') would likely vary depending on the specific effect and underlying mechanism. It is unlikely that adequate detail could be always obtained on each mechanism and for each potential effect to defensibly specify a % deviation from baseline conditions. In summary, Aurora LNG felt that a qualitative approach was ultimately more appropriate and defensible than having quantitative thresholds for each magnitude level.
1379.1	round 1	Kitsumkalum First Nation	4.9.2.8	Marine Fish and Fish Habitat	Significance of an effect should not be bounded by temporal or population level limits as is done here. A significant effect can occur over short periods of time and affect less than the whole population of a fish species. In addition, significant effects can occur for other species groups and should not be limited to "a marine fish population". Please change this entire paragraph.	Aurora LNG acknowledges that defining a significance threshold for an ecological Valued Component (VC) is subjective, as it depends on what characteristics of the VC are considered of value to an individual or organization. For the Marine Fish and Fish Habitat VC, Aurora LNG took an ecological function approach, whereby an exceedance of the significance threshold (i.e., local extirpation of a population) could result in a significant effect on the function of the marine ecosystem. The definition also allowed adequate flexibility to be generalizable to all four marine fish and fish habitat potential effects. Effects manifesting over a short period of time, or on a scale that does not affect the whole population, were captured as part of the broader characterization of residual effects, based on the metrics defined in Table 4.9-5. Finally, the term 'fish' is used as per the Fisheries Act definition, which does include marine species beyond the taxonomic group of finfish. Please see page 4.9-1 (second paragraph) of the Application for this definition of 'fish'.
1380.1	round 1	Kitsumkalum First Nation	4.9.3.1	Marine Fish and Fish Habitat	In the listing of different modelling studies provided, there is no current and wind dispersion model for large scale and accidental bunker oil releases and for operational and likely frequent releases of bunker oil, and other mechanical fluids as well as ballast water from the tankers. Please provide such a model.	The potential effects of an accidental release of bunker fuel on marine water quality and marine fish and fish habitat are discussed in Section 9.9 of the Application. The assessments in Sections 4.5 (Water Quality VC) and 4.9 (Marine Fish and Fish Habitat VC) focus on potential effects of Project construction, routine operations and decommissioning. It is standard EA practice to consider the effects of accidents and malfunctions separately from other Project-related effects. Aurora LNGdisagrees with the statement that there will be "likely frequent releases of bunker oil, and other mechanical fluids...".Vessels calling on the Aurora LNG marine terminal will comply with all relevant federal and international regulations (e.g., Vessel Pollution and Dangerous Chemical Regulations of the Canada Shipping Act, 2001) that have been established to minimize the potential for releases of hazardous materials. For a discussion on preventative measures and response measures that would be implemented in the unlikely event of an accidental spill, please see Section 9.9.2. Aurora LNG is of the opinion that undertaking current and wind modelling of large scale and or accidental bunker oil releases is not required to characterize potential Project interactions between released oil and marine fish and fish habitat. Oil trajectory modelling following an unlikely release incident would use real-time meteorological and oceanographic data to more accurately predict the movement of oil, and guide response activities at that time. The release of ballast water is regulated by Transport Canada through the Ballast Water Control and Management Regulations of the Canada Shipping Act (2001). The regulations are aimed at avoiding the introduction of invasive species to local waters, and outline mandatory management procedures for ballast water management, exchange and treatment, reporting requirements, compliance and enforcement, and research. Further discussion is provided in Table 4.5-17 and in the Water Quality VC (Section 4.5.15.3, Operations). Vessels transiting to the Aurora LNG marine terminal will comply with Transport Canada regulations, as per Mitigation 4.5.7 (Section 4.5.15.3, Table 4.5-26 of the Water Quality VC).
1381.1	round 1	Kitsumkalum First Nation	4.9.3.2	Marine Fish and Fish Habitat	For all of the locations the observations appear to be purely based on presence and absence without any attempt to determine densities by species or species groups. Please explain how Aurora LNG plans to measure changes in species densities or relative species composition in the intertidal and subtidal zone based on presence-absence based surveys? Please also provide a summary table for all surveyed locations for the intertidal and subtidal species composition and densities.	Detailed methods and results of Project-specific field surveys are provided in Appendix L. Estimated relative abundance of species and species groups is presented using density where appropriate (e.g., quadrat-based observations during intertidal surveys, numbers per area seined) and other metrics where more suitable (e.g., number per length of ROV transect or number per time of tangle net set). Summary tables of intertidal data are presented in Appendix 1 of Appendix L, summary tables of subtidal data are presented in Appendix 2 of Appendix L, and summary tables of marine fish data (sampled in both the intertidal and subtidal) are presented in Appendix 6 of Appendix L. The characterization of species composition and relative abundance in Appendix L was used to inform the assessment of Project-related effects that could result in changes to species composition or relative abundance. Assessment of potential change in habitat is in Section 4.9.5.2, assessment of change in behaviour is in 4.9.5.3, assessment of change in mortality risk is in Section 4.9.5.4, and assessment of change in health is in Section 4.9.5.5.

1382.1	round 1	Kitsumkalum First Nation	Figures 4.9-3, 4.9-4 and 4.9-5	Marine Fish and Fish Habitat	Please explain why the areas that are going to be dredged as part of the construction of marine infrastructure are by colour-coding (dark blue) characterized as “altered” and not as “lost” or as “permanently altered”. At least those areas have to be characterized as temporarily lost until the composition and density of all species is similar to pre-project metrics.	Figures 4.9-3 to 4.9-5 show alteration and loss of marine substrate and vegetation as a result of Project construction. The area affected by dredging is captured by three colours: light pink (indicating a change from intertidal to [lower elevation] intertidal), dark pink (indicating a change from intertidal to subtidal), and blue (indicating a change from subtidal to [deeper] subtidal). These changes are classified as 'alterations' since the substrate will remain available for use by marine species (including CRA species) after dredging has been completed, but will be different in their nature. Other changes, in which the substrate is completely removed from the marine environment, are classified as "lost". The figures do not further depict between alterations that are considered temporary or permanent; this distinction is covered in the text itself. A permanent alteration is determined based on DFO's definition -- i.e., that the change is of a duration that could impair the ability of a CRA species to complete one or more life processes. Habitat changes caused by dredging (or any other mechanism), that fulfilled this definition were included in the area estimates of permanent alteration, and will be offset. The lag time during which marine communities recover to their climax state (resulting in a productivity deficit) are (and will continue to be) accounted for in estimates of offsetting requirements through an appropriate offset ratio.
1383.1	round 1	Kitsumkalum First Nation	Figure 4.9-7b	Marine Fish and Fish Habitat	The figure shows only one dredging location at the jetty site while Figure 4.9-3 shows another dredging location south of Tuck Island that would be exposed to higher current speeds and therefore sediment disturbed by dredging would likely be deposited at higher distances from the dredging location shown for the one dredging site close to Digby Island. Please add the second dredging site and related sedimentation patterns to Figure 4.9-7b.	The purpose of Figure 4.9-6 and Figure 4.9-7 (in the Marine Fish and Fish Habitat VC) was to demonstrate that sediment deposition associated with dredging activities is expected to occur predominantly in areas that experience natural sedimentation (as opposed to accretion). The LNG Jetty - Berth 1 North and the Pile-and-Deck MOF option were chosen as two examples to visually display this phenomenon. At the LNG Jetty – Berth 2, areas of predicted sediment deposition (displayed in Figure 10-6 of Appendix G [Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling]) are also expected to occur predominantly in areas that experience natural sedimentation (displayed in Figure 64a of Appendix M [Hydrodynamic Modelling of Changes in Sediment Erosion and Accretion due to Project Infrastructure]).
1384.1	round 1	Kitsumkalum First Nation	4.9.5.2	Marine Fish and Fish Habitat	The loss of eelgrass is not expressed in the big picture of percentage loss of eelgrass within the Prince Rupert Harbour area. The categorization of the loss of eelgrass as “moderate in magnitude” can only be made once the total historical versus current extent of eelgrass occurrence in the Prince Rupert Harbour area has been assessed. Please add an assessment of total area of historical and current eelgrass in the harbour area to this report and then base the assessment of magnitude of effect on the bigger picture.	It is standard Environmental Assessment methodology to assess and characterize project-related effects in relation to current (i.e., existing baseline) conditions. Management and restoration decisions for eelgrass, which consider a broad spatial and temporal scope, are the responsibility of regulatory agencies (such as Environment and Climate Change Canada, Fisheries and Oceans Canada, the Government of BC's Ministry of Environment and Ministry of Forest, Lands and Natural Resource Operations) and local environmental groups. Wherever possible and practicable, Aurora LNG will adopt restoration or offsetting goals to complement the objectives of these efforts. However, Aurora LNG believes that baseline conditions should be based on current -- not historical -- conditions. Please note that cumulative effects (which consider past, present and reasonably foreseeable projects) are considered in Section 4.9.6 of the Application.
1385.1	round 1	Kitsumkalum First Nation	4.9.5.2	Marine Fish and Fish Habitat	The characterization of dredging and marine construction as “low to moderate” is in our opinion inappropriate based on the Proponent’s own classification scheme and the Fisheries Act: The Act does not define harm as “harm to fish populations” but harm to “CRA fish” in Section 35(1) of the Fisheries Act and prohibits any work, undertaking or activity that results in serious harm to fish that are part of a CRA fishery, or to fish that support such a fishery. Serious harm to fish is defined as “the death of fish or any permanent alteration to, or destruction of, fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.” Therefore, harm especially to eelgrass beds clearly falls under this classification and therefore the effects of dredging and construction should be re-classified as a significant adverse effect.	Aurora LNG is of the opinion that the characterization of residual changes to marine fish habitat (under the 'change in habitat effect', Section 4.9.5.2) is fair. The magnitude of residual changes in marine fish habitat associated with dredging and marine construction activities (including infilling, pile driving, and the installation of intake and outfall pipes) is characterized as being low (i.e., measurable, but below regulatory guidelines [i.e., serious harm to fish under the Fisheries Act] and does not affect the long-term persistence of any marine fish population) to moderate (i.e., measurable, above regulatory guidelines [i.e., serious harm to fish under the Fisheries Act], but does not affect the long-term persistence of any marine fish population). The characterization of 'low magnitude' accounts for residual effects such as those associated with sediment deposition during dredging activities, which are not expected to limit or diminish the ability of CRA fishery species to complete one or more life processes; therefore, residual serious harm to fish is not anticipated. The characterization of 'moderate magnitude' accounts for residual effects such as those associated with the loss of habitat during dredging activities (e.g., eelgrass), which are expected to constitute serious harm to fish and will require offsetting. With the successful implementation of mitigation measures identified in Table 4.9-11, including the development and successful implementation of a habitat offsetting plan, residual changes in marine fish habitat from dredging and marine construction activities are not expected to threaten the long-term persistence of a marine fish population. Therefore, residual effects are considered not significant.
1386.1	round 1	Kitsumkalum First Nation	4.9.5.2	Marine Fish and Fish Habitat	Where are accidental and large volume or operational and small volume oil spill effects considered under Marine Fish and Habitat? It is not sufficient to provide this information Under Accidents and Malfunctions; please also assess it here and in the context of damage to CRA fish and their habitat.	It is standard Environmental Assessment practice to consider the effects of accidents and malfunctions separately from other Project-related effects (i.e., effects of construction, routine operations, and decommissioning). Potential effects of an accidental oil release on marine fish and fish habitat are assessed in Section 9.9 of the Accidents and Malfunctions VC chapter.
1387.1	round 1	Kitsumkalum First Nation	Table 4.9-18	Marine Fish and Fish Habitat	Under the row labelled 4.9.14, the Proponent mentions that an Environmental Monitor will be onsite during pile driving and blasting. Please state whether an Environmental Monitor will be on site for all other construction activities as well and whether local First Nations have been asked to fill the Environmental Monitor position.	Aurora LNG will retain the services of an onsite environmental monitor throughout the construction phase of the Project. It is anticipated the environmental monitor will need to be a "qualified professional", with demonstrated experience and knowledge of environmental monitoring. As outlined in mitigation 5.2.5, Aurora LNG is committed to working with training and education facilities, Aboriginal Groups, and local communities to increase opportunities to obtain training required for Project participation. Aurora LNG welcomes further discussions with Kitsumkalum First Nation regarding training and education opportunities.
1388.1	round 1	Kitsumkalum First Nation	4.9.5.4	Marine Fish and Fish Habitat	Eelpouts (Zoarcidae spp.) are described as “more motile…fish” . We disagree with this characterization in this context since eelpouts have the tendency to seek shelter or even burry deeper when disturbed (experience of author: Dr. Elmar Plate) and thus are unlikely to avoid mortality during dredging.	Aurora LNG acknowledges that the mention of eelpout as a fish likely to flee the area in response to dredging was not appropriate. An errata document is being compiled that captures this correction and it will be filed with the BC EAO. The assessment of change in mortality risk described in Section 4.9.5.4 will not be affected by the removal of eelpout from the list on Page 4.9-87.
1389.1	round 1	Kitsumkalum First Nation	4.9.5.5	Marine Fish and Fish Habitat	Is a contingency plan for water release in place? Please state the trigger concentrations for water treatment in a table and show how the trigger concentrations are monitored for all COPCs.	Waste water discharges are subject to a range of permitting and regulatory oversight, dependent on the source and nature of the discharge. Details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1390.1	round 1	Kitsumkalum First Nation	Table 4.9-21	Marine Fish and Fish Habitat	This table, as does the whole “Marine Fish and Habitat” chapter, leaves out all effects of accidental and large volume oil spills and operational and small volume oil spills. Wherever else in this Application they are mentioned, please also assess them here and in the context of damage to CRA fish and their habitat.	It is standard Environmental Assessment practice to consider the effects of accidents and malfunctions separately from other Project-related effects (i.e., effects of construction, routine operations, and decommissioning). Potential effects of an accidental oil release on marine fish and fish habitat are assessed in Section 9.9 of the Accidents or Malfunctions VC chapter.
1391.1	round 1	Kitsumkalum First Nation	Table 4.9-22	Marine Fish and Fish Habitat	Please explain why only one of the many past projects has led to change in mortality risk and none have led to changes in health? Just like the proposed Aurora LNG Project, all past projects have led and continue to lead to changes in mortality risk and health of marine fish and fish habitat.	Aurora LNG can not speak for the assessments completed by other projects. The purpose of Table 4.9-22 in the Marine Fish and Fish Habitat VC (Section 4.9) is to identify other past, present, and reasonably foreseeable future projects and physical activities that may interact cumulatively (from a marine fish and fish habitat perspective) with the proposed Aurora LNG Project. A description of each project and physical activity that was considered in the cumulative effects assessment is included in Table 3-4 of the Assessment Methods (Section 3.0 of the Application). Table 4.9-22 identifies past projects and physical activities that have resulted in lasting effects to marine fish habitat, or that continue to adversely affect fish through changes in mortality risk, behavior, or health. For a past project or physical activity to interact cumulatively with the Aurora LNG Project itself (and receive a check mark in Table 4.9-22), the following needs to be satisfied: i) the past project continues to adversely affect marine fish and fish habitats (e.g., the project continues to result in the injury or mortality of marine fish), and ii) these adverse effects are likely to interact cumulatively with the proposed Aurora LNG Project (e.g., adverse effects of the past project or physical activity overlap on a spatial or temporal scale with the proposed Aurora LNG Project, or affect a population within the Marine Fish and Fish Habitat RAA, such that the effects are expected to interact cumulatively). Section 3.7 of the Assessment Methods Chapter provides additional details on the methods for assessing cumulative effects.
1392.1	round 1	Kitsumkalum First Nation	4.9.6.6	Marine Fish and Fish Habitat	In this paragraph, planned projects and their metrics of permanent CRA fish habitat alterations are listed as a start of a meaningful cumulative impact assessment. In addition to these numbers expressed in lost or permanently altered area, we need the same metrics for all existing projects in Prince Rupert Harbour to assess “real” cumulative impacts. Please provide these numbers and delineate all past and planned future loss or permanent alterations of ACR fish and fish habitat in table format and as a GIS layer on a map. As it stands, the cumulative impact assessment does not provide any overview/assessment of cumulative impact in this area. As part of this assessment, please also provide an estimate of suggested total development limits in this area to protect its ecological function.	Please note that for a cumulative effects assessment, "residual" effects are considered from Aurora LNG's Project and other past, present and reasonably foreseeable projects likely to interact cumulatively. Residual effects constitute any remaining effect after the implementation of mitigations - including habitat offsetting, which is not considered in the rationale underpinning this comment. Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsetting to counterbalance serious harm to fish caused by the loss or permanent alteration of habitat. Further, Aurora LNG assumes that other projects will also adhere to their legal requirement to offset any serious harm to fish they cause, since failure to do so would contravene the Fisheries Act and trigger serious consequences. As such, residual effects of the Aurora LNG Project and other potentially interacting projects as a result of areas lost or permanently altered are not expected to interact cumulatively in a manner that could cause adverse effects to the productivity or sustainability of CRA species. Finally, since a consideration of the residual effect of Project should include habitat offsetting, it is not necessary, appropriate (or, indeed, possible) to map areas lost or permanently altered for all past, present or reasonably foreseeable future projects.
1393.1	round 1	Kitsumkalum First Nation	Appendix G, 4.1 (top panel) and Table 4-2	Marine Fish and Fish Habitat	The measured peaks of the horizontal current speeds appear to be consistently underestimated by the modelled results for all higher current speeds. Please adjust and re-calibrate the model based on empirical data. For the 16.7 m depth, the observed maximum values are more than twice the modeled values.	As discussed in Section 4.3 of Appendix G of the Application) re-calibration of the model is not considered necessary. There are a few very large speed values in the observed data, which are attributed to buoy motion. A moored buoy is often susceptible to spikes in the current data due to pitch and roll of the sensor by wave action and these are considered noise. Readings at Tuck Buoy gave a maximum current speed of up to 40.2 cms-1 at 16.7 m depth, which is unrealistic values for near the seabed. The company that collected and supplied the ADCP data (Ausenco) confirmed there were some discrepancies in data quality and the uncertainties are larger than desired for the purpose of comparison to model output. However, the data indicate that the model is performing well in this region, following the trends in the observed data. There are a number of instances at each depth where the model slightly over-predicts the currents.
1394.1	round 1	Kitsumkalum First Nation	Appendix G. 12.1	Marine Fish and Fish Habitat	In this paragraph it is stated that “Values exceeding 5 mg/L can extend as a narrow plume northwards to a maximum distance of 700 m, with width remaining within 300 m.” We may have missed it but this result did not appear to have been reported in Section 4.9 Fish and Fish Habitat. If missed, please add this statement to Section 4.9 and interpret its results in the light of significance of effect.	A detailed description of the spatial and temporal extent of predicted TSS sediment plumes associated with dredging activities at the MOF and the LNG Jetty is included in Appendix G (Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling). This information was considered in the assessment of potential effects to marine fish health associated with exposure to elevated levels of TSS (under the 'change in health' effect, Section 4.9.5.5 of the Marine Fish and Fish Habitat VC).
1395.1	round 1	Kitsumkalum First Nation	Appendix V, Conceptual Fish Habitat Offsetting Plan, Table 16, Table 17	Fish Habitat Offsetting Plan	The rationale that only “hard” habitats have to be offset would only apply if the “soft” habitats would not provide for CRA fish species. This is not true based on the Proponent’s own baseline studies that found CRA fish species in the “hard” and the “soft” bottomed habitats especially considering that “fish” in the Fisheries Act are defined as “parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals;”. We therefore think that by applying the Fisheries Act provisions correctly to ACR” fish” rather than “whole fish populations” and including the non-fish ACR species a total minimum of 172,124 m2 of area has to be entered into the habitat offsetting account for change in marine substrate resulting from dredging, infilling, and installation of seawater system pipes. Based on the same rationale, an additional minimum of 19,883 m2 (MOF–pile-and-deck-option) or 78,675 m2 (MOF-concrete caisson option) have to be added to the offsetting account due to marine substrate loss.	The distinction between "hard" and "soft" substrates is not based on whether or not they "provide for" CRA species. Rather, the distinction is based on whether or not a change to, or removal of, such habitat has the potential to cause residual serious harm to fish - i.e., that it could impair the ability of a CRA species to complete one or more life process. As per Page 47 of the Conceptual Fish Habitat Offsetting Plan (Appendix V), "The potential for residual serious harm to fish resulting from a change in intertidal or subtidal substrates depends on the comparative value of the initial and final conditions". For this reason, the different types of changes are identified (i.e., soft to hard, hard to soft, change in height or shape of soft substrate, change in height or shape of hard substrate - Page 47; loss of hard substrate, loss of soft substrate - Page 48), and consideration is given to the potential for residual serious harm from each change. For details on this distinction, please see Pages 47 48 of the Conceptual Fish Habitat Offsetting Plan (Appendix V).
1396.1	round 1	Kitsumkalum First Nation	4.9	Marine Fish and Fish Habitat	"unidentified larval fish (a grouping that could possibly include eulachon, as well as other Osmerids)." Nexen should confirm identity as utilization of project area by eulachon is important information to Kitsumkalum as this species is a key food source.	It was not possible to distinguish between larval eulachon and other osmerids captured in beach seines during the marine fish surveys; these individuals in their larval stage can only be distinguished through DNA analysis. However, the absence of confirmation of larval eulachon was not used to infer absence of eulachon from the LAA. Information collected during the Project-specific marine fish surveys were complemented by information collected from publicly available literature (including TEK), and both types of sources were used to characterize existing conditions for marine fish (including eulachon) and fish habitat in areas potentially affected by the Project. See Appendix L (Marine Fish and Fish Habitat TDR) for more details.
1397.1	round 1	Kitsumkalum First Nation	4.9 (page 4.9-26)	Marine Fish and Fish Habitat	Nexen is missing information provided by Kitsumkalum regarding TU and current use of the Project LAA.	Aurora LNG acknowledges that Kitsumkalum First Nation did provide TU and current use of the Project LAA information. This information was incorporated into Section 6.5 (Marine Use and Navigable Waters), Section 11.3.10 (Assessment of Section 5(1)(c) Effects - Kitsumkalum First Nation) and Section 12.5.7 (Aboriginal Interests - Kitsumkalum First Nation) of the Application. The information is also included in Section 7 of the Aboriginal Consultation TDR (Appendix S.2).
1398.1	round 1	Kitsumkalum First Nation	4.9 (page 4.9-27)	Marine Fish and Fish Habitat	Potential project interaction is missing. Project component "Waste management" and potential effect "change in habitat". Cooling tower discharge has the potential to affect fish habitat, and those discharges from de-salination plant, and waste from floating camp etc.	Potential effects to fish and fish habitat resulting from waste discharges to the marine environment are assessed in the Marine Fish and Fish Habitat assessment under Project Mechanisms for Change in Health, Section 4.9.5 of the Application. This section details the mechanisms for change in fish health due to waste discharges during construction, operation, and decommissioning. The assessment identifies waste discharges during construction and operations, including power generation cooling water and treated sanitary wastewater (which may include chlorine content). Mitigation 4.5.8 in Table 4.9-20 covers waste discharges to the marine environment. Potential residual effects are assessed in the Characterization of Residual Effects for Change in Fish Health, under Construction – Waste Management, and Operations – Waste Management. The fish and fish habitat assessment did not assess waste discharge characteristics (e.g. temperature, chlorine concentration) individually. Instead, the potential for all waste discharges to affect fish health was assessed. Waste discharges, regardless of make up, are managed in the same manner; permit conditions limit the quality and quantity of the waste discharged and impose monitoring requirements. Aurora LNG is legally-obliged to abide by permit conditions, which are designed to protect marine life. Therefore, waste discharge effects to fish and fish habitat were considered not significant. The assessment of potential effects to fish and fish habitat resulting from waste discharges is supported by information from the Marine Water Quality assessment (Section 4.5.11 of the Application). A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota. The marine water quality assessment therefore covers changes in water quality that may significantly affect fish and fish habitat. Table 4.5-19 in the Marine Water Quality section lists Project-related wastewater inputs to the marine environment as a project effect mechanism, and potential effects of this mechanism are assessed in Section 4.5.15. Mitigations 4.5.8 and 4.8.9 in Table 4.5-26 cover waste discharges to the marine environment. Potential residual effects to marine water quality related to waste management are characterized in the Characterization of Residual Effects component of Section 4.5.15.3. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

1399.1	round 1	Kitsumkalum First Nation	4.9 (page 4.9-28)	Marine Fish and Fish Habitat	Kitsumkalum would like to see a follow-up study to confirm the predictions that there will be no measurable effect to marine water quality / marine resources from localized marine water acidification or eutrophication. And to confirm there will be no changes to water quality (and thus marine / estuarine vegetation from changes to TSS (especially in Delusion Bay)	Marine water acidification and eutrophication is not expected to occur due to the high buffering capacity of marine waters. Therefore, no adverse effects on marine water quality and marine fish and fish habitat are expected from acidification and eutrophication. However, it is anticipated that a selection of freshwater lakes and streams (which may include streams that flow into Delusion Bay) will be monitored to verify the prediction of no adverse effects on water quality due to acidification and eutrophication. These acidification and eutrophication monitoring programs are expected to be regionally focused and developed in consultation with MOE, Aboriginal Groups, and industry partners. Regarding TSS-driven effects on marine vegetation, all site discharges into the marine environment, including discharges into Delusion Bay (e.g., from the soils storage area), will comply with relevant regulations and permitting requirements, and therefore no adverse effects to marine vegetation in Delusion Bay are expected from these discharges. Adherence with these regulations is a legislated requirement of all proponents, including Aurora LNG, and failure to adhere to them can have serious ramifications. Aurora LNG is committed to developing and implementing a Marine Water Quality Monitoring Program, which will include monitoring turbidity and confirming the effectiveness of mitigation measures. The plan will include water quality thresholds, monitoring frequency, and specific monitoring locations. The content of the plan will be developed in accordance with industry best management practices and standards, applicable regulations, and conditions of the Environmental Assessment Certificate and relevant permits. For further details, please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1400.1	round 1	Kitsumkalum First Nation	4.9 (Appendix M)	Marine Fish and Fish Habitat	The hydrodynamic modeling (of erosion and accretion) did not incorporate vessels at berth as a modelled scenario. Suggest this should be included to assess the potential changes to fish habitat. Characterization of effects is not complete.	Since vessels are not expected to be berthed continuously, and do not constitute part of the Project infrastructure, they are not expected to have any prolonged, consistent or meaningful impact on sediment erosion and accretion rates. As such, Aurora LNG does not believe that incorporation of vessels into hydrodynamic modelling of Project infrastructure is necessary. Nevertheless, the potential effects of Project vessels on marine fish and fish habitat are considered throughout Section 4.9, and potential effects on marine water quality are considered in Section 4.5.
1401.1	round 1	Kitsumkalum First Nation	4.9 (Appendix M)	Marine Fish and Fish Habitat	include follow-up modelling of hydrodynamic with FEED to quantify changes to fish habitat, and include monitoring program to ensure effects are as predicted in EA.	Aurora LNG is confident that potential changes to marine fish habitat due to sediment deposition and accretion have been adequately characterized (Appendix M of the Application), and that the resultant effects have been adequately assessed (Section 4.9, Marine Fish and Fish Habitat). Aurora LNG has committed to a Marine Sediment Deposition Monitoring Program to monitor potential sediment accumulation in the vicinity of Charles Point if the concrete caisson MOF option is constructed (see Section 15.2.3 of the Application). The details of this monitoring program will be developed in accordance with industry best management practices and standards, applicable regulations, and conditions of the Environmental Assessment Certificate and relevant permits.
1402.1	round 1	Kitsumkalum First Nation	4.9 (Table 4.9-13)	Marine Fish and Fish Habitat	What is the difference between "habitat permanently altered" and "habitat lost"?	"Permanently altered" means that the habitat has changed from one type to another for a duration that could impair the ability of a species to complete one or more life process. "Habitat lost" indicates that the marine habitat is completely removed and no longer available for use by fish, such as when it is raised above the high tide level through infilling.
1403.1	round 1	Kitsumkalum First Nation	4.9 (Table 4.9-13)	Marine Fish and Fish Habitat	There is no characterization of the fish habitat at Brown Passage, yet there are project effects at that location. With in the EA project effects at Brown Passage appear to be limited to affects to fish (and not also to fish habitat). There are known sponge reefs within the potential range of sediment deposition effects. See PNW LNG "Brown Passage Subtidal Survey, October 22, 2014"	Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea"which will be filed with the BC EAO.
1404.1	round 1	Kitsumkalum First Nation	4.9 (page 4.9-63)	Marine Fish and Fish Habitat	It is stated that construction activities (e.g. dredging) will occur 20 hours a day at the MOF). This is outside the window BMP from the BC OGC for noise management (near residential Dodge Cove) Clarification is required.	The construction phase noise assessment includes noise effect from dredging activities for a daily duration up to 20 hours. The BC OGC noise guideline recommends construction activity during the daytime period (7:00 to 22:00); however, the guideline does not set specific noise limits for construction activity. Noise effect from dredging activities during the nighttime period is predicted to be in compliance with the thresholds recommended by the Health Canada noise guidance. Please see the "Sleep Disturbance and Speech Interference" technical memo for a discussion on potential sleep disturbance. The technical memo assessed the potential sleep disturbance noise effect due to construction activities. The results indicate that construction noise effect at all receptors is below the noise threshold with the exception of receptor R2 (Dodge Cove). Additional mitigation measures are required during the construction phase to reduce the predicted noise effect to below the sleep disturbance threshold of 45 dBA. The additional mitigation measures are presented in the technical memo. The technical memo will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1405.1	round 1	Kitsumkalum First Nation	4.9 (Table 4.9-20)	Marine Fish and Fish Habitat	Mitigation 4.5.3 and 4.5.8 is not sufficient to ensure water quality objectives for the protection of aquatic life. Should include "when exceedance are discovered outside the area predicted to have exceedances then shut down of construction activities will occur until a reduction in TSS occurs (and new mitigations implemented to ensure exceedances outside the predicted area of exceedances do not occur). " Monitoring of TSS/turbidity and temperature should also be included as mitigation to water quality via regular monitoring of waste water discharge (both construction and operations, e.g. cooling tower effluent [temperature at outfall] and over burden storage area discharge [TSS / turbidity], especially during rain events])	The on-site environmental monitor will work with the dredging contractor to identify and implement site-specific mitigation measures, if water quality exceedences are detected. Waste discharges to the marine environment will be subject to effluent and receiving environment monitoring. The spatial scale, frequency, and required parameters for monitoring will be defined in waste discharge permits issued for the Project. Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1406.1	round 1	Kitsumkalum First Nation	4.9 (page 4.9-102)	Marine Fish and Fish Habitat	There is a disconnect between the daily duration of dredging activities (20hrs/day for 48 days at MOF) and the requirement for Noise Management (from the OGC 7am - 10pm). Only the noise of blasts and pile driving were modelling in the Acoustic Assessment, but realistically dredging activity will also cause noise (therefore should be modelled) and is proposed to happen outside the OGC window. Please clarify effects due to noise from dredging activity.	Noise effect during dredging activity is included in the assessment. The dredging activity noise emissions are summarized in Table 5-2, Section 5.1.2.1 of the Acoustic Environment Technical Data Report of the Application. The noise model indicates that the Project related construction activities (including dredging) will meet the Health Canada noise guidance thresholds.
1407.1	round 1	Kitsumkalum First Nation	4.9	Marine Fish and Fish Habitat	There is no sense of the magnitude of change in temperature in the receiving environment (marine)at the cooling tower discharge. In order to understand potential effects this needs to be characterized (and not left to permitting).	Cooling tower blowdown water will meet CCME and BC water quality guidelines for temperature, outside of the initial dilution zone. These guidelines allow a maximum change of $\pm 1^{0}$C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The exact size of the mixing zone is not yet known, and will be determined through modelling in the permitting phase. Waste discharges within and outside the mixing zone, cannot be acutely toxic to fish (per the Fisheries Act)The effect of cooling tower blowdown waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life (see Section 4.5.15.3). With a commitment to meet the water quality guideline of maximum change of $\pm 1^{0}$C beyond the mixing zone, the effect was characterized as not significant (low in magnitude, within the LAA, continuous, and long-term in duration). Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1408.1	round 1	Kitsumkalum First Nation	4.9	Marine Fish and Fish Habitat	Kitsumkalum disagrees with the characterization of residual effects to marine fish habitat given that there is no characterization of utilization of habitats by fish (to support an understanding of productivity for offsetting); that there is a significant amount of fish habitat to offset and the conceptual fish offsetting plan presented in the Application is not sufficient in detail, alternatives, or consideration of other project which may required offsetting "space" ; and that many of the suggested mitigation measures do not go the step further to include a stoppage of work if 'issues"/exceedances arise or include sufficient commitment to monitoring to confirm effects predictions are correct to justify the conclusions (of residual effects to marine fish and fish habitat).	Aurora LNG has characterized the utilization of habitats by fish to support an understanding of productivity for offsetting. Extensive field studies were undertaken to characterize habitats that would be affected by the Project, and the species that use these habitats. The results of these studies, presented in Marine Fish and Fish Habitat TDR (Appendix L), guided the development of the proposed offsetting measures. Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsets that counter-balance residual serious harm to fish. This commitment will be accomplished by following DFO's guidance on offsetting. This guidance involves understanding habitat productivity through the concepts of species utilization of, and dependence upon, habitats, broken down by species and life stage. It also involves setting specific success criteria, that are subsequently used as benchmark indicators that the offsets have fulfilled their productivity objectives and, as such, have counterbalanced Project-driven serious harm. As stated in the Conceptual Fish Habitat Offsetting Plan, the offsetting philosophy and ideas presented were intended to be concepts that demonstrate Aurora LNG's approach to identifying effective offsets and concrete ideas for counterbalancing harm. They provide a transparent starting point for constructive discussions about habitat offsetting with the ultimate goal of developing widely endorsed, low-risk, effective, appropriately located and well designed offsets. Offset projects and the corresponding "space" required for those projects will be identified through field surveys and in consultation with regulatory agencies (primarily DFO) and Aboriginal Groups. Final designs, amounts, locations, success criteria and monitoring requirements will ultimately be approved by DFO in the Fisheries Act Authorization permit. Construction of the offsets will be monitored to ensure adherence to the proposed mitigation measures and regulatory requirements and to evaluate the effectiveness of the proposed mitigation measures. Where relevant, threshold values (e.g. CCME water quality guidelines) will be used during monitoring and exceedances will trigger construction action, such as temporary cessation of activity (stop work), or slowing of activity. Details of these adaptive measures will be included in the forthcoming Marine and Freshwater Resources Management Plan. Additionally, the final fish habitat offsetting plan, that will from part of the Request for Authorization application to DFO, will include details on offset monitoring, with specific objectives focused on assessing the effectiveness of habitat offsetting.
1409.1	round 1	Kitsumkalum First Nation	4.9 (Table 4.9-22)	Marine Fish and Fish Habitat	Alta Gas Propane facility is not listed in the projects interaction list for cumulative effects on Marine Fish and Fish Habitat	As outlined in section 3.7.1 of the AIR, the Project and Activities Inclusion list was finalized within three weeks of submitting the final AIR on November 23, 2015. The Environmental Evaluation for the AltaGas Ridley Island Propane Export Terminal was submitted well after this cutoff, in December 2016. On January 3, 2017, AltaGas announced it would proceed with the Project as it had received its approval under section 67 of CEAA 2012. Given the timing for these activities, the AltaGas project was not considered in the cumulative effects assessment conducted in the Application.
1410.1	round 1	Kitsumkalum First Nation	4.9.6.3	Marine Fish and Fish Habitat	Kitsumkalum does not agree with the characterization of cumulative effects to marine fish and fish habitat given that the CFHOP does not ensure that the total area of habitat destruction can be offset (the proponent cannot ensure that there is enough area in the RAA to complete the offset requirements)	Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsets that counterbalance residual serious harm to fish. This commitment will be accomplished by following DFO's guidance on offsetting. This guidance involves following DFO's preference for in-kind over out-of-kind offsetting and for projects in the local area. It also involves setting specific success criteria, that are subsequently used as benchmark indicators that the offsets have fulfilled their productivity objectives and, as such, have counterbalanced Project-driven serious harm. Through collaborative engagement with DFO, and consultation associated with the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets. Additionally, all other proponents are legally bound to offset serious harm to fish caused by their projects. Aurora LNG assumes that other proponents will fulfill this obligation, since not doing so would violate the Fisheries Act and have severe consequences for those proponents. Consequently, Aurora LNG stands by the characterization of cumulative effects to marine fish and fish habitat.
1411.1	round 1	Kitsumkalum First Nation	4.9.9	Marine Fish and Fish Habitat	Follow-up and monitoring to ensure effects to marine fish habitat are as predicted should include monitoring around the berth dredging area (and not just at Charles Point).	Aurora LNG is committed to implementing follow-up programs when there is a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the assessment, In these cases, a follow-up program will be used to verify the accuracy of predictions. Criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011). Aurora LNG has committed to a number of follow-up programs specific to marine fish and fish habitat and marine water quality (see Section 15, Summary of Follow-up Programs and Compliance Reporting), including a Sediment Deposition Monitoring Program. This program will focus on monitoring sediment deposition within a localized area near Charles Point. This program has been put forward because of the potential for sediment deposition in this area to result in serious harm to fish (as defined under the Fisheries Act). As described in Section 4.9.5.2 of the Marine Fish and Fish Habitat VC, the results of hydrodynamic modeling suggest that up to 4-5 cm/year are predicted to be deposited in this area (see Figure 69 (c) of Appendix M [Hydrodynamic Modeling of Changes in Sediment Erosion and Accretion due to Project Infrastructure]), where substrates are composed primarily of a mix of cobble and boulder (see Section 5.1 and Section 2 of Appendix L, Marine Fish and Fish Habitat TDR). As a result, the deposition of sediment in this area could result in serious harm to fish, and additional offsetting would need to be discussed with DFO. However, sediment deposition in this area is only anticipated to occur if the Concrete Caisson MOF is selected for construction, and therefore the program will not proceed if the Pile-and- Deck MOF option is selected. Based on the results of sediment transport modelling (Appendix M), sediment deposition and accretion in other areas (i.e., areas away from Charles Point) are predicted to occur predominately over sediment habitats and changes are expected to be localized and gradual (see Figure 64 (c) and Figure 65 (c) of Appendix M). As such, any changes are not expected to affect the ability of marine species to complete their life processes, and serious harm to fish is not anticipated. For this reason, no monitoring is proposed for areas outside of Charles Point.
1412.1	round 1	Kitsumkalum First Nation	Appendix H	Marine Fish and Fish Habitat	Although Aurora LNG completed sediment transport and deposition modeling for Brown Passage (as a disposal site), there is no characterization of the habitat or fish presence and as such the characterization of effects to marine fish and fish habitat is not complete. There are multiple benthic and demersal fish species utilizing the area and there are cloud and glass sponge within the deposition zone (in previous DAS zone) (See Brown Passage Subtidal Survey, PNW LNG, Stantec, October 22, 2014) and destruction of these habitat forming species and effects to fish are not fully characterized in the Application.	Potential effects of the disposal of dredgeate on fish habitat at the Brown Passage disposal at sea site are assessed in Section 4.9.5.2 of the Marine Fish and Fish Habitat VC (see page 4.9-52). This assessment considered effects to deep-water soft sediment habitats; however, it did not consider potential effects to glass sponges (Hexactinellida), which are known to occur in this area. For a discussion and characterization of potential effects to glass sponges, Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea"which will be filed with the BC EAO. The potential for injury or mortality of marine fish and invertebrates due to disposal of dredgeate at Brown Passage are assessed in Section 4.9.5.4 of the Marine Fish and Fish Habitat VC (see pages 4.9-87 to 4.9-88). Finally, the potential effects to marine fish health from exposure to elevated TSS concentrations during disposal at sea are assessed in Section 4.9.5.5 (see pages 4.9-103 to 4.9-104).
1413.1	round 1	Kitsumkalum First Nation	Appendix V	Fish Habitat Offsetting Plan	When a "no significance" determination for residual effects and cumulative effects to fish and fish habitat (both freshwater and marine) is presented, but this determination hinges on the ability to offset "serious harm" it is difficult to agree with this characterization given the Conceptual Fish Habitat Offsetting Plan presented in the Application. There is little confidence that the Proponent can in fact find enough area within the RAA to offset the habitat losses presented in the Application (both freshwater and marine) nor that the two main areas / zones being considered for offsetting designs (Casey Cove and Delusion Bay) are areas where there are potential effects from the project (which may affect the offsets) can support effective offsets.	Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsets that counterbalance residual serious harm to fish. This commitment will be accomplished by following DFO's guidance on offsetting. This guidance involves following DFO's preference for in-kind over out-of-kind offsetting and for projects in the local area. It also involves setting specific success criteria, that are subsequently used as benchmark indicators that the offsets have fulfilled their productivity objectives and, as such, have counterbalanced Project-driven serious harm. Through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets.

1414.1	round 1	Kitsumkalum First Nation	Appendix V (Figure 8) and 4.9	Fish Habitat Offsetting Plan	It is not clear why percent cover (for eelgrass) was not characterized for Delusion Bay. Kitsumkalum does not think that effects from air emissions from operational activities and from discharge from the overburden storage (and potential discharge from the site storing of the 0.5m layer of marine sediments....where the site is currently unknown) are adequately characterized or mitigated to ensure no effects to Delusion Bay (marine and freshwater fish habitat, and marine and freshwater riparian habitat). Percent cover and extent of all riparian and marine vegetation should be characterized in Delusion Bay such that a monitoring program (developed in consultation with regulatory authorities and Schedule B and C First Nations) could become part of the EAC Conditions (as it should) to ensure the effects are as predicted.	Eelgrass beds in Delusion Bay were delineated during a dedicated eelgrass survey conducted from July 31 to August 6, 2015. Survey methods are described in Section 5.4.2 of the Marine Fish and Fish Habitat TDR (Appendix L), and the results for Delusion Bay are presented in Section 5.4.3.4. The following text is taken from Pages 69 and 70: "Delusion Bay harboured a continuous, dense eelgrass bed along the southwestern edge at its mouth but, moving northward was filled with extensive, and short-canopied (~15 to 20 cm canopy height) eelgrass patches. Both sparse (Photo 47) and dense (up to 100% cover) patches (Photo 48) extended nearly a kilometre northward, within brackish zones along the edges of the main freshwater outflow, to the head of Delusion Bay (see Figure 36 and Figure 37). Beaked widgeongrass was observed (but not delineated) in the stream centre, as well as along high intertidal fringes along the length of Delusion Bay. A very small patch of Scouler's surfgrass was located on a rocky outcrop in the middle of the bay (see Figure 36, Photo 49 and Photo 50). Because of the extensive coverage of eelgrass in Delusion Bay (see Figure 36 and Figure 37), and limited low tide timing available for sampling, the decision was made to focus on comprehensive delineation of beds and patches; no quadrat-based estimates of percent cover, shoot density, or canopy height were taken in this area." Marine riparian vegetation in Delusion Bay was characterized during an intertidal survey conducted from July 31 to August 3, 2015. Survey methods are described in Section 5.1.2 of the Marine Fish and Fish Habitat TDR (Appendix L), and results for Delusion Bay are presented in Section 5.1.3.4. Based on current Project design plans, the soil storage area will be located to the west of Delusion Bay and will not overlap with the marine riparian habitat zone (defined as a 10 m buffer [horizontal distance] from the high water mark) or any salt marsh vegetation or eelgrass. The soil storage area will be confined within a berm, and contact water will be managed and tested before being directed into Delusion Bay. Water discharged from this area will comply with relevant permit requirements. As such, no adverse effects on marine vegetation (e.g., salt marsh and eelgrass) or associated fish and invertebrates are anticipated.
1415.1	round 1	Kitsumkalum First Nation	4.10.2.4	Marine Wildlife - Marine Mammals	The Application notes that "The term 'qualitative' was added to qualify likelihood under the measurable parameter for change in mortality risk to better reflect the style of assessment (i.e., a qualitative assessment of mortality risk was undertaken; no quantitative assessment of vessel strike likelihood was performed)." There is no explanation as to why the risk of ship strikes was not evaluated quantitatively or why a comprehensive collision risk assessment was not done.	As strike risk increases in higher density traffic areas, the likelihood of residual cumulative effects for change in mortality risk to marine mammals is considered high. In the event of an accidental vessel strike, effects on the marine mammal involved are assumed to be permanent and irreversible, and would be of heightened concern for SARA-listed species. Based on current marine mammal population sizes and trends for species known to occur in the RAA, changes in mortality risk are considered unlikely to affect population viability, and as noted in the Application, are therefore expected to be not significant. Quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result, and as noted in the IR, a qualitative analysis was completed, with a moderate level of prediction confidence. This approach is consistent with the approach taken for the recently approved Pacific NorthWest (PNW) LNG project, that will occur in the same region of BC. The analysis conducted for Transmountain Pipeline Expansion Project provided estimates of potential vessel-whale encounter risk. This analysis did not extend to vessel-whale strike risk due to limited data available on species-specific responses (e.g., whether the animal dives or turns) to vessel approach. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.
1416.1	round 1	Kitsumkalum First Nation	4.10.2.8	Marine Wildlife - Marine Mammals	It is stated that "This section describes the threshold for potential effect, beyond which a residual effect is considered significant". Although the Proponent used measurable parameters (see Table 4.10-2) to assess potential effects of the Project, no specific thresholds (e.g., km2 exposed or % population exposed to specific sound levels) are provided in this section. Instead, it is stated that "A significant adverse residual effect is defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA'. Thus, the effects assessment appears to take a more qualitative rather than a quantitative approach.	For the marine mammals assessment, a significant adverse residual effect was defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA. As outlined in Section 4.10.2.8 of the Application, the significance thresholds represent the limits of an acceptable change in a measurable parameter or state of the VC, based on applicable legislation, regulatory guidance documents or other management standards. Where thresholds are not set by legislation, guidance documents or standards (as in this case), a threshold has been developed based on scientific literature and professional judgment.
1417.1	round 1	Kitsumkalum First Nation	4.10.3; 4.10.5; Appendix N	Marine Wildlife - Marine Mammals	There is not enough baseline information to characterize the seasonal distribution and relative abundance of various marine mammal species within the LAA. Although adequate data were available to determine abundance for two species (humpback whale and harbour porpoise), density estimates for other marine mammal species would contribute more to the understanding of the use by various species of the LAA and would have been pertinent in assessing potential effects of the Project on marine mammals. The data are therefore not adequate to support a quantitative impact assessment where the potential for mortality or injury is a realistic outcome of an accident or malfunction or to quantitatively assess the effects of Project activities on changes in health or behaviour.	The assessment of change in health, change in behaviour, and change in mortality risk for marine mammals relies on not only the results of the Aurora LNG marine mammal surveys and subsequent analysis and results, but baseline information that includes a literature review, the results of marine mammal surveys for other proposed projects, and information collected by the BC Cetacean Sightings Network. These sources provide information on the seasonal distribution and abundance for marine mammals present within the LAA and RAA. A quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result a qualitative analysis for change in mortality risk was completed, with a moderate level of prediction confidence. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.
1418.1	round 1	Kitsumkalum First Nation	4.10.5.1	Marine Wildlife - Marine Mammals	The statement "Pile driving was modelled in deep water sites where sound typically propagates furthest" is not necessarily true. Propagation in shallow water is highly complicated and sound may travel further under certain conditions than in deep water. In fact, Appendix P, Table 1 notes that modeling for pile driving was done for water depths <23 m, so the statement is confusing.	To clarify the intent of the statement: Out of the potential locations where Project-related pile driving activitiesare anticipated, acoustic modelling sites were selected based on areas of relatively deeper water. As noted, the extent of underwater noise is dependent on many factors (e.g., water temperature and depth) and all acoustic modelling included the geoacoustic properties of the sites, depth and temperature. As part of the Marine and Freshwater Resources Management Plan, developed through engagement with applicable regulatory agencies and Aboriginal Groups, field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.
1419.1	round 1	Kitsumkalum First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	A comprehensive collision risk assessment should have been conducted for large cetacean species in the LAA and for various types of project-related vessels. The collision risk assessment should be based on transit routes, vessel speeds, ability of vessels and marine mammals to take effective evasive action to avoid collisions, and accurate estimation of the distribution of species' relative densities. All collision risk assessments should have been presented as part of the Application and appropriately documented with uncertainties and limitations of the analyses clearly stated so that collision risk to marine mammals during all seasons is well understood. If the collision risk assessment indicates a non-zero probability of collision with any large cetacean species in the LAA, then further work would be required to determine what the likely annual incident of collisions would be and if they may detrimentally affect population viability (e.g., species listed under SARA). In addition, results of the collision risk assessment would need to be evaluated in light of adding to or modifying necessary mitigation measures. Of particular concern is the potential population level effect of mortality from ship strikes on the Northern Resident killer whale due to this population's low abundance (Williams and O'Hara 2009). It is difficult to assess the actual potential impacts of vessel collisions to marine mammals in the LAA based on the information provided in the Application, particularly due to the inadequate baseline information regarding seasonal distribution and relative abundance in the LAA, and the lack of detail regarding mitigation measures to prevent ship strikes with marine mammals.	As strike risk increases in higher density traffic areas, the likelihood of residual cumulative effects for change in mortality risk to marine mammals is considered high. In the event of an accidental vessel strike, effects on the marine mammal involved are assumed to be permanent and irreversible, and would be of heightened concern for SARA-listed species. Based on current marine mammal population sizes and trends for species known to occur in the RAA, changes in mortality risk are considered unlikely to affect population viability, and as noted in the Application, are therefore expected to be not significant. Quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result, and as noted in the IR, a qualitative analysis was completed, with a moderate level of prediction confidence. This approach is consistent with the approach taken for the recently approved Pacific NorthWest (PNW) LNG project, that will occur in the same region of BC. The analysis conducted for Transmountain Pipeline Expansion Project provided estimates of potential vessel-whale encounter risk. This analysis did not extend to vessel-whale strike risk due to limited data available on species-specific responses (e.g., whether the animal dives or turns) to vessel approach. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.
1420.1	round 1	Kitsumkalum First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	Measures to be taken by a vessel to avoid a marine mammal collision have only been specified in vague terms (see Table 4.10-10), and there is not any assessment of the effectiveness of these measures on actually avoiding a collision with transiting marine mammals or an aggregation of feeding marine mammals. No analysis has been presented in the Application regarding stoppage time and stopping distance for a vessel to avoid a marine mammal collision or to determine if this is even possible given a reasonable detection range of a marine mammal from a vessel. There is also no analysis of the feasibility of making route adjustments to avoid a marine mammal.	Project-related vessels will proceed at a safe speed and respect any regionally-defined or PRPA-specific speed profiles that are applicable at the time of operations, subject to navigational safety. The intent of the educational material proposed in Table 4.10-10 is to raise awareness of potential marine mammal presence in the area. Decisions regarding the need for, and feasibility of, undertaking measures such as route or speed alterations upon sighting and approach of a marine mammal(s) rest entirely with the shipmaster and pilot after taking into account navigational and human safety. Educational materials will also detail the reporting protocols in the event of an accidental strike. The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) process, conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects and feedback through engagement with PRPA, DFO, Aboriginal Groups, and others. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
1421.1	round 1	Kitsumkalum First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	According to the Application, "….ship strikes are more likely to occur when ships are over 80 m in length and travelling at 14 kts or faster (Laist et al. 2001; Panigada et al. 2006). Potential for change in mortality risk is therefore considered greatest during transit operations (relative to other Project phases and vessel types)…". Nonetheless, the Application states that LNG carriers may travel at speeds of up to 16 kts; no vessel speed restrictions have been proposed. The Application only states that "Project-related vessels will proceed at a safe speed", but "safe speed" is not defined. To reduce the risk of ship strikes which have been assessed to be of moderate magnitude and medium likelihood during operations, LNG carriers should not travel >14 kts within the RAA.	The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL), conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects, and feedback through engagement with PRPA, DFO, Aboriginal Groups, and others. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
1422.1	round 1	Kitsumkalum First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	The mitigation measures for reducing ship strike are outlined as "Aurora LNG will develop educational material that will be distributed to Project-related vessel operators, tug operators, and pilots to inform them of the species of marine mammals in the area, their conservation status, the risk of ship strikes and what mariners can do to help reduce those risks (e.g., reporting the sightings to other mariners, reducing speeds). Educational material will also detail reporting protocols in the event of an accidental strike." However, the Proponent then goes on to say that "Education does not guarantee that vessel operators will take heed of the information provided." Further information is required to gauge the adequacy of this mitigation measure. For example, the level of effort used to detect marine mammals, equipment used to enhance detection, protocols for translating sightings into mitigation action by the ship's captain, data recording, analysis, and reporting-out on the results of monitoring and the efficacy of protocols for avoiding marine mammal collisions.	Project-related vessels will proceed at a safe speed and respect any regionally-defined or PRPA-specific speed profiles that are applicable at the time of operations, subject to navigational safety. The intent of the educational material proposed in Table 4.10-10 is to raise awareness of potential marine mammal presence in the area. Decisions regarding the need for, and feasibility of, undertaking measures such as route or speed alterations upon sighting and approach of a marine mammal(s) rest entirely with the shipmaster and pilot after taking into account navigational and human safety. Educational materials will also detail the reporting protocols in the event of an accidental strike. The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) process, conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects and feedback through engagement with PRPA, DFO, Aboriginal Groups, and others. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
1423.1	round 1	Kitsumkalum First Nation	4.10.9	Marine Wildlife - Marine Mammals	The Proponent should consider a follow-up program to monitor underwater noise effects on marine mammals as a result of increased shipping as the magnitude of the residual effects are deemed to be moderate and the likelihood is deemed to be high. In addition, follow-up monitoring for harbour porpoise should occur, as the Application found a Significant effect on the change in behaviour of harbour porpoise. Monitoring would help discern what the actual changes in behaviour are and to what extent they are Significant.	Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe best management practices and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.
1424.1	round 1	Kitsumkalum First Nation	Appendix N: 3.1.3.1	Marine Wildlife - Marine Mammals	The Appendix notes that "There have been a few rare sightings of California sea lions (*Zalophus californianus*), and northern elephant seals (*Mirounga angustirostris*) (Ford 2014). This statement is not supported by the reference. According to Ford (2014), northern elephant seals are not considered rare in northern BC; there is not enough information for this claim for the RAA. In fact, Ford (2014) report a winter haul-out for California sea lions within the RAA near Digby Island. Thus, the statement is incorrect and this species should have been included in the Application in Table 4.10-5 under 4.10.3.2.	As noted in Appendix N of the Application, Table 7 presents the 12 marine mammal species (or ecotypes) that are considered to regularly occur in the RAA. The Application further notes that many species of marine mammal are migratory and/or wide-ranging, and the inclusion of a marine mammal in Table 4.10-5 is meant to qualitatively reflect the standard distribution of these species. Specific occurrence of a particular species within the RAA at any given time fluctuates, and is therefore uncertain. As explained in the footnotes to Table 4.10-5, other species, not included in this table, may also be infrequently sighted within the RAA. As noted in the IR, Ford (2014) identifies a California sea lion winter haulout near Digby Island. However, he recognizes that this species is predominantly observed in the Strait of Georgia and along the west coast of Vancouver Island, and is only observed near Haida Gwaii and on the central mainland coast in some years. Ford (2014) also reports that breeding occurs off southern California and Baja California, Mexico and only males are expected to migrate through BC waters in the fall and spring. As a result, it is not anticipated that California sea lions will occur regularly within the RAA. Ford (2014) does not show elephant seal sightings within the RAA and reports they may occur along the northern BC coast. Sightings of elephant seals are typically of individual animals. Although it is possible they may be observed within the RAA, it is anticipated sightings would be infrequent.
1425.1	round 1	Kitsumkalum First Nation	Appendix N: 3.1.3.1	Marine Wildlife - Marine Mammals	Northern fur seals (*Callorhinus ursinus*) are not mentioned in the Application but it is possible that they could occur in the RAA.	Many species of marine mammal are migratory and/or wide-ranging, and the inclusion of a marine mammal in Table 4.10-5 (of the Application) is meant to qualitatively reflect the standard distribution of these species. Specific occurrence of a particular species within the RAA at any given time fluctuates, and is therefore uncertain. Other species, not included in Table 4.10-5 , may also be infrequently sighted within the RAA. Northern fur seals are more typically observed over the continental shelf (Ford 2014) than within the RAA.
1426.1	round 1	Kitsumkalum First Nation	Appendix N: 4.4.1	Marine Wildlife - Marine Mammals	It is reported that "Humpback whale sighting numbers were the lowest in the spring and early-summer survey periods." No attempt is made to explain why the survey found lower numbers of humpbacks during the summer than the rest of the year. It is noted that PNW also found lower numbers during summer. However, these findings are in contrast to Ford (2014) that humpbacks are most numerous from April through November. Additionally, according to Appendix O, the number of detection days in 2014 with humpback whale calls peaked from mid-July to late October.	Ford (2014) reports that humpback whales are observed year-round in BC waters, and as noted in the IR, are most abundant in BC waters from April to November. Substantial changes in humpback whale distribution and abundance within the feeding season and inter-annually are also noted (Ford 2014). The Aurora marine mammal surveys covered the RAA (Chatham Sound) and as a result, only provide information on marine mammal presence within the RAA. As the data collected are not reflective of humpback whale abundance "in BC waters", humpback whale sighting information does not contradict Ford (2014). Ford et al. 2010 reported that winter sightings of humpback whales, observed during surveys conducted by DFO, were noted to occur particularly in Chatham Sound and off northern Haida Gwaii. As noted in Appendix O, acoustic data were collected between July and October/November 2014, not during the winter months. It should also be noted that an absence of marine mammal calls does not reflect an absence of the species. Ford, J.K.B., Abernethy, R.M., Phillips, A.V., Calambokidis, J., Ellis, G.M., and Nichol, L.M. 2010. Distribution and relative abundance of cetaceans in western Canadian waters from ship surveys, 2002-2008. Can. Tech. Rep. Fish. Aquat. Sci. 2913: v + 51 p.
1427.1	round 1	Kitsumkalum First Nation	Appendix O: 1.2	Marine Wildlife - Marine Mammals	No explanation is provided as to why acoustic monitoring was not done year-round – monitoring only took place during July to October/November 2014.	While the data collected during the acoustic monitoring program (Appendix O) was analyzed for marine mammal vocalizations, detection of marine mammals was not the primary objective of this program. The primary objective of the acoustic monitoring program was to document the baseline noise conditions near the proposed Project site so as to provide a statistical noise distribution of the pre-Project development conditions. The timing and duration of the program were therefore developed primarily in consideration of the desire to characterize the existing ambient sound levels and existing vessel traffic, both of which are adequately captured in the selected 3.5 month period that spans periods of lower and higher expected vessel traffic in the region.
1428.1	round 1	Kitsumkalum First Nation	Appendix O: 3.3	Marine Wildlife - Marine Mammals	The acoustic data were not analyzed for minke whale or Steller sea lion vocalizations, but no explanation is given as to why. Also, no explanation is provided why the acoustic monitoring was not done year-round – monitoring only took place during July to October/November 2014.	While the data collected during the acoustic monitoring program (Appendix O) was analyzed for marine mammal vocalizations, detection of marine mammals was not the primary objective of this program. The primary objective of the acoustic monitoring program was to document the baseline noise conditions near the proposed Project site so as to provide a statistical noise distribution of the pre-Project development conditions. The timing and duration of the program were therefore developed primarily in consideration of the desire to characterize the existing ambient sound levels and existing vessel traffic, both of which are adequately captured in the selected 3.5 month period that spans periods of lower and higher expected vessel traffic in the region.

1429.1	round 1	Kitsumkalum First Nation	4.1 (Appendix P)	Marine Wildlife - Marine Mammals	It is unclear how the proponent will be able to monitor for harbour porpoise the area at the limit of behavioural thresholds (160 dB 1uPa) given the distance of esonified area (above threshold), especially at the berth area during construction activities. Even if activities are conducted during daylight hours any sea state above Beaufort 2 will make it very difficult to observe harbour porpoise on the water at any distance, and given their general lack of vocalization hydro acoustic monitoring is also less affective. residual effects are characterized as significant, but as we know this does not halt the approval of a project EA certificate so how are we to ensure this listed species population is to remain sustainable in the region?	The mitigation measures proposed are consistent with recovery strategies and action plans, where such documents exist. The suite of mitigation measures proposed are expected to be effective at achieving their primary objectives (i.e., to reduce potential for changes in health and behaviour during in-water blasting; to reduce potential for changes in health and behaviour during impact pile driving; and to reduce potential changes in marine mammal mortality risk from increased risk of vessel strikes). A meeting was held with DFO on April 25, 2017 to discuss the Application and proposed mitigation measures to reduce the potential residual effects on marine mammals as a result of construction activities. Aurora LNG will explore further mitigation measures (e.g., double bubble curtain, hydrosound dampener) to reduce the extent of underwater noise that exceeds the NOAA interim behavioural threshold for impulsive noise (160 dB re 1 µPa SPLrms) as a result of impact pile driving. As noted in the Application, impact pile driving will occur during daylight hours, and an underwater noise field verification program will be conducted to verify predicted sound pressure levels and the size of the exclusion zone.As part of the Marine and Freshwater Resources Management Plan a monitoring program will be developed and implemented to enforce and effectively monitor the applicable exclusion zone during in-water impact pile driving. Aurora LNG would welcome specific feedback regarding the proposed mitigation measures, including suggested revisions to the currently proposed mitigation measures, from Kitsumkalum First Nation.
1430.1	round 1	Kitsumkalum First Nation	4.11.3, Appendix Q	Marine Wildlife - Marine Birds	The Application, including the assessment of potential environmental effects on marine birds and the Marine Bird Technical Data Report (Appendix Q) does not provide a level of detail on marine bird population trends, threats, and Aboriginal reliance on the species group that is required to support the environmental assessment of a development project of this nature in the North Coast of British Columbia. The technical data report only provides a high-level overview of the marine bird ecology in the RAA and is deficient in the following areas: • The Proponent followed standardized protocols for the collection of marine bird data, but only report on species occurrence data. • The report authors make inferences between these data and species abundance and richness, without the support of statistical analysis and/or population models on relative abundance and/or densities. • The technical data report does not present information on the population status (e.g., stable, increasing, decreasing) of marine birds that occur in the LAA and RAA. • Specific data and information of the seasonal abundance (density or total number) of marine birds in the LAA and RAA is not provided. • An indication of habitat quality (either in a sense within the LAA/RAA or compared to other regions that are used to fulfill those same life-history requirements) for various life functions or marine bird species in the LAA and RAA is not provided.	Aurora LNG acknowledges this comment. Appendix Q of the Application provided a summary of the seasonal presence, abundance, richness, and distribution of marine birds from stationary shoreline count and vessel-based survey data completed for the Project. These were placed into context with presence, abundance, and richness information provided for other projects within the RAA. Please refer to Tables 1-2, and 1-3 for a detailed summary of the total number of marine birds observed during Project field studies. The technical data report (Appendix Q of the Application) specifically characterizes abundance (i.e., the total number of individuals observed), relative frequency of species detection (i.e., the percentage of total observations), and species richness (i.e. the number of species observed). For vessel-based surveys, the average number of species and individual birds per transect is also reported with a measure of error (i.e., standard deviation) to facilitate seasonal comparison of marine bird presence within the RAA. Characterization of residual effects to marine birds can be reasonably determined through the existing evaluation of Project specific and regional data in combination with information available in scientific literature and professional judgement and experience. To support the assessment of effects to marine birds, the current status of marine birds potentially occurring within the LAA and RAA was considered. The status of species of management concern was described in Table 2 of Appendix Q and Table 4.11-7 of the Application, and represents species that have shown either declining populations or trends in recovery but are currently not considered secure. Marine birds not listed in these tables are considered not at risk (i.e., have stable or increasing populations). A summary of traditional use of marine birds is provided in Section 4.11.3.2 of the Application. Aurora LNG was limited in drawing comparisons in marine bird habitat associations and their relative importance, with other regional datasets due to the methods used to collect or present those data (i.e., site specific habitat information was not collected or not presented). However, information on seasonal abundance, richness, and distribution of marine birds is still considered in combination with life history information on species and species groups, to provide context on the relative importance of marine habitats within the LAA for breeding, foraging, roosting, and staging activities compared to those available in the region.
1431.1	round 1	Kitsumkalum First Nation	4.11.2.4	Marine Wildlife - Marine Birds	The evaluation of potential effects is based primarily on a qualitative assessment. For the assessment of the change in marine bird habitat, the Proponent states that this was based on a quantitative measure, but this measure only documents the areal extent of the marine habitat that will be lost or altered by the construction of the project facilities. This effect does not account for the value that this habitat provides for the various life requisites of marine birds.	Section 4.11.5.2 of the Application provides a combined quantitative and qualitative discussion of the direct change in habitat for marine birds as a result of Project activities and infrastructure as well as indirect change resulting from sensory disturbance. A description of the habitats, the species (or species groups) expected to be affected by change in those habitats, and their value to support foraging, staging, roosting, or breeding activities is described in 'Project Mechanisms for Change in Habitat' therein. A more detailed discussion of species presence and use of habitats within the PDA and LAA is found in Appendix Q and summarized in Section 4.11.3.
1432.1	round 1	Kitsumkalum First Nation	4.11.5.2	Marine Wildlife - Marine Birds	While the Proponent has quantified the amount of habitat impacted, the Application makes weak inferences regarding the importance of this habitat to marine birds. Habitat associations are not specifically addressed in the Project-specific field surveys.	Marine habitat associations for individual species, or species groups, are described in detail in Appendix Q. Species observed to be associated with nearshore marine habitats within the LAA during Project field studies are described in Sections 4.1.3 and 4.2.3 of Appendix Q. Section 4.2.3 of Appendix Q provides additional information on species observations and associations on farshore marine habitats. Tables 2-1 and Table 3-1 of Appendix Q provide a break down of detection for individual species, across habitat types sampled during Project field studies. Species' habitat associations were used in Section 4.11.5.2 to characterize effects of change in habitat from construction and operation of marine infrastructure (e.g., foraging and roosting opportunities).
1433.1	round 1	Kitsumkalum First Nation	4.11.5.2	Marine Wildlife - Marine Birds	The Proponent stated that results from the Project-specific field surveys showed that marine bird abundance was highest at the mouth of Delusion Bay, which is directly adjacent to the project development area (footprint), but it has not characterized the importance of the habitat in Delusion Bay for marine birds. The Proponent also makes inferences that the results of the field studies are consistent with existing regional data, with specific regard to marine bird abundance, and not habitat associations. While sources are identified in the literature review section of the Marine Bird Technical Data Report (Table 1 in Appendix Q), the specific references that describe known marine bird abundance in the area are not cited.	Section 4.11.3 of the Application provides a description of the findings, indicating that bird abundance and richness was generally similar across points (with exceptions to stations reporting higher numbers of individuals and species described therein). Table 2-1 of Appendix Q of the Application provides a summary of individual species reported at each shoreline stationary count. Compared to other locations, counts completed in Delusion Bay (i.e., MBDI09 and MBDI10) recorded fewer individual birds and species but nonetheless indicate that habitats at those locations support use by shorebirds, ducks, grebes, loons, gulls, corvids, and eagles (for example). Aurora LNG was limited in drawing comparisons in marine bird habitat associations with other regional datasets due to the methods in which some of those regional records were collected and presented in publicly-available reports (i.e., not all include site-specific information to draw habitat associations). However, information on seasonal abundance, richness, and distribution is still valuable in combination with life history information on species and species groups, to provide context on the importance of marine habitats within the LAA relative to those available in the region. Table 1-1 of Appendix Q of the Application provided a detailed summary of historical marine bird occurrence records within the RAA by species and dataset. Citations for each data source were provided as footnotes to the table and correspond to citations provided in Section 6 of Appendix Q (Literature Review).
1434.1	round 1	Kitsumkalum First Nation	4.11.5.2	Marine Wildlife - Marine Birds	On page 4.11-27, it is stated that "Given that most marine birds present in the LAA and RAA have secure populations (no reference provided) and have access to other suitable marine habitats, marine birds are expected to demonstrate a moderate degree of resilience to change in habitat availability as a result of the Project." In making this determination, the Proponent has not provided evidence that "most marine bird populations" are secure, nor has it provided information to describe suitable marine bird habitats in the region.	Section 4.11.3 and Appendix Q of the Application outline the methods and findings for characterizing existing conditions for marine birds. Both parts of the Application considered whether marine birds had secure populations by providing a review of their conservation status. Species of management concern include species known to, or with potential to, occur within the RAA that are considered of interest from a conservation perspective (i.e., federal or provincial species or subspecies at risk). Information on species of management concern, including occurrence records, species accounts, management plans, or other guidance documents, was compiled from the BC CDC (BC CDC 2017) and the Species at Risk Public Registry (Environment Canada 2016) and are referenced in the Application. The remaining marine bird species are considered to have secure federal or provincial conservation status (i.e., are designated Not at Risk or on the BC Yellow List). Marine habitat associations for individual species, or species groups, are described in detail in Appendix Q of the Application. Species observed to be associated with nearshore marine habitats within the LAA during Project field studies are described i Sections 4.1.3 and 4.2.3 of Appendix Q. Section 4.2.3 ofAppendix Q provides additional information on species observations and associations on farshore marine habitats. Tables 2-1 and Table 3-1 of Appendix Q provide a break down of detections for individual species, across habitat types sampled during Project field studies. Information on species presence, richness, abundance, and distribution was used to inform the assessment and characterization of potential Project effects. References: British Columbia Conservation Data Center (BC CDC). 2017. BC Species and Ecosystems Explorer. BC Ministry of Environment, Victoria, BC. Available: http://a100.gov.bc.ca/pub/eswp/. Accessed: March 2017. Government of Canada (GOC). 2017. Species at Risk Registry. Available at: https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1. Accessed: March 2017.
1435.1	round 1	Kitsumkalum First Nation	4.11.5.2	Marine Wildlife - Marine Birds	The Proponent states that the primary mitigation for the loss and alteration of marine bird habitats is the Conceptual Fish Habitat Offsetting Plan that is aimed to offset the loss of marine communities and species. As its name implies, this plan is conceptual and will need approval by Fisheries and Oceans Canada. Regardless, the Application has not provided a comparison of the habitat the Proponent proposes to construct to the types and quantities of habitat that will be lost or altered.	The conceptual fish habitat offsetting plan provides information on the types and quantities of habitats expected to be destroyed or altered that would ultimately lead to serious harm to fish (Section 9, Appendix V). The type, quantity, and location of habitat affected is explicitly considered in the design of habitat offsetting along with the ecological roles of those habitats, within that specific environmental context. This includes the ecological value those habitats have for supporting marine bird life history requirements (e.g., foraging). Offsets will be designed to counterbalance resulting serious harm to fish, in keeping with DFO's guidelines (DFO 2013). Key aspects of DFO's guidelines include a principle of offsetting Project impacts by selecting in-kind offsets over out-of-kind offsets where appropriate (see Section 10.4 and 10.5 of Appendix V). In accordance with DFO's guidance (DFO 2013), in-kind offsets are intended to replace the same quantity and quality of habitat that is being destroyed or altered as a result of the Project. The conceptual plan provides preliminary concepts for the types of offsets that Aurora LNG anticipates creating and the methodology used to design offsets and calculate offsetting quantities. Reference: Fisheries and Oceans Canada (DFO). 2013. Fisheries Productivity Investment Policy: A Proponent's Guide to Offsetting. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/offsetting-guidecompensation/index-eng.html. Accessed: March 2017.
1436.1	round 1	Kitsumkalum First Nation	4.11.5.2	Marine Wildlife - Marine Birds	The Proponent makes the over simplistic assumption that marine birds will use this new habitat without providing any evidence to support this case. In this regard, no discussion was provided to quantify the abundance of marine birds in the habitat that will be lost or the expected timeframe (e.g., short-term or long-term) for both creating this habitat and ensuring that it becomes a functional habitat for marine birds.	Marine bird shoreline stationary counts were located in areas of the LAA adjacent to proposed Project infrastructure (e.g., the MOF, marine terminal, trestle and berths) to characterize seasonal abundance, richness, habitat associations. A detailed summary was provided in Appendix Q of the Application. The conceptual fish habitat offsetting plan provides information on the types and quantities of marine habitats expected to be destroyed or altered as a result of Project activities and infrastructure (Section 9, Appendix V of the Application). The type, quantity, and location of habitat affected is explicitly considered in the design of habitat offsetting along with the ecological roles of those habitats, within that specific environmental context. Offsets will be designed in keeping with DFO's guidelines by selecting in-kind offsets over out-of-kind offsets where appropriate (see Section 10.4 and 10.5 of Appendix V; DFO 2013). In-kind offsets are intended to replace the same quantity and quality of habitat that is being destroyed or altered as a result of the Project. In turn, in-kind offsets will provide replacement habitat for fish communities as a mechanism to counterbalance serious harm to fisheries affected by the Project. Because in-kind offsets will be developed to replace the quantity, quality, and function of fish habitat removed or altered by the Project, they are expected to provide similar compensatory marine bird habitat (inclusive of habitat types and the marine prey species they support). Once built, the effectiveness of the offsets will be monitored to confirm they are performing as designed.
1437.1	round 1	Kitsumkalum First Nation	4.11.5.3	Marine Wildlife - Marine Birds	The Proponent has stated it will increase employee awareness regarding the potential for mortality and/or injury to marine birds caused by lit infrastructure and that some staff will be provided information on how to handle and release birds that are grounded. These measures are typically more challenging to implement unless standards are in place and key staff (e.g., environmental monitors) are specifically trained to take on the responsibility for dealing with birds that are found on site. It is also challenging to ensure that all project staff are reporting occurrences of marine birds. However, the chances of this can be improved when strong policies are in place and enforced by the company.	Aurora LNG is committed to monitoring potential effects of the Project on bird and bat mortality, and promoting an environment of awareness and compliance among Project personnel. To facilitate compliance with Project mitigation measures, educational materials provided to employees and contractors will include information on procedures for documenting and reporting bird injury or mortality, and handling and release of stranded birds. The on-site Environmental Monitor or Monitors will be responsible for providing access to educational materials, training and advising staff, maintaining an accurate record of injury and mortality events, and communicating this record to applicable regulatory authorities at a prescribed interval. Complete details will be outlined in the Wildlife Management Plan.
1438.1	round 1	Kitsumkalum First Nation	4.11.5.4	Marine Wildlife - Marine Birds	The Proponent provided an overly simplified conclusion that marine birds observed near the marine terminal and MOF have been observed to use shoreline or nearshore habitats throughout the LAA and are expected to move to other similarly suitable habitats present in the LAA or RAA during Project construction. The Proponent provides no details as to why or when marine birds are using habitats throughout the LAA and RAA. There can be an energetic cost associated with marine bird avoidance of Project activities, or displacement from preferred habitats, but the Proponent has not provide a measurement or details on these energetic costs in the effects assessment.	A discussion of marine bird abundance, richness, and seasonal distribution, and use (e.g., foraging, staging, roosting) is found in several locations in the Application, including Appendix Q, Section 4.11.3, and Section 4.11.5.2. The determination that marine birds observed using habitats near the marine terminal and MOF have been observed to use shoreline and nearshore habitats throughout the LAA and are expected to move to similarly suitable habitats is supported by Project and regional data, literature, and professional judgement from prior experience. These materials provide information on the overall distribution and use of habitats within the LAA. Section 4.11.5.4 provides reference to supporting information in Appendix Q. The energetic cost associated with marine bird avoidance or displacement due to Project activities was assessed in Section 4.11.5.4. As indicated therein with reference to supporting literature, behavioural responses are known to be species-specific. Although flushing distances have been measured for some species under specific conditions (e.g., marbled murrelet response to high-speed recreational vessel traffic), the energetic expenditures associated with those movements are not widely available, nor are they easily placed into appropriate context with the nature of Project-specific disturbance effects. In absence of detailed information, a qualitative approach was used to evaluate change in behaviour (including the energetic cost of avoidance or displacement). See Sections 4.11.5.1 and 4.11.5.4 for further details.
1439.1	round 1	Kitsumkalum First Nation	Table 6.6-2	Community Health	While the Summary of Key Information and Concerns that influenced the Scope of the Assessment included "Vulnerable Populations" and "Changes in social environments (e.g. increased crime, drug activity, homelessness)" the measureable parameters in Table 6.6-2 excludes housing affordability, increased homelessness and for those parameters that were identified, are proposed to be qualitative. Surveys can be conducted to provide quantitative information similar to the surveys conducted by Kitsumkalum in 2016 and it is therefore recommended survey monitoring be implemented for Kitsumkalum as the project develops to assess how well people are coping with the boom and bust and implement adaptive management measures if needed.	Baseline information provided in Section 6.3.3 of the Application was informed through the review of publicly available information as well as through key informant interviews conducted in the LAA and RAA. Section 13.5 provides consideration of concerns and issues not addressed in Part B of the Application. In particular, Section 13.5.3 addresses private property values and Section 13.5.4 addresses cost of living. With respect to monitoring, mitigation 6.3.1 (Social Management Plan) integrates an adaptive management framework and will be used to monitor the effectiveness of mitigation measures proposed in Section 6.3 of the Application. Aurora LNG's framework for adaptive management is as follows: the social management plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
1440.1	round 1	Kitsumkalum First Nation	5.1	Economic Conditions	Terrace and Kitsumkalum IR1 are not identified as being economically affected by the project. This is incorrect since people from all over the region will be drawn to the jobs offered by Aurora LNG and there is therefore the potential to affect the viability of businesses who currently rely on workers. In addition, because the region will be impacted from many of the VCs and specifically KKN, the expectation is that benefits in terms of employment and contracting will be made available to those living in the region not only in the LAA.	The LAA, which encompasses communities that have the greatest potential to experience adverse economic Project effects was established within the AIR. With respect to potential changes in labour supply and demand and potential changes in commercial businesses affected by Project spending, the LAA encompasses Prince Rupert and nearby communities (see Table 5.2-3 of the Application). Aurora LNG acknowledges that some workers may be drawn from outside of the LAA (i.e. from the RAA). In Section 5.2, baseline information for both LAA communities, as well as the RAA in total is provided. Where applicable, the analysis of effects is also extended to the RAA - see "Characterization of Residual Effects for Change in Labour Supply and Demand" on pp 5.2-61 - 5.2-66, and "Characterization of Residual Effects for Change in Activities for Commercial Businesses Affected by Project Spending" on pp. 5.2-71 to 5.2-75. As indicated in Table 5.2-41, project residual effects on economic conditions are anticipated to extend to the RAA. Project benefits, including employment and business opportunities are estimated on the basis of RAA communities.
1441.1	round 1	Kitsumkalum First Nation	Table 5.2-2	Economic Conditions	Please define local e.g. have lived in Prince Rupert for three years, have an address, etc.?. Labour will come from Terrace as well since the drive is only 1.5 hrs. and many KKN members have relatives in Prince Rupert.	In the context of the Table 5.2-2 in the Application, the adjective "local" means labour from within the LAA. However, it is anticipated that the Project will also hire labour from Terrace, and other RAA communities, as well as from communities elsewhere in BC.

1442.1	round 1	Kitsumkalum First Nation	Table 5.2-3	Economic Conditions	According to the Investment Ready Community Profile created by the City of Terrace (2015), Terrace is the service hub of the northwest region, with 46% of employment working in the service sector, compared to 37% regionally (City of Terrace, 2015). These means many services and supplies will be sourced from Terrace in addition to labour however Terrace is not included within the LAA economic boundary even though the "LAA encompasses the communities that are most likely to be called upon to provide labour, goods, and services required for the Project construction and operations".	The LAA, which encompasses communities that have the greatest potential to experience adverse economic Project effects was established within the AIR. With respect to potential changes in labour supply and demand and potential changes in commercial businesses affected by Project spending, the LAA encompasses Prince Rupert and nearby communities (see Table 5.2-3 of the Application). Aurora LNG acknowledges that some workers may be drawn from outside of the LAA (i.e. from the RAA). In Section 5.2, baseline information for both LAA communities, as well as the RAA in total is provided. Where applicable, the analysis of effects is also extended to the RAA - see "Characterization of Residual Effects for Change in Labour Supply and Demand" on pp 5.2-61 - 5.2-66, and "Characterization of Residual Effects for Change in Activities for Commercial Businesses Affected by Project Spending" on pp. 5.2-71 to 5.2-75. As indicated in Table 5.2-41, project residual effects on economic conditions are anticipated to extend to the RAA. Project benefits, including employment and business opportunities are estimated on the basis of RAA communities.
1443.1	round 1	Kitsumkalum First Nation	Section 5.2.2.8	Economic Conditions	Significance Thresholds for Residual Effects. The definition does not provide a threshold, i.e. distinguishable is not defined - what is distinguishable? How much (quantity or quality) of a change in economic condition does there need to be so that one can say it is distinguishable? One business closing its doors because it can't keep employees - is that distinguishable?	Absent any well established quantitative thresholds for determining a "significant economic effect", Aurora LNG is using an "expression of condition" approach to qualitatively define a threshold. "Distinguishable" in the context of the economic significance threshold definition, means distinct from current conditions or trends. In other words, the condition can be reasonably attributed to the Aurora LNG project rather than due to other economic factors, such as seasonal variations or structural changes affecting the economy (including such factors as in-migration, out-migration, closure and opening of other businesses and projects). It is difficult to apply a numerical threshold to socio-economic effects that would be representative and reasonably accepted. For some, no amount of adverse economic change is acceptable, regardless of whether the local economy as a whole may benefit. Therefore, we are using a definition that allows us to first characterize the predicted effects post mitigation, and based on this characterization determine if the above significance threshold has been "passed". If it is clearly evident that there wil be material un-mitigable residual adverse economic effects attributable to the Project, then it could reasonably be considered significant. However, this conclusion will need to be made with appropriate consideration of the local economic context. For example, businesses may be both positively affected (through increased commercial activity) and adversely affected (through higher labour costs) by the presence of the Project.
1444.1	round 1	Kitsumkalum First Nation	Page 5.2-37	Economic Conditions	Kitsumkalum education and training section. All references to the survey data collected in 2016 is incorrect - Kitsumkalum 2016 is the correct reference. Crossroads did not conduct the survey or report on the information as identified in the Kitsumkalum and Crossroads 2016 report .	It is not stated in the section on Kitsumkalum First Nation, Education and Training on page 5.2-36 of the Application that Crossroads conducted the survey, but rather that a survey was conducted. The report Kitsumkalum Traditional Use Study and Socio-economic Impact Assessment, Aurora Liquefied Natural Gas Project identifies that it was prepared by both Kitsumkalum First Nation and Crossroads Cultural Resource Management Ltd., and a full citation to this effect is provided on page 5.2-36, as well as in the references at the end of Section 5.2 of the Application. The use of "Crossroads 2016" as a short-hand for the full citation - as indicated on page 5.2-36 - was not intended to imply sole authorship by Crossroads. To avoid potential misinterpretation of this shorthand citation an errata will be be provided to clarify that "Crossroads 2016" means "Kitsumkalum and Crossroads 2016." An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1445.1	round 1	Kitsumkalum First Nation	Section 5.2.5.1	Economic Conditions	Analytical Assessment Techniques. Terrace and Kitsumkalum IR1 have been excluded from this assessment in the change in labour supply and demand despite the recognition the region will be economically affected by the project.	Section 5.2.5.1 assesses residual effects change in labour supply and demand at the LAA spatial level. The LAA, which encompasses communities that have the greatest potential to experience adverse economic Project effects was established within the AIR. With respect to potential changes in labour supply and demand, the LAA encompasses Prince Rupert and nearby communities (see Table 5.2-3 of the Application). Aurora LNG acknowledges that some workers may be drawn from outside of the LAA (i.e. from the RAA). In Section 5.2, baseline information for both LAA communities, as well as the RAA in total is provided. Where applicable, the analysis of effects is also extended to the RAA - see "Characterization of Residual Effects for Change in Labour Supply and Demand" on pp 5.2-61 - 5.2-66. As indicated in Table 5.2-41, project residual effects on economic conditions are anticipated to extend to the RAA.
1446.1	round 1	Kitsumkalum First Nation	Table 5.2-34	Economic Conditions	Developing work packages that consider capacity of local and regional businesses and facilitating local content is helpful to assist local and regional people in benefiting from the development, however, these benefits are short term during construction only. Effectiveness timing therefore should be characterized as short term rather than short and long term. Beyond construction there is no evidence to show these benefits will last since unless there is another LNG project being constructed the work will be significantly reduced.	While the nature and magnitude of opportunities will differ, depending on Project phase, Aurora LNG intends to apply this mitigation across all Project phases. Table 5.2-39 provides an estimate of annual procurement from suppliers in Northwest British Columbia during the operations phase.
1447.1	round 1	Kitsumkalum First Nation	Table 5.2-34	Economic Conditions	No mitigation has been developed to address the transition to the bust from the boom. In addition, the boom-bust effects need to be incorporated in to the social effects section 6 as the literature shows many boom-bust effects as discussed in Kitsumkalum's comments on Infrastructure and Services Section of this EA.	The transition from construction to the operations phase of the project will result in changes in economic opportunities associated with the Project. This is discussed under the heading "Transition from Construction to Operation" on pp. 5.2-61 and pp. 5.2-62 of the Application. Because of the large amount of labour needed to construct the project, relative to the size of the local labour pool, the majority of construction workers will be recruited from outside of northwest BC. On an annualized basis, it is estimated that the Project will result in 395 direct, indirect, and induced jobs within the RAA (see Table 5.2-35). By comparison, the Project is expected to generate 795 direct, indirect, and inducedjobs within the RAA during operations (Table 5.2-36), of which it is expected that many will be filled by local residents. Because employment opportunities for local residents are predicted to be similar (or greater) during operations phase, the "boom-bust" model is not anticipated for the Project. Skills and qualifications required for many of the operations positions will differ from those needed during construction, and therefore an emphasis on training and education will enable those individuals seeking construction and/or operational positions to prepare for such work. Aurora LNG will support training initiatives for local and Aboriginal communities across construction and operations phases, as described in Mitigation 5.2.5.
1448.1	round 1	Kitsumkalum First Nation	Section 5.2.5.1	Economic Conditions	Direct Employment. Why is there a discussion on RAA and then it switches to LAA? Throughout this economic Section 5 there are several inconsistencies in data and predictions being discussed wit LAA and RAA.	The LAA, which encompasses communities that have the greatest potential to experience adverse economic Project effects was established within the AIR. With respect to potential changes in labour supply and demand and potential changes in commercial businesses affected by Project spending, the LAA encompasses Prince Rupert and nearby communities (see Table 5.2-3 of the Application). Aurora LNG acknowledges that some workers may be drawn from outside of the LAA (i.e. from the RAA). In Section 5.2, baseline information for both LAA communities, as well as the RAA in total is provided. Where applicable, the analysis of effects is also extended to the RAA - see "Characterization of Residual Effects for Change in Labour Supply and Demand" on pp 5.2-61 - 5.2-66, and "Characterization of Residual Effects for Change in Activities for Commercial Businesses Affected by Project Spending" on pp. 5.2-71 to 5.2-75. As indicated in Table 5.2-41, project residual effects on economic conditions are anticipated to extend to the RAA. Project benefits, including employment and business opportunities are estimated on the basis of RAA communities.
1449.1	round 1	Kitsumkalum First Nation	Section 5.2.5.1	Economic Conditions	Direct Employment. Kitsumkalum would like to know what the requirements are to qualify for trades jobs. For example, can an Apprentice access employment or does someone need to have a Red Seal Certificate? Does a trades person need a minimum number of years of experience?	Aurora LNG will initiate its detailed design process following a Project approval from both BC and CEAA. Aurora LNG expects to determine its required skill sets and trades for both construction and operations during the detailed design process. At this time, it is expected that apprentices will be able to access Project employment and every effort will be made to ensure that individuals that are mid-way through their apprenticeship would have the opportunity to complete it with the Project. Apprentices that have completed their training and become certified journey persons would have access to employment. Journey persons that have the Red Seal endorsement on their provincial or territorial certificates of Qualification and Apprenticeship would have access to employment. Aurora LNG will continue to consult with Aboriginal Groups and local communities on employment opportunities as the Project progresses.
1450.1	round 1	Kitsumkalum First Nation	Section 5.2.5.1	Economic Conditions	Indirect and Induced Employment. The numbers of indirect and induced annual jobs during construction seem to be very low given the capital cost of the project is $23B even though LNG projects are capital intensive. More detailed information is needed to show how these numbers are developed. Why is the calculated direct jobs based on the availability of LAA people only? Estimating the number of jobs created by the development is extremely important when predicting population increases. Kitsumkalum would like more information on indirect and induced employment.	The magnitude of direct, indirect, and induced employment jobs was estimated using the following method: 1. Direct employment was based on an estimated 5% of the Project's 5,000 person construction workforce hired locally. 2. Indirect and induced employment were based on the construction employment multipliers for Prince Rupert contained within tables 3.1 and 3.3 of the document: British Columbia Local Area Economic Dependencies: 2006 (Horne 2009). To add conservatism to the analysis, the results of calculations were rounded up, and in the case of induced economic effects, it was assumed that the "no safety net" scenario applies (which results in a higher degree of induced effect than otherwise). Aurora LNG acknowledges that there is only a moderate degree of precision in these estimates. First, it is not known precisely how many local and regional residents will be employed during construction. Factors influencing this include the size of the available construction labour force and/or the willingness of individuals to take up Project construction positions. The local area multipliers from Horne (2009) likely only provide a rough approximation of indirect and induced effects because of differences between constructing the Aurora LNG plant and generally smaller construction projects upon which the multipliers are based. For example, with Aurora LNG most materials and components will be brought to the construction site from suppliers outside of the LAA, and the labour force will be required to live in the construction camp on Digby Island while on shift. For the above mentioned reasons, the direct, indirect, and induced employment estimates should be considered indicative rather than precise. The assessment of effects on employment focuses on effects on LAA communities for reasons discussed in response to Comment #1440.1 and Comment #1441.1. Because the LAA has a smaller labour force than the RAA, assuming that effects on employment will occur mainly in the LAA provides an element of conservatism in the assessment. In reality, Aurora LNG anticipates that individuals from other communities in the RAA, as well as elsewhere in BC would participate in Project construction.
1451.1	round 1	Kitsumkalum First Nation	Page 5.2-63	Economic Conditions	Tonts et al (2012) concludes the socioeconomic wellbeing and experience of resource communities varies based on regional characteristics, the type of resource and the community. Resource dependence is not the only factor - the type of commodity is important - Tonts et al explains that a community with gold is less stable than one with iron as gold mines can experience volatility whereas iron production is more stable. LNG is short term - we know there will be a closure at the end of construction - 5 to 8 yrs. Community remoteness, population size, percentage of indigenous peoples, unemployment rates and level of education all are factors that determine if a community is resilient to resource developments that include boom-bust dynamics. The authors also recognize the issue is complex and their study only looked at the time period when the 33 communities studied were in a boom phase. The information cited from the Tonts et al (2012) appears to be incorrect.	The provided reference to Tonts (2012) is incorrect. The correct citation is to the following report by Matthew Tonts: Tonts, Matthew. May 2010. Labour Market Dynamics in Resource Dependent Regions: An Examination of Western Australia. Geographic Research, 48(2), pp. 148-165. The correct citation will be included in an errata document that is being developed and will be filed with the BC EAO.
1452.1	round 1	Kitsumkalum First Nation	Section 5.2.5.1	Economic Conditions	Summary. Early on in this section it is stated the construction phase benefits will last 10 yrs. however in the Summary it is stated the short term construction phase is known and people will be able to transition to operations as the area is moderately resilient. Given the significant amount of literature on boom-bust dynamics, the resource curse, and the negative impacts to indigenous people in general worldwide, it is unclear how the lack of appropriate mitigation provided in this EA overall to ensure participation of regional indigenous people in the project so they can receive benefits and not be negatively effected as well as provide mitigation from the construction to the operations phase will most certainly result in vulnerable people being worse off as a result of the project. Kitsumkalum recommends additional mitigation measures be proposed to maximize socioeconomic benefits and minimize socioeconomic effects.	Aurora LNG maintains that the mitigation measures identified to support local and Aboriginal economic participation in the Project are appropriate. These include: Mitigation 5.2.1 - Inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases. Develop work packages that consider the capacity and capabilities of local and regional businesses. Mitigation 5.2.5 - Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation. Further, Aurora LNG has identified numerous mitigation measures for addressing adverse effects on infrastructure and services, land and resource use, marine navigation and use, visual quality, and community health. In addition, it is expected that the social management plan (Mitigation 6.3.1) will include an adaptive management framework. Aurora LNG's framework for adaptive management is as follows: management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Because there will be substantial local employment opportunities during Project operations as well as Project construction, Aurora LNG maintains that the Project can avoid a "boom and bust" phenomena.
1453.1	round 1	Kitsumkalum First Nation	general	Economic Conditions	Operations Direct Employment. What are the skills needed to operate the facility and where will the workers come from - what percentage will be from other parts of B.C., Canada and Internationally?	There are numerous jobs associated with an operating LNG plant, broadly divided into four employment areas: management, administration and other, operations, and technical services/other. Examples of LNG plant positions include: LNG technicians, pipeline operations technicians, gas control system operator, terminal operator, power engineer, power generation technician, process engineer, process control engineer, health and safety technician, maintenance coordinator, maintenance technicians, controller, human relations, plant manager. Each position requires specific skills, expertise, and experience. The majority of positions will require skills associated with plant operations and maintenance. Aurora LNG estimates that approximately 90% of its workforce will be Canadian residents, and the balance will be foreign and work on a FIFO basis. It is Aurora LNG's objective to operate the plant "locally" meaning that the majority of its operations staff will live near the plant. It is expected that the proportion of local residents working at the facility will grow over time, as "home grown" expertise in LNG plant operations is developed.
1454.1	round 1	Kitsumkalum First Nation	general	Economic Conditions	Indirect and Induced Employment during Operations. How were the indirect and induced job multipliers derived? Operations is 25 yrs. - why is there a closed camp for operations? Why would people not move to the area if they have an operations job?	The magnitude of indirect and induced employment jobs was estimated based on the estimated number of jobs for Canadian residents (540 out of 600 in total), multiplied by Prince Rupert employment ratios for Misc. Manufacturing contained in tables C.2.1, C.2.2, and C.2.3 of the document: British Columbia Local Area Economic Dependencies: 2006 (Horne 2009). Aurora LNG anticipates maintaining an operations work camp because at least during the early years of operations it is expected that a proportion of the operations work-force will be from outside of the RAA, and will work on a FIFO basis. The expectation is that over time most operations positions will be filled either by people that are residents of local communities or will have moved into the area to take up employment. However, the work camp will still be maintained to house crews for periodic maintenance turnarounds.
1455.1	round 1	Kitsumkalum First Nation	Section 5.2.5.1	Economic Conditions	Likelihood of Residual Effects. Change in labour supply and demand is identified as having moderate to high likelihood of adverse effects during decommissioning, however the construction workforce will peak at 5000 + indirect + induced jobs which will reduce to 600 at operations. The end of the construction phase will likely have more adverse effects than the loss of 600 jobs + indirect + induced. In addition, no specific mitigation has been provided to address these adverse effects.	Only a small proportion of the construction workforce is predicted to be hired locally (estimated at 5% of the peak workforce requirements of 5000). Because it is predicted that there will be more locally based labour associated with operations than with construction (compare tables 5.2-36 and 5.2-35) the transition from construction to operations is predicted to have only low to moderate effects overall.
1456.1	round 1	Kitsumkalum First Nation	Section 5.2.5.2	Economic Conditions	Page 5.2-68. The comment re operations spending by LNG workers conflicts with a previous statement that identifies the majority of operations workers coming from outside the region and to be housed in a closed camp.	The last paragraph on page 5.2-70 notes that "the majority of the workforce will be hired from outside the region" and refers to the construction workforce. Aurora LNG intends that the majority of the operations workforce will be comprised of individuals either hired from local communities or persons who have moved into the region with the Project. For both construction and operations phases, it is Aurora LNG's goal to maximize local/regional hiring.

1457.1	round 1	Kitsumkalum First Nation	Section 5.2.5.2	Economic Conditions	Residual effects Commercial Businesses Construction. There could be a stronger commitment to work with local and regional businesses so they can benefit during construction and transition to operations. There is a commitment to develop work packages specific to local and regional companies, however, how engagement with local and regional businesses will be carried out is not mentioned. How will the proponent manage its EPCM contractor and the subcontractors to ensure local content is included and facilitate long term benefits from the development?	Aurora LNG will initiate its detailed design process following a Project approval from both BC and CEAA. Aurora LNG expects to determine its required skill sets and trades during that process. As noted in mitigation 5.2.5, Aurora LNG will identify potential shortages of workers with the identified skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation. As noted in mitigation 5.2.2, Aurora LNG will provide information to employment agencies and economic development organizations to help them plan for increased demand for construction labour . As noted in mitigation 5.2.1, Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases. Aurora LNG will develop work packages that consider the capacity and capabilities of local and regional businesses. It is expected that notice of these opportunities may be through a combination of employment agencies, trade union offices, local, regional, and national newspapers, and the Aurora LNG website. Regarding EPCM contractors, it is expected that Aurora LNG will include specific local hiring criteria in the EPCM contract documents. The contractual criteria would also have requirements for the EPCM contractor to report back on extent of local hiring. The exact details will be developed during the Project design process.
1458.1	round 1	Kitsumkalum First Nation	Section 5.2.5.2	Economic Conditions	Again this section switches between opportunities offered to LAA and both LAA and RAA. For example transportation and logistics opportunities appears to be restricted to the LAA. Kitsumkalum have a rail line through their IR and would very much like to have the opportunity to provide transportation and logistics services for the development. Kitsumkalum will be impacted by the development and should have access to contracting and employment at all phases of the development. The EA is ambiguous in terms of what will be offered to who since Kitsumkalum are classified as within the RAA.	The LAA, which encompasses communities that have the greatest potential to experience adverse economic Project effects was established within the AIR. With respect to potential changes in labour supply and demand and potential changes in commercial businesses affected by Project spending, the LAA encompasses Prince Rupert and nearby communities (see Table 5.2-3 of the Application). Aurora LNG acknowledges that some workers may be drawn from outside of the LAA (i.e. from the RAA). In Section 5.2, baseline information for both LAA communities, as well as the RAA in total is provided. Where applicable, the analysis of effects is also extended to the RAA - see "Characterization of Residual Effects for Change in Labour Supply and Demand" on pp 5.2-61 - 5.2-66, and "Characterization of Residual Effects for Change in Activities for Commercial Businesses Affected by Project Spending" on pp. 5.2-71 to 5.2-75. As indicated in Table 5.2-41, project residual effects on economic conditions are anticipated to extend to the RAA. Project benefits, including employment and business opportunities are estimated on the basis of RAA communities. Information included in the assessment of economic effects is not intended to imply any restriction by Aurora LNG or its contractors in regards to where or with whom they will procure goods or services, or hire labour.
1459.1	round 1	Kitsumkalum First Nation	Table 5.2-38	Economic Conditions	Please add two other columns to this table - sourced outside NWBC but within B.C., sourced outside NWBC in Canada, and sourced internationally. It is unclear why so many goods and services are not sourced in B.C. or Canada. One example is camp services. - only 50% from NWBC?	See Section 1, Table 1-4 of the Application for an overview breakdown of spending in BC, Canada, and Internationally, and Table 1-5 for an itemized breakdown of spending within Canada. Aurora LNG anticipates that 70% of capital spending will occur overseas because the LNG plant will be pre-fabricated at overseas facilities and then shipped as modular units to the Project site on Digby Island for assembly. Aurora LNG estimates that there will be nearly $8.4 billion in purchasing from Canadian suppliers, including $3.3 billion in purchasing from B.C. suppliers. With respect to the camp, the estimate provided in Table 5.2-38 is inclusive of capital and operating costs. Aurora LNG anticipates that it will work with an existing large industrial camp provider to design and supply the camp, and Aurora LNG expects that large portions of the camp will be modular components that could be constructed at locations either inside or outside of BC depending on the supplier commercial arrangements.
1460.1	round 1	Kitsumkalum First Nation	Section 5.2.5.3	Economic Conditions	An important addition to Assumption 3 is many people rely on traditional foods to supplement their food purchases and for First Nations these foods are also important for good health.	Aurora LNG acknowledges this assumption, and will include it as an erratum. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1461.1	round 1	Kitsumkalum First Nation	Section 5.2.5.4	Economic Conditions	Regional Cumulative Effects for change in labour supply and demand. If multiple projects were constructed it is likely they would be staggered. According to a Mining Australia 2013 article (https://www.australianmining.com.au/oil-gas/what-it-takes-to-build-70-billion-worth-of-lng-plants-bechtel-construction-facts/) Bechtel was able to employ 4500 of 10,000 required construction workers from the Gladstone area for the 3 projects constructed on Curtis Island from 2010 to 2014. These projects had modules imported similar to what is proposed for LNG projects in Prince Rupert, however Aurora LNG is estimating only 5% of the workforce will come from the region - please explain. In addition, the article notes that the company is helping businesses who held contracts during construction to transition to post LNG construction phase.	The Gladstone region has a much larger population than does the LAA or RAA, which accounts for much of this difference. As of 2015, the Gladstone population was 67,465 (source: http://www.qgso.qld.gov.au/products/reports/gladstone-region-pop-report/gladstone-region-pop-report-2016.pdf) , This compares to the 2011 LAA population of 14,396 and RAA population of 32,906. From 2002 to 2015 Gladstone's population has been growing at an average annual rate of about 3.2%, with the majority of growth attributed to in-migration. This growth coincided with the construction of numerous industrial and infrastructure projects including aluminum processing, civil and port works, coal export facilities, as well as LNG plants. Therefore, it is likely that the Gladstone region has a high proportion of residents who are working in the heavy industrial construction sector, thus providing a large labour pool for Bechtel to draw on. There is no recent history of large industrial construction occurring in the LAA or RAA that has resulted in permanent in-migration of construction workers (the Rio Tinto Kitimat modernization project, the largest recent industrial construction project that occurred in NWBC was built mainly with FIFO labour). The estimate that 5% of Aurora LNG's peak construction workforce will be hired from persons within the LAA (i.e. 250 persons) considers the size of the labour pool for construction-related occupations as well as estimated labour availability - based on the unemployment rate. The actual number of local/regional area residents directly employed on Project construction may be more or less than 250, depending on their availability, appropriate skills/experience, and interest.
1462.1	round 1	Kitsumkalum First Nation	Section 5.2.5.4	Economic Conditions	Summary of Economic Effects. Aurora LNG should develop a Local Content Plan that would outline how it will work with its contractor, subcontractors and local/regional businesses to ensure local content is maximized and also commit to assisting businesses who have contracts to transition beyond construction. The Local Content Plan should also outline how Aurora LNG will assist Kitsumkalum members on and off reserve living in the region to participate in employment and training opportunities.	Aurora LNG maintains that mitigation measures identified in Section 5.2 are sufficient to facilitate economic participation in the Project by Aboriginal and local community members and businesses.
1463.1	round 1	Kitsumkalum First Nation	Section 5.2.9	Economic Conditions	Follow-up and Monitoring. No follow-up programs are proposed and there is therefore no way to determine if mitigation has been effective. A Local Content Plan should include monitoring of the participation of the people and businesses living in the LAA and RAA to verify the contracting and employment benefits have been provided and people are not worse off as a result of the project.	Aurora LNG maintains that mitigation measures identified in Section 5.2 are sufficient to facilitate economic participation in the Project by Aboriginal and local community members and businesses.
1464.1	round 1	Kitsumkalum First Nation	14	Environmental and Operational Management Plans	Section 14.2 Social Management Plan. This plan does not address any of the major socioeconomic issues associated with the boom-bust dynamics (other than some issues associated with camp workers and health services) that will originate from the Project. In addition Kitsumkalum request socioeconomic effects to on-reserve infrastructure and services be added to the SMP, as increased cost of housing will cause overcrowding on reserve unless mitigated. Without a more comprehensive SMP, Kitsumkalum members will inevitably be worse off as a result of the project. Kitsumkalum recognizes Aurora LNG cannot be held responsible for all socioeconomic issues within the region, however the project will impact people and more effort is needed by Nexen to mitigate these effects. Two additional plans to the SMP would be useful: Training and Employment plan; and Construction to Operations Transition plan. These plans would enhance benefits and mitigate for negative effects associated with many of the social issues not currently included in the plans.	The Social Management Plan (mitigation 6.3.1) does not include specific mitigation to address changes in Kitsumkalum on-reserve infrastructure and services. Mitigation measures identified in Table 6.3.10 are expected to effectively manage Project-related effects on accommodation. As such, the likelihood that in-migration, resulting from Project-related changes in accommodations, to Kitsumkalum will increase demand for on-reserve infrastructure and services or directly result in overcrowding is reduced. In the cumulative case, Aurora LNG understands that effects on accommodations from several simultaneous projects could result in increased in-migration to Kitsumkalum resulting in increased demand for on-reserve infrastructure and services and the potential of overcrowding. To aid in mitigating residual cumulative effect, as noted throughout Section 6.3.6, Aurora LNG will participate in government-led initiatives to address these effects. To increase local benefits (e.g., employment and procurement) Aurora LNG will:Mitigation 5.2.1 - Inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases. Develop work packages that consider the capacity and capabilities of local and regional businesses.Mitigation 5.2.2 - Provide information to employment agencies and economic development organizations to help them plan for increased demand for construction labour.Mitigation 5.2.5 - Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation.A specific construction-to-operations transition plan is not proposed. However, as noted in Section 5.2.5.1 (subsection 'Transition from Construction to Operations'), while a loss of direct employment from construction to operations is expected, there is potential that some appropriately skilled construction workers could transition into operation-based employment (recognizing that differing skillsets and education are associated with operations). Where workers are unable to transition from construction into operations, adverse effects could occur as result of decreased employment; however, the relatively short-term nature of Project construction is known and will be anticipated by workers who are employed by the Project. In addition, labour income, skills and experience gained while employed with the Project will further offset adverse effects. In the case of gained skills and experience, these benefits of employment could improve qualifications for employment on other future projects. As noted above, mitigation measures targeted at increasing local benefits (e.g., employment and procurement) could also further offset these effects.
1465.1	round 1	Kitsumkalum First Nation	6.2.2.8	Visual Quality	Kitsumkalum has concerns regarding the threshold for significance. 1) Why use the Partial Retention VQC as the threshold as opposed to Retention or Modification VQCs? No justification is provided. 2) Why is the presence of VQ planning objectives among local authorities a criterion for significance? Would this not imply that the visual quality VC could have just been scoped out of the EA altogether if no planning objectives were present? Furthermore, it assumes that if no planning objectives were present, then visual quality is of no concern to any other groups who had input into the plans, which is almost certainly not the case. It also assumes that there are no groups external to the local planning process that are concerned about visual quality, which not true given the Kitselas' and Kitsumkalum's interests in the area.	The significance threshold used in the assessment of effects on visual quality incorporates a number of elements. These are: - The post-development EVC exceeds Partial Retention. - The average existing EVC was either Preservation, Retention or Partial Retention - The viewpoints from which the change is viewed are of moderate to high importance - Visual quality is documented as an important planning objective for government authorities in the LAA. These thresholds incorporate both quantitative and qualitative elements. The first two elements relate to existing visual condition (EVC) in the post-development and baseline conditions. EVC is a measure of the degree of visual disturbance that is present. This element indicates that if the project is causing the EVC to exceed partial retention (i.e. over 7% disturbance) in an area for which disturbance is less than 7% then this could result in a significant effect. A higher threshold for potential significant effect was not used because then even with substantial project-induced change to visual quality the effect would not be significant. The third element relates to importance. While there is a degree of subjectivity in quantifying "importance", the criteria considered include the number, type, and intensity of receptors that may be affected, including residences, scenic highways, tourist locations, and recreational areas. The fourth element, planning context, recognizes that the assessment of visual quality should not be based on measurable criteria only, but should incorporate the extent to which government agencies (local, regional, provincial) seek to protect visual quality as a policy objective. This element allows for the possibility that significance determination can be made even in situations where change in visual quality based on measured elements (e.g. EVC) does not warrant it. Conversely, if protection of visual quality in an area is not considered an important policy objective by relevant government and regulatory authorities then this is also relevant when making a significance determination.
1466.1	round 1	Kitsumkalum First Nation	6.2.5	Visual Quality	The justifications to exclude the shipping route from the assessment are not convincing. First, while the Project's LNG tankers will not add a "new visual element" to the view scape, they are expected to triple the current shipping traffic through the PRPA, which is significant. If it is not considered significant, it should be explained why that is the case. Second, the Pacific Northwest LNG EA concluded that the effects of the project were not significant on the basis that there were no planning objectives specific to visual quality in any local development plans. As indicated in the previous comment, Kitsumkalum does not agree that this is an appropriate criteria to evaluate significance. Additionally, the Pacific Northwest LNG EA indicated that along with the terminal, the LNG tankers created a residual effect that triggered a cumulative effects assessment. No comparable CEA would be possible if shipping is scoped out of the assessment. Given the large increase in shipping traffic the Project will bring, a cumulative effects assessment including shipping seems warranted. We therefore requests that an assessment of shipping on visual quality be included.	As discussed in Section 6.2.2.4 of the Application, the effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because the Prince Rupert Port is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which is proposing to use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not introduce new visual elements or be visibly prominent from most viewpoints along the proposed shipping route.
1467.1	round 1	Kitsumkalum First Nation	6.2.3\6.2.5	Visual Quality	There seems to be a disconnect with respect to the assessment methodology and the determination of significance. The assessment goes to great lengths to describe the current and post-development EVC for each VSU affected by the project, but the final determination of significance is based only on the average change in EVC over the entire LAA. It is clear from table 6.2-14 that each of the three VSUs located on Digby Island will undergo significant changes to EVC, yet that is not considered at all in the significance determination. Given that the bulk of the analysis in the assessment is specific to the VSUs, the potential changes to EVC in those VSUs should be included as a criteria in the determination of significance.	The assessment considers the change to visual quality within the LAA, not change specifically from the assessed viewpoints. The four viewpoints that were analysed show potential effects from a number of different locations, including several locations located close to the facility. These viewpoints could be expected to be affected more than those located further away within the LAA. The assessment weighted the potential effects on the assessed viewpoints, but also considered the likely change to visual quality within the LAA overall. This balance is evident in Table 6.2-14 of the Application, which presents change in EVC both to individual visual sensitivity units, as well as to the overall view from each viewpoint.
1468.1	round 1	Kitsumkalum First Nation	6.2.5.2	Visual Quality	Table 6.2-14 indicates that the % Alteration for the Project Condition for the overall view of VP01 is 1.9%, but the EVC is listed as Retention, when it should be Partial Retention. The same goes for VLI 292 for VP02. Additionally, the Existing Condition EVC for VLI 280 should be Partial Retention.	In Section 6.2.5.2, Table 6.2-14, Page 6.2-39, the EVC of the Overall View for VP01 in the Project Condition should be changed to “Partial Retention” from “Retention.” In the same table the EVC for VP02, VLI 292 should be changed to “Partial Retention” to “Retention.” As well, the EVC for VPO2, VLI 280 should be changed to “Partial Retention” from “Retention.” An errata document is being created that will capture this correction and it will be filed with the BC EAO.

1469.1	round 1	Kitsumkalum First Nation	6.2.3.2	Visual Quality	No information is presented on night time viewers of the landscape and/or night sky in order to establish context on any assessment of lighting effects. For example, Metlakatla, Port Ed, Dodge cove, potentially lie within the light dome for a project of this size, where the view of the night sky would be affected. Are there any beaches or camp sites where the views of the night sky could be affected? Additional information is needed to assess the lighting effects. Cumulatively, lighting on the project can have major impacts to visual quality in the area not to mention the wildlife etc.	It is acknowledged in Section 6.2.10 of the Application that the Project will contribute to skyglow in the Prince Rupert area. Depending on atmospheric conditions, the sky glow created by a combination of Prince Rupert, nearby industrial facilities, as well as the Project may be discernable from a considerable distance. However, the magnitude of sky glow generated from the Prince Rupert area at receptor locations located more than a few km away is likely limited by the relatively small size of the lit urban and industrial areas. Through the use of shielded and directional lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow will be minimized. Other lighting effects (glare and light spill) are more relevant to receptor locations within a direct line of sight to Project lighting. As discussed in Section 6.2.5.2 of the Application, the only residential receptors within a direct line of site of the Project are in Prince Rupert. There is a possibility that the Project will be visible from one campground - the Prince Rupert R.V. Campground, though topographical and/or vegetation screening are expected to limit the line of view towards the Project from this location. If the Project is visible from this location, it is anticipated that the change in visual quality will be similar to that for VP03 (Prince Rupert Residences), in that the Project will result in a small incremental change in a view already heavily modified by industrial development along the Prince Rupert waterfront.
1470.1	round 1	Kitsumkalum First Nation	6.2.3.2	Visual Quality	The selection of viewpoints did not include any considerations for use as light receptors. Of the four viewpoints selected, only VP03 was suitable as a light receptor, as it was the only one that people would actually visit at night. Additional receptors for the light assessment could have been identified that were appropriate for use in an assessment of lighting effects and were safe to access at night. We request that at least one additional view point as a light receptor be considered.	Other viewpoints were considered in the assessment of lighting effects, including potential receptor locations in Port Edward. However, because Port Edward does not have a direct view towards the Project, lighting effects were not assessed. Similarly, most streets in Prince Rupert run SW to NE, with most homes and commercial buildings oriented SE to NW (i.e. either looking back towards Mount Hays or looking across the harbour towards the Tsimshian Peninsula). Because the Project is located SE of Prince Rupert, and because of topographical shielding, it will not be visible to the majority of Prince Rupert residences. For this reason, VP03 was selected for assessing lighting effects, because it is the closest residential area within a direct line of site of the Project, and thus has the highest potential to experience adverse effects. Please see the technical memo "Additional Visual Quality Renderings" that will be filed with the EAO for additional viewpoints.
1471.1	round 1	Kitsumkalum First Nation	6.2.5.1	Visual Quality	The justification for the qualitative assessment of ambient light is based on the distance of VP03 from the Project, but no mention is made of the effect of sky glow, which could very well be apparent at that distance, especially under more rural conditions. A discussion of sky glow in the context of nighttime use of the surrounding landscape should be included in the justification of a qualitative assessment.	It is acknowledged in Section 6.2.10 of the Application that the Project will contribute to skyglow in the Prince Rupert area. Depending on atmospheric conditions, the sky glow created by a combination of Prince Rupert, nearby industrial facilities, as well as the Project may be discernable from a considerable distance. However, the magnitude of sky glow generated from the Prince Rupert area at receptor locations located more than a few km away is likely limited by the relatively small size of the lit urban and industrial areas. Through the use of shielded and directional lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow will be minimized. Other lighting effects (glare and light spill) are more relevant to receptor locations within a direct line of sight to Project lighting. As discussed in Section 6.2.5.2 of the Application, the only residential receptors within a direct line of site of the Project are in Prince Rupert. There is a possibility that the Project will be visible from one campground - the Prince Rupert R.V. Campground, though topographical and/or vegetation screening are expected to limit the line of view towards the Project from this location. If the Project is visible from this location, it is anticipated that the change in visual quality will be similar to that for VP03 (Prince Rupert Residences), in that the Project will result in a small incremental change in a view already heavily modified by industrial development along the Prince Rupert waterfront.
1472.1	round 1	Kitsumkalum First Nation	6.2.7.1	Visual Quality	It is not described anywhere how the average post-development EVC of the LAA was calculated, nor how that relates to Table 6.2-14, despite both items being critical to the assessment. Please include an explicit methodology regarding the calculation of average post-development EVC over the LAA.	The average post development EVC change resulting from the Project considered the change in views from assessed viewpoints, as well as potential visibility of the Project based on the viewshed analysis. The viewshed analysis shows that the Project will not be visible from most areas within the LAA (see Figure 6.2-5), and thus will not contribute to a change in visual quality for most of the LAA. Those areas where the Project is visible is represented by the four assessed viewpoints. Of the four viewpoints assessed, only VP02 (Mt. Hays) is expected to have an overall change in EVC that exceeds partial retention, and is attributable to the Project. For these reasons, it is concluded that the average post development EVC change in the LAA resulting from the Project will not exceed 7% (i.e. partial retention).
1473.1	round 1	Kitsumkalum First Nation	Table 6.3-3	Infrastructure and Services	General Comment Baseline. It appears as though direct and indirect potential impacts to infrastructure and services has not been identified for Terrace or Kitsumkalum IR1. We know based on the last boom with up to 3000 workers at Rio Tinto Alcan in Kitimat, housing will be affected by such a large development like Aurora LNG in other nearby communities. Terrace is the major business centre of the north and indirect effects will occur from the influx of people who will work or contract to the Project. In addition, if the Hwy and the Hospital will be affected, how will the people utilizing these services who live in Terrace and Kitsumkalum IR1 not be affected?	The spatial boundaries for the Infrastructure and Services VC align with those defined in the AIR, and includes Terrace and Kitsumkalum IR1. Table 6.3-3 indicates that the Northwest Regional Airport Terrace Kitimate (YXT) and Mills Memorial Hospital (Terrace) are part of the local assessment area (LAA) and the Terrace Census Agglomeration Area (including the City of Terrace) and Kitsumkaylum 1 IR (Kitstumkalum First Nation) are part of the regional assessment area (RAA). As characterized in Section 6.3.6 of the Application, residual cumulative effects on infrastructure and services would apply to all residents of the RAA accessing affecting infrastructure and services. With respect to this comment,this includes transportation infrastructure and services and health care infrastructure and services within the RAA accessed by Kitsumkalum members and residents of Terrace. Similarly, persons who live outside the RAA but access infrastructure and services within the RAA would also be affected. Cumulative effect characterizations for the RAA are summarized in Table 6.3-29. Residual cumulative effects on change in transportation infrastructure and services with the Project are characterized as high in magnitude, to extend to the RAA, are continuous, long-term in duration, reversible and occur within a moderately resilient socio-economic context. Residual cumulative effects on change in health care infrastructure and services are characterized as high in magnitude, to extend to the RAA, are continuous, long-term in duration, reversible and occur within socio-economic context that has low resiliency to change.
1474.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	General Comment Baseline. Although 2011 Statistics Canada data is the latest data available for population of Terrace and Prince Rupert, some discussion is needed about the most recent boom in Terrace from the Rio Tinto Alcan project and the increased cost of housing.	Baseline information depicting recent changes in housing demand within the RAA is reflected in Section 6.3.3.2 subsection 'Home Construction, Sales and Pricing'. Under this heading, baseline information from 2004 through 2014 regarding issued residential building permits and the value of building permits is provided. Baseline information shows a dramatic increase in 2014 with respect to both the number of issued residential building permits (indicating a sharp increase in demand) as well as a dramatic increase in the value of issued residential building permits (indicating an increase in the value of homes being built).
1475.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	General Comments Baseline. Several Kitsumkalum Members live in Prince Rupert, therefore, the Prince Rupert School District provides services to off reserve Kitsumkalum First Nation members as well. This applies to all infrastructure and services in Prince Rupert as Kitsumkalum Members live in Prince Rupert.	Aurora LNG understands that numerous Kitsumkalum members live within the LAA, including Prince Rupert, and that Project effects on infrastructure and services within the LAA could affect these members. It is also understood that effects on LAA infrastructure and services would be realized by members who live outside the LAA but also access these services.
1476.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Hospital and healthcare registrations for current demand - great baseline - how will we know if mitigation is not working during monitoring - an increase in demand by 10%, 20%? What is the threshold or trigger?	Through the Social Management Plan (mitigation 6.3.1), changes in baseline conditions will be monitored through identified indicators to determine the effectiveness of proposed mitigation measures. Means to monitor the effectiveness of mitigation measures will be determined through engagement with potentially affected service providers, in this case Northern Health, during development of the Social Management Plan. In addition, Aurora will implement an adaptive management framework as follows for the plan: the plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
1477.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	It is unclear why impacts to aboriginal healthcare does not include Terrace and other aboriginal peoples who live in Prince Rupert with similar issues to those quoted by Metlakatla. The literature is abundant with respect to the overall lower health status of aboriginal peoples in Canada. Kitsumkalum has several members who live in Prince Rupert.	The spatial boundaries for the Infrastructure and Services VC align with those defined in the AIR, and includes Terrace and Kitsumkalum IR1. Table 6.3-3 indicates that the Northwest Regional Airport Terrace Kitimate (YXT) and Mills Memorial Hospital (Terrace) are part of the local assessment area (LAA) and the Terrace Census Agglomeration Area (including the City of Terrace) and Kitsumkaylum 1 IR (Kitstumkalum First Nation) are part of the regional assessment area (RAA). Aurora LNG understands that many Kitsumkalum members live in Prince Rupert. As characterized in Section 6.3.5.5, adverse residual effects on health care infrastructure and services would apply to all residents of the LAA accessing affected infrastructure and Services. This includes Aboriginal persons living in Prince Rupert including Kitsumkalum members. Similarly, persons who live outside the LAA but access infrastructure and services within the LAA would also be affected. Residual effect characterizations for change in health care infrastructure and services within the LAA are summarized in Table 6.3-27 of the Application.
1478.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Housing and Accommodation. This section acknowledges housing as a concern, especially for aboriginal people but is missing a lot of baseline housing information for Terrace. Several studies have been completed - housing needs assessments - however they have not been reviewed or included in the baseline summary.	Additional baseline information regarding accommodations within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo including whether supplemental information affects conclusions provided in Section 6.3 of the Application. The technical memo will be filed with the BC EAO.
1479.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Housing and Accommodation. Kitsumkalum provided data showing 34% cannot afford accommodation on reserve, while 56% cannot off reserve. Why is this data not provided as baseline?	While information specific to housing, as provided in the 2016 Report 'Kitsumkalum Traditional Use Study and Socio-economic Impact Assessment' (the Report), is referenced in Section 6.3.3.2 (subsection 'Housing andAccommodations'), information provided in Table 9 of the Report is not included.This information is provided below. Respondents to Kitsumkalum's 2006 questionnaire (Q2) show that over one-third of on-reserve respondents cannot afford on-reserve accommodation while more than half (56%) of off-reserve respondents cannot afford off reserve accommodation (see the below table). The percentage of on-reserve respondents reporting that they cannot afford accommodations is greater than that of the aggregate sample. An opposite trend is identified off-reserve. With respect to living conditions, a greater percentage of on-reserve respondents indicate poor housing conditions (41%) that off-reserve respondents (37%) with similar trends in inadequate space (30% vs. 24%). In both cases, the percent of on- and off-reserve respondents with at least one child reporting poor housing conditions and inadequate space is greater than that reported by the aggregate sample. Indicator On Reserve - IR 1 (%)Off Reserve (%)Total respondents Respondents with at least 1 child Total respondents Respondents with at least 1 child Cannot afford accommodation34465650Poor housing condition41463740Inadequate space30472433Source: Adopted form Kitsumkalum First Nation 2016 Information provided above helps strengthen Aurora LNG's understanding of the Kitsumkalum socio-economic environment but the details do not change the conclusions reached through Aurora LNG's conservative approach. The characterization of residual adverse effects (see Section 6.3.5.3) and residual cumulative effects (see Section 6.3.6.4) on accommodations remain unchanged. Reference: Kitsumkalum First Nation. 2016. Kitsumkalum Traditional Use Study and Socioeconomic Impact Assessment – Aurora Liquefied Natural Gas Project. Prepared for Nexen Energy ULC.
1480.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Housing and Accommodation. Although the baseline shows owners pay a higher shelter to income ratio we disagree owners would be more vulnerable to housing costs. It depends on when they purchased their house and unless they have a variable interest rate mortgage have a fixed monthly payment. Owners are subjected to higher property taxes. Renters are subjected to increases in rent from market forces. Both groups are equally vulnerable and FNs are more vulnerable due to their education, employment and economic status being lower than the non aboriginal population. At a meeting between Kitsumkalum and Nexen we raised the issue that socioeconomic impacts, especially regarding housing and access to healthcare need to be separated out for Kitsumkalum (or Aboriginal Peoples in general) from the rest of the population due to the increased vulnerability and greater impacts. It was to be placed in Other Matters of Concern however it is not and instead refers back to the general VC impact assessment. It is unclear how Nexen has addressed this concern either by identifying the impact or mitigating for it.	As noted and recognized through baseline information presented in Section 6.3.3.2 of the Application (subsection 'Housing and Accommodations'), data indicate that Aboriginal persons are more vulnerable to changes in the cost of accommodations as the shelter-cost-to-income ratios among Aboriginal persons is higher than that of the aggregate population. As accurately noted in the comment, additional socio-economic considerations make Aboriginal persons more vulnerable to changes in accommodations. While Section 6.3 of the Application does not disaggregate residual effects on accommodations and health care infrastructure and services on the basis of Aboriginal vs. non-Aboriginal persons, residual effects as characterized in Section 6.3.5 and 6.3.6 would be experienced by any person accessing accommodations or health care infrastructure and services within the LAA and RAA respectively. With respect to residual effects, Aurora LNG is confident that the suite of mitigation measures provided in Section 6.3 will effectively manage Project-related effects on accommodations and health care infrastructure and services. With respect to residual cumulative effects, Aurora LNG will participate in provincial and/or regional led initiatives to address cumulative adverse effects on infrastructure and services. With reference to the October 25, 2016 meeting, the view that disaggregated characterizations be provided in 'Other Matters of Concern' in Part C is captured in Table 12.9-1 where it is noted that "Aurora LNG has not incorporated an additional socio-economic assessment in Part C because it believes that these effects have been adequately addressed in other sections of the Application.
1481.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Housing and Accommodation. Non-market housing information for Terrace is missing.	Additional information on non-market housing within the RAA is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo. A discussion as to whether supplemental information affects conclusions presented in Section 6.3 is also provided. The technical memo will be filed with the BC EAO.
1482.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Page 6.3-45 second paragraph second sentence seems out of place as it is a general statement re units available to aboriginal peoples in Prince Rupert. Kitsumkalum members live in both Prince Rupert and Terrace and both locations are likely to be impacted by increased housing costs.	The identified sentence "there are approximately 170 social housing units in Prince Rupert for low-income tenants of Aboriginal descent" should be removed. An errata document is being created that will capture this correction and it will be filed with the BC EAO.
1483.1	round 1	Kitsumkalum First Nation	Section 6.3.3.2	Infrastructure and Services	Housing and Accommodation. More information should be provided on the 168 bed construction camp Horizon north is pursuing - is this for the Aurora LNG Project? It is also unclear who the camps will be constructed for on Digby Island or the two at Port Edward (4,000 workers each). What projects would these camps be constructed for?	Referenced documents used to describe accommodation camps proposed for the LAA, as provided in section 6.3.3.2, do not include additional detail regarding the purpose of these camps, with the exception of PNW LNG where it is stated that accommodation camps near Port Edward will be used (references provided below). None of these accommodation camps are associated with the Aurora LNG Project. Section 6.3.3.2 does not list project-specific accommodation camps such as that associated with BG LNG. References: City Spaces. 2015a. Prince Rupert Housing Action Plan. Northern Development Initiative Trust. 2015. Available at: http://www2.gov.bc.ca/assets/gov/housing-and-tenancy/tools-for-government/publications/prince_rupert_hap_final.pdf. March 2016. City Spaces. 2015b. Port Edward Housing Action Plan. Northern Development Initiative Trust. 2016. Available at: http://www2.gov.bc.ca/assets/gov/housing-and-tenancy/tools-for-government/publications/port_edward_hap_final.pdf. March 2016.
1484.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Analytical Techniques Impact Assessment. Terrace and Kitsumkalum IR1 are not considered in the impact assessment. Terrace is the service center of the northwest. Any large development will impact infrastructure and services and will impact those who are most vulnerable such as aboriginal peoples living on and off reserve. Kitsumkalum members live in both Prince Rupert and Terrace and can migrate between both Cities. The absence of assessing potential effects on Infrastructure and Services in the Terrace area is a significant gap in this environmental assessment.	The spatial boundaries for the Infrastructure and Services assessment align with those defined in the AIR, and include Terrace and Kitsumkalum IR1. Table 6.3-3 of the Application indicates that the Northwest Regional Airport Terrace Kitimate (YXT) and Mills Memorial Hospital (Terrace) are part of the local assessment area (LAA) and the Terrace Census Agglomeration Area (including the City of Terrace) and Kitsumkaylum 1 IR (Kitstumkalum First Nation) are part of the regional assessment area (RAA). Aurora LNG understands that many Kitsumkalum members live in Prince Rupert. As characterized in Section 6.3.5 of the Application, adverse residual effects on infrastructure and services would apply to all residents of the LAA accessing affected infrastructure and Services. Similarly, persons who live outside the LAA but access infrastructure and services within the LAA would also be affected. Residual effect characterizations for the LAA are summarized in Table 6.3-27 of the Application.

1485.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Analytical Techniques Impact Assessment. Assumptions seems to be missing for the spin-off construction jobs from the 5000 peak workers phase 1. Who will provide camp services, catering, subcontracting, etc.- how many people? Usually the factor is 2.5, i.e. 2.5(5,000) = 12,500 people needed during peak construction. This is double the population of Prince Rupert. KKN would like to see a review of the Gladstone projects where 3 LNG facilities were built and the increase in population rather than a calculation built on assumptions that may be missing important aspects of the population estimates.	Assumptions provided in Section 6.3.5.1 relate to direct employment effects. Indirect and induced employment and population effects are assessed in Section 5.2 and 6.3.5.2 respectively. Population effects are estimated using a combination of modeling (discussed below). Case study analysis was not used to assess population change. Economic Modelling Statistics Canada's Inter-provincial Input/output Model was used to estimate direct, indirect and induced employment effects during construction (see Sections 1.4 and 5.2.5). Results of this modeling were used in conjunction with LAA and RAA baseline characteristics and Statistics Canada Economic Multipliers to derive indirect and induced employment effects within the RAA. Indirect and induced employment accounts for the forms of employment highlighted by Kitsumkalum. Using these methods direct peak construction employment was estimated at 5,000 persons. Presented in Table 5.2-35, indirect and induced employment was estimated at an additional 145 annual jobs within the RAA (note, additional employment is estimated to occur outside the RAA). Using direct workforce estimates developed by Aurora LNG for operations (a direct peak workforce of 200 persons), indirect and induced employment for the RAA (using the same methods as used for construction) were estimated. Presented in Table 5.2-36, indirect and induced employment was estimated at an additional 195 annual jobs within the RAA (note, additional employment is estimated to occur outside the RAA). Population Modelling Results of economic modelling and analysis completed in Section 5.2 were carried forward as inputs that informed population modelling completed in Section 6.3. Population modelling completed in Section 6.3 accounted for direct, indirect and induced in-migration resulting from Project employment and adjusted for household characteristics (i.e., baseline data for the LAA and RAA was used to adjusted for the in-migration of spouses and dependents). Replacement effects (i.e., additional in-migration in response to increased employment for vacated positions resulting from workers leaving current positions to seek employment with the Project) were also accounted for through population modelling. The resulting output (see Section 6.3.52) provides an estimate of population change, over that estimated in the base case by BC Stats, and is considered conservative (i.e., overstated).
1486.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Analytical Technical Impact Assessment. Please define local. This definition would be useful for the entire EA as it is mentioned in various sections.	In general, 'local' refers to the local assessment area (LAA) and is defined in the AIR and in Table 6.3-3 as follows: "Includes communities within the mainland portion of the Skeena-Queen Charlotte Regional District (SQCRD) including: City of Prince Rupert, District Municipality of Port Edward, Dodge Cove Improvement District, Crippen Cove, other communities within the SQCRD Electoral Areas (SQCRDA) A and C, Lax Kw'alaams IR 1 (Lax Kw'alaams Band), S1/2 Tsimpsean Indian Reserve 2 (Metlakatla First Nation), Dolphin Island 1 (Gitxaala Nation). Highway 16 up to and including the Northwest Regional Airport Terrace Kitimat (YXT) and Mills Memorial Hospital (Terrace) are also included." Exceptions: Local is also used in the term 'Local Health Area' which is an administrative boundary defined by the BC Ministry of Health. This does not perfectly align with the description of the LAA. In Section 6.3.3.2 'Hospital and Health Care Capacity' local and non-local demand refers to patient registrations with addresses inside or outside a given hospital's catchment area. 'Local roads' refer to municipal roads References to 'local' as taken from cited references. Local would refer to the description provided in the referenced material. In most cases, this use of 'local' is qualified when used in the context of the assessment.
1487.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Project Mechanisms For Community Infrastructure and Services. The presence of a camp is not likely to mitigate effects to housing costs as demonstrated by several resource development projects throughout the world (e.g., Gladstone, Australia). Please provide at least one example of the presence of a camp mitigating these effects with a similar scenario to Aurora LNG to show there will be minimal effect to housing cost from the project in both Prince Rupert and Terrace. Effects to Kitsumkalum IR1 will occur if housing costs increase in both these Cities.	Section 13.5 of the Application provides additional consideration of issues and concerns not addressed in Part B of the Application. This includes private property value (section 13.5.3) and cost of living (section 13.5.4). Drawing on case-study analysis, these sections present scenarios that show positive effects and scenarios that show adverse effects of industrial development on private property values and cost of living. Each section concludes with a determination of the status of the issue or concern. Case-study analysis of the use of accommodation camps as a effective means of mitigating adverse effects on accommodations was not completed; however; as noted in Section 6.3 of the Application, the use of accommodation camps to address Project effects on commercial accommodations is a well-established management measure to reduce adverse effects on nearby communities (see IFC 2012). International Finance Corporation [IFC]. IFC Performance Standards on Environmental and Social Responsibility. 2012. Available at: https://www.ifc.org/wps/wcm/connect/c8f524004a73daeca09afdf998895a12/IFC_Performance_Standards.pdf?MOD=AJPERES. Accessed: January 2016.
1488.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Project Mechanisms For Community Infrastructure and Services. Please define local.	In general, 'local' refers to the local assessment area (LAA) and is defined in the AIR and in Table 6.3-3 as follows: "Includes communities within the mainland portion of the Skeena-Queen Charlotte Regional District (SQCRD) including: City of Prince Rupert, District Municipality of Port Edward, Dodge Cove Improvement District, Crippen Cove, other communities within the SQCRD Electoral Areas (SQCRDA) A and C, Lax Kw'alaams IR 1 (Lax Kw'alaams Band), S1/2 Tsimpsean Indian Reserve 2 (Metlakatla First Nation), Dolphin Island 1 (Gitxaala Nation). Highway 16 up to and including the Northwest Regional Airport Terrace Kitimat (YXT) and Mills Memorial Hospital (Terrace) are also included." Exceptions: Local is also used in the term 'Local Health Area' which is an administrative boundary defined by the BC Ministry of Health. This does not perfectly align with the description of the LAA. In Section 6.3.3.2 'Hospital and Health Care Capacity' local and non-local demand refers to patient registrations with addresses inside or outside a given hospital's catchment area. 'Local roads' refer to municipal roads References to 'local' as taken from cited references. Local would refer to the description provided in the referenced material. In most cases, this use of 'local' is qualified when used in the context of the assessment.
1489.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Project Mechanisms for Community Infrastructure and Services. The transition from the construction phase (5 to 8 yrs.) to operations has been missed. This transition will result in declining housing costs and increased vacancies. The relatively small number of operations people will likely not result in increased pressure on housing given the need to accommodate during the construction phase. There will be a boom-bust dynamic as a result of the construction and operations phases of this development. This has not been discussed. Please refer to the literature on this topic when justifying the identification of potential impacts from the influx of people whether it be migrants or FIFO. The transition from construction phase to operations is discussed in the economics section however no mitigation is proposed to minimize these effects other than providing information and working with other groups.	The assessment of change in accommodations takes into consideration the existing supply of housing within the LAA and RAA and qualifies this with information regarding predicted new builds (e.g., accommodation camps, lands available for development). While it is acknowledged that a surge of in-migrating workers followed by a sudden decline could result in an oversupply of accommodations, this scenario is not considered in Section 6.3 of the Application. Rather, the assessment of change in accommodations (Sections 6.3.5.3 and 6.3.6.4) assumes (from economic modelling completed in Section 5.2) that roughly 95% of the peak construction workforce will be employed on a fly-in/fly-out (FIFO) basis, 3% comprised of current residents of the LAA and RAA and 2% from in-migrating workers (see Section 6.3.5.1). From this, approximately 100 in-migrating workers are anticipated at peak construction. During operations approximately 20% of the peak workforce will be comprised of FIFO workers, 12% current residents and 68% in-migrating workers (see Section 6.3.5.1). An estimate of 408 in-migrating workers are anticipated during operations. Estimates of direct employment suggest that demand from housing will increase from construction to operations and consequently an oversupply of housing is not anticipated. Similarly, indirect and induced employment is anticipated to increase form construction to operations. Assuming a percentage of these workers in-migrate to the LAA and RAA demand for housing will increase from construction to operations. From Section 5.2.5.1 it is noted that a loss of direct employment from construction to operations is expected. However, there does exist potential for some appropriately skilled construction workers to transition into operation-based employment (recognizing that required skill-sets are largely different between construction and operations). Section 5.2.5.1 also notes that while adverse effects could occur as a result of decreased construction employment, the relatively short-term nature of Project construction is known and will be anticipated by workers who are employed by the Project. It is further suggested that labour income, skills and experience gained while employed with the Project will further offset adverse effects and that in the case of gained skills and experience, these benefits of employment could improve qualifications for employment on other future projects. In addition, through mitigation 6.6.1 (Employee Assistance Program), employees will be provided with access to financial planning and similar counselling services. These services can be accessed by workers to help prepare them for this transition. Through these measures and an understanding of the work schedule, the magnitude of adverse effects on community health and wellness following the transition from construction to operations is anticipated to be reduced.
1490.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Closed camp - good mitigation, however how will this be monitored/enforced? Will this encourage people to live in the community rather than camp?	The worker camp will be a closed-access camp, meaning that Project employees will be expected to remain onsite for the duration of their work shifts. Failure to adhere to the camp policies will result in worker termination. In addition, on-site security services (mitigation 6.3.9) will also control access on and off site. The closed-access camp and Project-specific transportation to/from the airport and the camp will likely dissuade fly-in/fly-out construction workers from in-migrating to LAA and RAA communities. However, as assessed throughout Section 6 (Social Environment), regardless of camp or project housing policies it is anticipated that direct, indirect and induced employment during construction and operations will result in measurable levels of in-migration (workers and their families) to the LAA and RAA (see Section 6.3.5.2).
1491.1	round 1	Kitsumkalum First Nation	Table 6.3.-21	Infrastructure and Services	The Social Management Plan in KKN's view is not rigorous as it does not provide enough detail on how monitoring and adaptive management will occur. Also, many of the proponents have excluded on reserve effects. For KKN it appears Aurora LNG has excluded effects to housing costs and access to healthcare in this EA and therefore impacts to the Nation will also be excluded from the SMP. This is a major concern for KKN.	Additional information on the Social Management Plan (mitigation 6.3.1) is included in Section 14.12 of the Application. As currently proposed, the plan includes consideration of Project-related effects on accommodations and health care infrastructure and services (which are assessed in Section 6.3). Detailed information beyond commitments to embed an adaptive management approach into the Social Management Plan is not provided in the Application. Rather, details of the Social Management Plan will be developed through engagement with regulators, Aboriginal Groups and interested stakeholders. Aurora LNG's framework for adaptive management is as follows: the social management plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
1492.1	round 1	Kitsumkalum First Nation	Table 6.3.-21	Infrastructure and Services	Item 6.3.4 of the Table. Engagement with government, FNs and the public is good however FNs need resources to monitor and engage. Also, the engagement of other large developers is necessary to manage boom-bust effects.	Aurora LNG understands capacity constraints could limit the ability of First Nations to engage and participate in monitor of Project effects. Aurora LNG hopes to better understand these constraints so that Project-measures can be implemented such that engagement with Aurora LNG does not further constrain available capacity. While Aurora LNG cannot guarantee that other proponents of projects within the RAA will engage collaboratively with Aurora LNG, as noted throughout Section 6.3.6 Aurora LNG will participate in government-led regional initiatives with respect to cumulative effects on community infrastructure and services.
1493.1	round 1	Kitsumkalum First Nation	Table 6.3.-21	Infrastructure and Services	While the construction camp will reduce impacts to infrastructure and services it will not minimize them to a level that will not effect people living in the region because of the sheer size of the project and the number of people coming to the area for the construction phase. This is amplified if other projects move forward at the same time.	Despite Project design to use on-site accommodations, enforce a 'closed-access camp' policy and to implement numerous mitigation measures (see Tables 6.3-21, 6.3-22, 6.3-23, and 6.3-26), Aurora LNG acknowledges that effects on infrastructure and services are likely to still occur. These residual effects are assessed in Section 6.3.5 of the Application. The Project's contribution to cumulative residual effects and cumulative residual effects with the Project are assessed in Section 6.3.6.
1494.1	round 1	Kitsumkalum First Nation	Table 6.3.-21	Infrastructure and Services	Is the Project adhering to IFC Performance Standards? KKN agree these Standards should be used since currently there is insufficient information in the EA to address effects to indigenous populations or vulnerable peoples.	Section 6.3 of the Application does not state that the Project is adhering to International Finance Corporation (IFC) Performance Standards on Environmental and Social Responsibility; rather, IFC standards were reviewed and informed the development of the following mitigation measures: 6.3.5, 6.3.6, 6.3.10. The reference 'IFC 2009' is incorrectly cited in Table 6.3-21 and Table 6.3-22, and is not included in Section 6.3.11 (References). The reference should be cited as 'IFC 2012' in Table 6.3-21 and Table 6.3-22 with the below citation included in Section 6.3.11. An errata document is being created that will capture these corrections and it will be filed with the BC EAO. International Finance Corporation [IFC]. IFC Performance Standards on Environmental and Social Responsibility. 2012. Available at: https://www.ifc.org/wps/wcm/connect/c8f524004a73daeca09afdf998895a12/IFC_Performance_Standards.pdf?MOD=AJPERES. Accessed: January 2016.
1495.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Characterization of the impacts to infrastructure and services does not include indirect workers and total influx of people and therefore is underestimated. Please explain.	Population modelling to support the assessment of change in community infrastructure and services included predicted effects on direct, indirect and induced population increases in both the LAA and RAA (see Section 6.3.5.2 and 6.3.6.4 of the Application). Modeling included consideration of workers and their families. Modeled population effects inform the effect mechanism 'population change' which is a fundamental consideration in the assessment of change in accommodations, change in transportation infrastructure and services and change in health care infrastructure and services. Adverse effect characterizations for each residual effect assessment in Section 6.3 consider population effects with residual effects characterized accordingly. Characterizations of residual effects are therefore not understated.
1496.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Page 6.3-62. Although caseloads for police re crime is lower in the LAA than BC , increased crime is associated with boomtowns and one can expect increased crime in the RAA from the effects of this development. It is important to monitor and adaptively manage for this potential effect	Aurora LNG acknowledges that residual adverse effects and residual cumulative effects on crime could occur within the LAA and RAA. Increased demand on police services within the LAA and RAA are discussed in Sections 6.3.5.2 and 6.3.6.3 respectively. Project-effects on the social determinant of health 'social environments', including consideration of changes in crime, are assessed for the LAA and RAA in Sections 6.6.5.3 and 6.6.6.3 respectively. Through the Social Management Plan (mitigation 6.3.1), Project-effects on police services will be monitored and adaptively managed. See Section 14.12 for additional information on the Social Management Plan.
1497.1	round 1	Kitsumkalum First Nation	Section 6.3.5.1	Infrastructure and Services	Page 6.3-62. The literature on boomtown effects show the transition from resource developments where there is a large influx of people followed by massive layoffs result in a potential for depression and other health issues (Alberta Oil sands suicide rate increased in first six months of 2015 by 30%). Aurora LNG needs to mitigate these effects by helping people prepare for the transition.	The relationship between employment and income and community health and wellness is identified in Table 6.6-2 and discussed throughout Section 6.6.5.3 as an effect mechanism. In particular, linkages between 'employment and income' and stress and anxiety and health status are identified. Informing the effect mechanism 'employment and income', as used in the assessment of change in community health and wellness, is the assessment of change in labour supply and demand (see Section 5.2.5.1). Section 5.2 is referenced, where applicable, in Section 6.6.5.3. From Section 5.2.5.1 it is noted that a loss of direct employment from construction to operations is expected. However, there does exist potential for some appropriately skilled construction workers to transition into operation-based employment (recognizing that required skill-sets are largely different between construction and operations). Section 5.2.5.1 also notes that while adverse effects could occur as a result of decreased construction employment, the relatively short-term nature of Project construction is known and will be anticipated by workers who are employed by the Project. It is further suggested that labour income, skills and experience gained while employed with the Project will further offset adverse effects and that in the case of gained skills and experience, these benefits of employment could improve qualifications for employment on other future projects. In addition, through mitigation 6.6.1 (Employee Assistance Program), employees will be provided with access to financial planning and similar counselling services. These services can be accessed by workers to help prepare them for this transition. Through these measures and an understanding of the work schedule, the magnitude of adverse effects on community health and wellness following the transition from construction to operations is anticipated to be reduced.

1498.1	round 1	Kitsumkalum First Nation	Section 6.3.5.3	Infrastructure and Services	As mentioned in previous comments, changes to accommodation will occur both in the LAA and the RAA as demonstrated by the literature. This effect has been completely missed.	Effects on accommodations are assessed throughout Section 6.3 of the Application. Section 6.3.5.3 'Characterization of Change in Accommodations' assesses adverse residual effects on accommodations within the LAA while Section 6.3.6.4 'Cumulative Effects Assessment for Change in Accommodations' assesses adverse cumulative effects on accommodations within the RAA. Stated in section 6.3.7.1 of the Application, adverse residual effects on accommodations within the LAA are not significant; however, in Section 6.3.7.2 adverse cumulative effects with the Project are significant.
1499.1	round 1	Kitsumkalum First Nation	Table 6,3-22	Infrastructure and Services	Engagement with aboriginal groups and a management plan will likely not be effective mitigation. There needs to be a plan to mitigate for the increase in homelessness during construction of these large developments which involves the provincial, federal, municipal governments, First Nations, and anti-poverty organizations. The project will cause these effects and should spearhead the assembly of such a group, i.e. advocate to the government the need to manage these effects as they occur. To comply with the International Finance Commission Performance Standards people should not be worse off as a result of project development.	Aurora LNG is confident that through Project design (i.e., a closed-access accommodation camp), logistics plans (e.g., that non-local workers will be transported to their home communities following the completion of their shifts), and mitigation measures proposed in table 6.3-22, commitments to ongoing engagement (mitigation 6.3.4, 6.3.11), and through development and implementation of the Social Management Plan (mitigation 6.3.1) adverse effects on accommodations will be reduced. With respect to cumulative residual effects within the RAA, Aurora LNG will participate in government-led regional initiatives with respect to cumulative effects on community infrastructure and services, including accommodations. It is expected that other projects that require regulatory approval will be subject to similar mitigation through the environmental assessment and permitting processes. Adherence to International Finance Corporation (IFC) Performance Standards on Environmental and Social Responsibility is not a requirement of the AIR.
1500.1	round 1	Kitsumkalum First Nation	Section 6.3.5.3	Infrastructure and Services	Page 6.3-68. The prediction of housing includes the potential for new housing to be built in addition to other mitigation measures that are likely to be ineffective given the large influx of people. The construction of new houses will result in a greater surplus of housing during the bust - the end of the construction phase and will reduce housing costs affecting those who purchased their houses during the construction phase and becoming unemployed. Aurora LNG needs to provide assistance to people so they are aware of these effects and help them transition from the boom to the bust. This is best accomplished as a cooperative between Aurora LNG, other major construction project proponents, governments, FNs and representatives of the public	The assessment of change in accommodations takes into consideration the existing supply of housing within the LAA and RAA and qualifies this with information regarding predicted new builds (e.g., accommodation camps, lands available for development). While it is acknowledged that a surge of in-migrating workers followed by a sudden decline could result in an oversupply of accommodations, this scenario is not considered in Section 6.3 of the Application. Rather, the assessment of change in accommodations (Sections 6.3.5.3 and 6.3.6.4) assumes (from economic modelling completed in Section 5.2) that roughly 95% of the peak construction workforce will be employed on a fly-in/fly-out (FIFO) basis, 3% comprised of current residents of the LAA and RAA and 2% from in-migrating workers (see Section 6.3.5.1). From this, approximately 100 in-migrating workers are anticipated at peak construction. During operations approximately 20% of the peak workforce will be comprised of FIFO workers, 12% current residents and 68% in-migrating workers (see Section 6.3.5.1). An estimate of 408 in-migrating workers are anticipated during operations. Estimates of direct employment suggest that demand from housing will increase from construction to operations and consequently an oversupply of housing is not anticipated. Similarly, indirect and induced employment is anticipated to increase form construction to operations. Assuming a percentage of these workers in-migrate to the LAA and RAA demand for housing will increase from construction to operations. From Section 5.2.5.1 it is noted that a loss of direct employment from construction to operations is expected. However, there does exist potential for some appropriately skilled construction workers to transition into operation-based employment (recognizing that required skill-sets are largely different between construction and operations). Section 5.2.5.1 also notes that while adverse effects could occur as a result of decreased construction employment, the relatively short-term nature of Project construction is known and will be anticipated by workers who are employed by the Project. It is further suggested that labour income, skills and experience gained while employed with the Project will further offset adverse effects and that in the case of gained skills and experience, these benefits of employment could improve qualifications for employment on other future projects. In addition, through mitigation 6.6.1 (Employee Assistance Program), employees will be provided with access to financial planning and similar counselling services. These services can be accessed by workers to help prepare them for this transition. Through these measures and an understanding of the work schedule, the magnitude of adverse effects on community health and wellness following the transition from construction to operations is anticipated to be reduced.
1501.1	round 1	Kitsumkalum First Nation	Section 6.3.5.4	Infrastructure and Services	Transport networks impacts. There is also a potential for an increase in vehicular accidents within the RAA given the route from the Northwest Regional Airport to Prince Rupert will be used by the Project	Section 6.3.6.5 includes consideration of cumulative effects on transportation infrastructure and services, including that related to roads and traffic (Highway 16 is specifically mentioned), within the RAA. However, due to numerous data gaps (i.e., vehicle traffic associated with all Projects and physical activities considered in the cumulative case [see Table 6.3-28]) a quantitative assessment of vehicular accidents is not provided. Rather, the potential for vehicular accidents is understood to increase in relation to increased traffic volumes. Residual cumulative effects on transportation infrastructure and services, which is understood to encompass potential motor vehicle accidents, is characterized as being high in magnitude, to occur throughout the RAA, are continuous and long-term in duration, reversible and occur within a moderately resilient socio-economic context (see Table 6.3-29 for a summary of residual cumulative effect characterizations). It is anticipated that if Aurora LNG determines that substantive Project-related traffic will start to utilize the Northwest Regional Airport (and associated Highway 16 to Prince Rupert) that a Project shuttle service will be considered to mitigate the potential increase in vehicle traffic (and potential accidents). This will be looked at in more detail in development of the Project Traffic Management Plan. Additional consideration of motor vehicle collisions is provided in Section 9.4 (Accidents and Malfunctions, subsection Motor Vehicle Collisions).
1502.1	round 1	Kitsumkalum First Nation	Section 6.3.5.4	Infrastructure and Services	Camp Policies - closed camp etc. is it legal to prevent people from leaving camp and terminate their employment if they do? Or if they use their own vehicle rather than the company transport?	Noted in Section 6.6.5.3 subsection 'Mitigation for Change in Community Health and Wellness' and similar sections of subsequent effects (as well as other social VCs), "the worker camp will be a closed-access camp, meaning that Project employees will be encouraged to remain onsite (See Section 1.2 Proposed Project Description). Failure to adhere to the camp policies will result in worker termination". As the owner of the work site including the camp, Aurora LNG will impose the appropriate management requirements for camp and transportation to align with the Social Management Plan and its mitigation measures.
1503.1	round 1	Kitsumkalum First Nation	Section 6.3.5.5	Infrastructure and Services	Health services impacts will extend to the RAA, in Terrace and will result in greater difficulty in accessing health services as has been documented in the literature - please refer to impacts documented in Fort McMurray and Gladstone. These impacts need to be monitored and adaptively managed collaboratively within the RAA.	As noted in Section 6.3.6.6 of the Application, it has been recognized that the baseline demand for health care infrastructure and services in the RAA is frequently not met and hospitals will not be able to accommodate additional demands created by a larger population without an increase in level of service. In particular, the availability of physicians in the RAA is lower than the provincial average and even a relatively small increase in demand could affect the quality of health care delivery in the area. With respect to Project residual effects on health care infrastructure and services within the LAA (which includes the Mills Memorial Hospital), through the Social Management Plan (mitigation 6.3.1) changes in demand will be monitored and mitigation measures adaptively managed to meet changing conditions. With respect to cumulative residual effects within the RAA, Aurora LNG will participate in government-led regional initiatives with respect to cumulative effects on community infrastructure and services, including health care infrastructure and services. It is expected that other projects that require regulatory approval will be subject to similar mitigation through the environmental assessment and permitting processes.
1504.1	round 1	Kitsumkalum First Nation	Table 6.3-27	Infrastructure and Services	All geographic extent effects are limited to the LAA, however all effects will extend beyond the RAA for the construction phase and the transition from construction to operations. This is a serious oversight in this summary of effects.	The LAA boundaries represent the spatial extent to which Project-related activities, change in population and employment and income could contribute to a direct, predictable and measurable adverse change in potential effects identified in Table 6.3-2 of the Application. The RAA boundaries capture an area that established context for the determination of significance of Project specific effects as well as encompasses the spatial extent where cumulative effects are most likely to occur. As discussed in Section 6.3.5 and summarized in Table 6.3-27, it is predicted that residual effects from the Project are limited to the LAA; however, cumulative residual effects are predicted to extend to the RAA (assessed in Section 6.3.6 and summarized in Table 6.3-29). Effects are predicted to extend into the RAA in the cumulative case as multiple LNG projects, pipelines, and other industrial developments proposed to be constructed in the RAA between 2015 and 2025 may result in rapid increase in in-migrating and temporary populations as non-local workers move into the communities. As such, the Project is predicted to have adverse residual effects on change in community infrastructure and services, accommodations, transportation infrastructure and services and health care infrastructure and services within the LAA but to contribute to cumulative residual effects within the RAA. Assessment methods established in Section 3 of the Application, in accordance with Section 3 of the AIR, do not require characterization of effects beyond the RAA.
1505.1	round 1	Kitsumkalum First Nation	Figure 6.3-16	Infrastructure and Services	RAA Populations estimates (note the axis label is incorrect). The assumptions to arrive at this increase in population from all the developments moving forward is grossly underestimated as only the direct jobs were used in the project alone population estimates methodology. The total influx of people from all the projects moving ahead at the same time must include direct and indirect jobs related to the developments and their families. It is more accurate to use other real examples of where projects have moved forward at the same time and what the population increase was and how effective their mitigation was. There are several scientific papers from Australia where multiple developments - mining and LNG - have resulted in population increases and cumulative social effects.	The mislabeling of the Y axis in Table 6.3-16 is acknowledged. The Y axis is incorrectly labeled as "LAA population" as opposed to "RAA population". An errata document is being created that will capture these corrections and it will be filed with the BC EAO. The commenter has incorrectly interpreted assessment methods and population modelling results. Discussed in Section 6.3.5.21, population modelling includes estimates of direct, indirect and induced population effects. Inclusive of these estimates are associated replacement effects (i.e., in-migrating workers filling vacated roles by current residents seeking employment with the Project) as well as effects associated with in-migrating spouses and dependents. Overall Project-related population effects are illustrated in Figure 6.3-14. With respect to Figure 6.3-16, Project-related changes in population (as noted above) are added to estimates of direct, indirect and induced population change associated with the Projects listed in Table 6.3-28. Therefore, Figure 6.3-16 also depicts estimates of direct, indirect, and induced (including replacement and family effects) population change. Regarding case-study analysis, Section 13.5 draws on numerous comparable case studies to that of the Project and provides a discussion of effects of population change on 'quality of life/community identity', 'social cohesion', 'private property values', and 'cost of living'.
1506.1	round 1	Kitsumkalum First Nation	Section 6.3.6.3	Infrastructure and Services	Cumulative Effects. This section in addition to all other sections in 6.3 acknowledges effects will extend to RAA, however mitigation is only proposed for LAA. This means those effects extending into RAA will not be mitigated or adaptively managed. This is a major concern for KKN.	Mitigation measures identified in Section 6.3.5 are proposed to avoid or reduce Project residual effects within the LAA and the Project's contribution to cumulative effects within the RAA. In addition to mitigation measures proposed in Section 6.3.5, Aurora LNG will also participate in government-led regional initiatives with respect to cumulative effects on community infrastructure and services at the regional level. (see Section 6.3.6).
1507.1	round 1	Kitsumkalum First Nation	Section 6.3.6.3	Infrastructure and Services	Cumulative Effects. The reason the effects are being assessed for cumulative effects is because post mitigation there are residual effects. Therefore the contribution to cumulative effects remain and must also be mitigated.	Mitigation identified in Tables 6.3-21, 6.3-22, 6.3-23 and 6.3-26 of the Application are predicted to reduce the Project's contribution to cumulative effects on change in community infrastructure and service. Given that cumulative effects may occur as a result of interactions with physical activities outside the control of the proponent, collaborative initiatives may be required among those responsible for other projects or physical activities as well as other third parties, including participation in government-led regional initiatives, may be required to reduce these cumulative effects.
1508.1	round 1	Kitsumkalum First Nation	Section 6.3.6.3	Infrastructure and Services	KKN are not satisfied with the mitigation proposed by PNW for social effects; comments provided to PNW are similar to comments provided here for Aurora LNG project.	Aurora LNG is confident that the suite of mitigation measures proposed as part of the Social Management Plan will effectively manage the predicted adverse residual effects on infrastructure and services.
1509.1	round 1	Kitsumkalum First Nation	Section 6.3.6.3	Infrastructure and Services	Page 6.3-89 last paragraph. Please clarify. On the one hand it is stated municipalities will be limited in terms of revenues realized from the project while on the other hand it is stated the economic development benefits will be long term. Unless there is concerted effort to diversify the economy before the end of construction the benefits will not last and the municipalities without revenues will be unable to improve their infrastructure or services in any of the phases, especially during operations.	The closing paragraph on page 6.3-89 of the Application refers to long term benefits to community infrastructure and services in the RAA associated with the Project and reasonably foreseeable major projects in or near the RAA that were selected to interact cumulatively with the Project (Section 6.3.6.1). Collectively, through tax revenue, service fees and other income sources generated by other projects and indirect and induced population effects associated with the Project, economic development is anticipated within the RAA, leading to long term beneficial effects on community infrastructure and services in the RAA. As discussed in Section 14.12, the Social Management Plan will be developed with regulators, Aboriginal Groups and concerned stakeholders. with the objective to outline mitigation measures to reduce or avoid Project-related economic and social effects.
1510.1	round 1	Kitsumkalum First Nation	Section 6.3.6.4	Infrastructure and Services	Cumulative Effects Mitigation for Accommodation. While Aurora LNG commits to participating in government led initiatives to manage cumulative effects, KKN would like to see LNG proponents advocate for such an initiative to ensure their contribution to cumulative effects are addressed. In addition, KKN suggest Aurora LNG commit to sharing and participating in monitoring programs to assess for effects over time.	Through the implementation of mitigation measures identified in Table 6.3-22, the Social Management Plan (mitigation 6.3.1) and in consideration of Project design (use of an on-site closed-access accommodation camp), the Project's contribution to cumulative effects is expected to be reduced. As noted in Section 6.3.64, since future projects requiring regulatory approval through the environmental assessment and permitting processes will be subject to similar mitigation requirements/expectations as that proposed by Aurora LNG, the contribution to cumulative effects within the RAA associated with these projects are also expected to be reduced. However, in recognition that cumulative effects could still occur, Aurora LNG has committed to participating in government-led regional initiatives with respect to cumulative effects on infrastructure and services, including accommodations. It is ultimately a government responsibility to coordinate such regional initiatives among a variety of proponents according to public policy.
1511.1	round 1	Kitsumkalum First Nation	Section 6.3.6.4	Infrastructure and Services	Residual cumulative effects. Temporary effects to housing costs needs to be defined and put into context. If several projects proceed temporary may mean 10 yrs. or more. For people who will be at risk of losing their home due to increased property taxes or increased rents a few months to one year of this increased cost will result in the need to relocate outside the region or become homeless. Terrace has seen homelessness double in two years due to the increased cost of housing (see Terrace and District Community Services homeless count), where 74% were aboriginal.	It is anticipated that Project-related population increase in the RAA will have an adverse effect on housing availability and affordability over the short term (residual effect restricted to the duration of the construction or decommissioning period or less; see Table 6.3-4 for residual effects characterization criteria). Over time, the housing market is expected to return to a supply/demand balance as housing and accommodations are influenced by market pressures. However, because of the increased population and level of economic activity, accommodation costs will likely be higher than at present. Therefore, as per Table 6.3-29, residual cumulative effects on infrastructure and service are predicted to be long term (residual effect extends through the operations phase). Cumulative effects on accommodations are determined to be significant (see Section 6.3.7.2).
1512.1	round 1	Kitsumkalum First Nation	Section 6.3.6.6	Infrastructure and Services	Health Services Cumulative Effects. While Aurora LNG commits to participating in government led initiatives to manage cumulative effects, KKN would like to see LNG proponents advocate for such an initiative to ensure their contribution to cumulative effects are addressed. In addition, KKN suggest Aurora LNG commit to sharing and participating in monitoring programs to assess for effects over time.	Through the implementation of mitigation measures identified in Table 6.3-26, the Social Management Plan (mitigation 6.3.1) and in consideration of Project design (use of an on-site closed-access accommodation camp with an on-site medical facility), the Project's contribution to cumulative effects is expected to be reduced. As noted in Section 6.3.6.6, since future projects requiring regulatory approval through the environmental assessment and permitting processes will be subject to similar mitigation requirements/expectations as that proposed by Aurora LNG, the contribution to cumulative effects within the RAA associated with these projects are also expected to be reduced. However, in recognition that cumulative effects could still occur, Aurora LNG has committed to participating in government-led regional initiatives with respect to cumulative effects on infrastructure and services, including health care infrastructure and services. It is ultimately a government responsibility to coordinate such regional initiatives among a variety of proponents according to public policy.
1513.1	round 1	Kitsumkalum First Nation	Section 6.3.7.1	Infrastructure and Services	Significance of Residual Project Effects. While economic benefits consider indirect effects in terms of tax revenue and other inputs to the economy, social effects are noted here to only address direct effects. Please explain why when indirect effects originate from project activities. Indirect effects due to the additional influx of people to support the project development are often greater in magnitude than the direct project effects and must be included in the overall assessment. In addition the RAA has not been characterized as being affected by the project because of the constraint of assessing the direct effects only.	Sections 5.2 (Economic Conditions), 6.3 (Infrastructure and Services) and 6.6 (Community Health) of the Application consider direct, indirect and induced population effects in the assessment of residual and cumulative residual effects. Population effects were modeled for the LAA and RAA using employment estimates provided in Section 5.2 (i.e., direct, indirect and induced employment) and modeled against baseline and forecasted population estimates from BCStats (see Section 6.3.3.2 subsection 'Population'). Workforce estimates were supplemented with estimates of population change related to replacement in-migration and family structures. Population estimates for the LAA and RAA are presented in Sections 6.3.5.2 and 6.3.6.4 respectively. Significance determinations provided in Section 6.3.7 for Project residual effects and cumulative residual effects account for direct, indirect and induced population change.

1514.1	round 1	Kitsumkalum First Nation	Section 6.3.7.2	Infrastructure and Services	Significance of Residual Cumulative Effects. As mentioned in previous comments the significance of cumulative effects is underestimated as it does not account for the indirect effects, i.e. the additional influx of people to support the development of the project.	Population modelling to support the assessment of change in community infrastructure and services included predicted effects on direct, indirect and induced population increases in both the LAA and RAA (see Section 6.3.5.2 and 6.3.6.4). Modeling included consideration of workers and their families. Modeled population effects inform the effect mechanism 'population change' which is a fundamental consideration in the assessment of change in accommodations, change in transportation infrastructure and services and change in health care infrastructure and services. Adverse effect characterizations for each residual effect assessment in Section 6.3 consider population effects with residual effects characterized accordingly. Similarly, significance definitions account for population change and therefore are not understated.
1515.1	round 1	Kitsumkalum First Nation	9 / page 6.4-86	Land and Resource Use	Under the hunting section, the proponent has seemingly missed the points that have now been brought forward made on several occasions. The first point is that there will likely be "no hunting zones" that are much larger than the project footprint. No firearm discharge areas will likely be 500m from the fence line of the project, substantially reducing hunting area on the island. The second is that the hunting pressures that will increase drastically in the region in general (not just wildlife management area 6-14). If this project proceeds, the local population will substantially grow. That population will want to hunt and fish the area, thus putting substantial pressure on the resources. We have experienced this with the BC-Hydro NTL powerline. and the Rio Tinto Expansion. Although camp workers were not allowed to have firearms and fishing rods in the camps, they would stay in the region on days off to hunt and fish. The project did not have the longevity that Aurora will and even still there was a notable decrease in wildlife populations. This point still does not seem to make it into the document. There is not much for mitigation that can seemingly be done, however it WILL be an environmental and social impact! this is glossed over on page 6.4-87. Perhaps wildlife improvement funds could be part of the mitigations?	No Hunting Zones Project residual effects assessed in Section 6.4.5.3 of the Application are characterized as extending into the LAA (the entirety of Digby Island; this area is inclusive of the PDA). As such, potential areas within the LAA beyond the PDA boundary that may be subject to additional setbacks from Project infrastructure, with respect to the discharge of firearms and bows, is accounted for in the assessment and accurately characterized. Hunting Pressures Non-Local Workers Most of the non-resident construction labour force will work on a fly-in/fly-out (FIFO) basis and will be accommodated at the Project's closed-access camp (meaning that workers will be expected to stay at the camp for the duration of their shift unless they must leave for work-related purposes). Combined with logistics planning that will require workers to be transported from the Project site to their community of hire following the completion of shifts and mitigation measures restricting the storage of hunting and fishing gear on-site (mitigation 4.8.11) and from engaging in recreational and commercial fishing on Digby Island, increases in hunting and fishing demand from FIFO construction workers are expected to be negligible. When present in local communities, adverse effects on hunting and fishing (i.e., increased pressure from Project-workers) from non-local workers will be further minimized through the Worker Code of Conduct and worker orientation (mitigation 6.3.3) which will communicate expectations for respectful conduct (e.g., expectations regarding engagement in hunting and fishing activities). In addition, Aurora LNG will develop and implement a Community Engagement Plan (mitigation 6.3.4) to facilitate ongoing and meaningful community engagement including monitoring, recording, and will provide a framework from which to address community complaints and concerns (mitigation 6.4.3 - community Process). In-migrating Workers It is assumed that a small proportion of the overall Project labour force may choose to relocate to the LAA. In-migrating workers have the potential to increase competition for resources within the LAA and RAA. To address potential concerns related to increased pressure on hunting and fishing due to Project-related population change, Aurora LNG will develop and implement a Community Engagement Plan (mitigation 6.3.4) to facilitate ongoing and meaningful community engagement including monitoring, recording, and will provide a framework from which to address community complaints and concerns (mitigation 6.4.3 - community Process). Wildlife Improvement Funds Mitigation measures proposed in Section 4 (Environmental Effects) of the Application such as the Wetland Compensation Plan (mitigation 4.6.12), Wildlife Management Plan (mitigation 4.7.16), Environmental Management Plan (mitigation 4.7.21), and Fish Habitat Offsetting Plan will avoid, reduce, or offset predicted adverse effects on wildlife. Additional mitigation beyond that provided in the Application (see Section 16 for a summary) is not currently proposed.
1516.1	round 1	Kitsumkalum First Nation	6.4.3.3	Land and Resource Use	Page 6.4-13 "Part 2 of the GBR LUO sets out objectives for the North Coast Area, within which the RAA is located. Objectives include the protection of Aboriginal features, important aquatic habitats, rare plants and important wildlife habitat. Within the RAA, there are three important areas identified in the Order; including grizzly bear habitat, important fisheries watersheds, and cedar stewardship areas (Government of BC 2016a)." Although the proponent has gone through Archaeology branch for working in and around heritage sites, Kitsumkalum has not been allowed by the proponent to be on site while studies and works surrounding our aboriginal, traditional features have been undertaken. and the fact that the midden and archaeological sites are not mentioned here seems odd and suspect.	Aboriginal Heritage Features (including shell middens) are objectives under the Great Bear Rainforest LUO and are present in the RAA. An errata document is being created that will capture this clarification and it will be filed with the BC EAO. Please refer to the "Aurora LNG's Approach to Consultation with Aboriginal Groups" technical memo for information regarding the field programs conducted for the project. This memo will be filed with the BC EAO. Aurora LNG endeavoured to identify and create opportunities where it could involve Aboriginal Groups in field work. As part of this process, Aurora LNG has prioritized the involvement of those Aboriginal Groups located in closest proximity to the location of the Project on the basis that these Aboriginal Groups have a higher likelihood of being effected by any potential effects associated with the Project. Due to logistical and operational limitations associated with field operations, Aurora LNG has had to limit participation by Aboriginal Groups further removed from the location of the Project including Kitsumkalum First Nation.
1517.1	round 1	Kitsumkalum First Nation	Page 6.4-14	Land and Resource Use	Refers to a private lot owned by Aurora LNG Joint Venture Partners. Who is the JV partner? Is this the IGBC referred to on 6.4-24? What does IGBC stand for? and where is the parcel of land?	Aurora LNG Joint Venture Partners include Nexen and INPEX Gas British Columbia Ltd. (IGBC). As shown on Figure 6.4-6, the noted private lot is located along Casey Cove near Charles Point.
1518.1	round 1	Kitsumkalum First Nation	Table 6.4-16	Land and Resource Use	4.2.5 should use air curtain burners for open burning on site. They reduce emissions, ash and fire escapement risk.	As discussed in Section 4.2.5 of the Application, the Project will avoid burning of biomass and accumulated waste material from the construction camp or postpone burning to meteorologically-suitable days. This mitigation measure reflects industry standards and regulatory requirements for open burning (Open Burning Smoke Control Regulation), and has been proven to be an effective measure to reduce open burning air emissions and to reduce effects on local air quality. Aurora LNG acknowledges that Air Curtain burners can be suitable for specific situations and will consider the use of Air Curtain burners during the FEED process and during the land clearing procurement process.
1519.1	round 1	Kitsumkalum First Nation	6.5.4.2	Marine Use and Navigable Waters	The Application determined that wake waves generated by LNG carriers and escort tugs are not likely to cause adverse effects on Aboriginal and commercial marine harvest. This was determined based upon a report produced for LNG Canada that predicted that wake generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high (at the source vessel), which is within the size range of naturally occurring waves in the region. They provide an example that wave height in Douglas Channel experiences a maximum height was 3.4 m with an averaged 0.14 m. The Application then screens out vessel wake in the assessment because it is expected that mariners and shoreline harvesters will be accustomed to dealing with project-related wake waves. While the magnitude vessel wake waves maybe well within the range of normal wave conditions, the predicted wave conditions are not provided for Chatham Sound.	Environment Canada and Fisheries and Oceans Canada monitor 17 buoys that record weather data. However, none of the buoys are located in Chatham Sound. Of these buoys, two were used in Section 6.5.4.2 to represent the potential range of wave heights experienced in the Project area. The South Hecate Strait buoyis located in relatively deep water (approximately 228 m) in an exposed area with high fetch, where Hecate Strait meets Queen Charlotte Sound. The mean monthly average wave height recorded at this buoy is 1.8 m, while the historical maximum is 13.7 m. The Nanakwa Shoal buoy, in Douglas Channel, is located in relatively shallow water (approximately 22 m) in a confined area with less potential for east-west fetch. Mean monthly average wave height at this buoy is 0.14 m and the historical maximum is 3.4 m. Specific wave height information for Chatham Sound is not available through the buoy monitoring system noted above. However, the weather buoy in South Hecate Strait is relatively more exposed than Chatham Sound, while the Douglas Channel buoy is in a much more confined location. The exposure and fetch of Chatham Sound are less than the area of the South Hecate Strait buoy, yet greater than the Douglas Channel buoy location. It is therefore reasonable to assume that average wave height experienced in Chatham Sound will fall somewhere between that seen at South Hecate Strait and that seen in Douglas Channel. The assessment in Section 6.5.4.2 states that a wave height range of 0.14 m and 1.8 m is assumed to be the average natural wave height typically observed in the Project area.
1520.1	round 1	Kitsumkalum First Nation	6.5.4.2	Marine Use and Navigable Waters	The assessment does not consider wave frequency or timing. Increased wave frequency could increase the likelihood of shoreline and intertidal erosion, thus impacting habitat for intertidal species (i.e., harvested invertebrates and algal species). Where the timing of waves and intertidal harvesting overlap, vessel wake can have a detrimental disturbance effect on harvesting practices as harvesters must accommodate for vessel wake. In addition, there has been no tanker wave study and wake wash impact assessment conducted in the Application. A more sophisticated analysis (magnitude, frequency, timing) is required to reduce uncertainties in the assessment, and provide a more rigorous framework for comparison with both the ambient storm wave climate and the wake associated with shipping traffic. Therefore, it is premature to conclude that there will be no adverse effects on shoreline/intertidal habitats and intertidal harvesting, much less to conclude that there is no pathway for effects to occur as was done in the Application.	Potential changes to marine fish habitat resulting from vessel wake generated by Project-related vessels are discussed under the 'change in habitat' effect (Section 4.9.5.2, Marine Fish and Fish Habitat). Based on the results of the assessment, wake effects resulting from vessels associated with the Project are not expected to adversely affect marine fish habitat. Therefore, wake effects were not considered further within the Marine Fish and Fish Habitat assessment. If it is conservatively assumed that intertidal harvesters working on shore are using both low tide periods in a day (this is unlikely, as the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping effects is temporally restricted on a daily basis. For approximately 83% of each day, wake from Project-related shipping will not interact with intertidal harvesters Section 6.5.4.2 of the Application describes that the mean monthly average natural wave height in the area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m, produced by LNG carriers and escort vessels at 12 knots, is within the range of the mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches the shoreline is lower than the wake height at the source vessel, and well within the natural wave height range currently experienced by shoreline harvesters. Additional large vessel traffic may alter the frequency of vessel generated wake but this is not expected to measurably change the wave activity in the area. Moreover, Project-related vessels will travel along the existing and established shipping route currently used by larger marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large, loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by shoreline harvesters, relating to natural weather patterns and large vessel traffic. Reference: Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
1521.1	round 1	Kitsumkalum First Nation	6.5.2.1	Marine Use and Navigable Waters	The environmental and economic consequences of species invasions are well known in the US and Canada. However, the Application does not discuss any potential for the introduction of invasive species into the LAA and RAA. The Application does mention that the Canadian Shipping Act and the associated Ballast Water Control and Management Regulations (BWCMR) exist, but there was no formal assessment. The regulations require tankers to exchange ballast at least 50 nautical miles west of Haida Gwaii or Vancouver Island. These areas are quite far offshore so unless there is noncompliance with the regulations, this measure should reduce the likelihood of introduction of invasive species. However, the BWCMR only require a 95% exchange rate of ballast so that 100% elimination of the potential for the introduction of exotics is not required nor mentioned in the Application. In addition, the effectiveness of mid-ocean ballast exchange depends entirely on compliance and the method of ballast treatment. Pui Gwun Lo (2009) pointed out several caveats regarding the effectiveness of mid-ocean ballast exchange. Hull fouling is another means for invasive species to be introduced into the LAA and RAA. Hull fouling involves organisms such as barnacles or mussels attaching themselves to ship hulls and either encountering structures in a new port or releasing larvae into the water. Therefore, invasive species should have been discussed and assessed in the Application.	Sections 6.5.2.1 and 6.5.6.4 of the Application identify the legislation and regulations pertaining to the control and management of ballast water. As per Mitigation Measure No. 4.5.7 (Section 4.5.15.3, Table 4.5-26, of the Water Quality assessment), vessels transiting to and from the Aurora LNG marine terminal will adhere to the Vessel Pollution and Dangerous Chemicals Regulations and the Ballast Water Control and Management Regulations under the Canada Shipping Act (2001). The Ballast Water Control and Management Regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Project-related international shipping will be required to adhere to these regulations. The Prince Rupert Port Authority (PRPA) is a standing member of the Green Marine Program, which encourages international ship owners to implement anti-fouling measures to reduce the risk of aquatic invasive species introductions from hull-attached organisms. The PRPA also monitors the potential establishment of invasive species as part of the Plate Watch program. To date, no aquatic invasive species have been documented in the Prince Rupert harbour as part of this program. Because the above identified mandatory management procedures for preventing the introduction of aquatic invasive species are well established and effective, a separate assessment of invasive species is not warranted.
1522.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	Assessing only what is known as the "Primary Route" from Triple Island through Chatham Sound is inappropriate, regardless of the "frequency of use". All in/out bound shipping routes have the potential to be used by the Aurora LNG project ships and should be assess as so. Kitsumkalum disagrees that the effects of the two secondary routes is the same as for the primary (e.g. effects to the breeding colonies of birds at Lucy Island).	The assessment of Marine Use and Navigable Waters was done using the primary shipping route. This choice was conservative because it represents the route that most shipping traffic is expected to use and therefore has the greatest potential for adverse effects to marine navigation and fisheries. As described in Section 6.5.2, while alternative shipping routes exist, LNG carriers should only deviate from the prescribed route under unusual circumstances (e.g., such as under the direction of the LNG carrier captain or marine pilot to avoid a collision or other emergency). As a result, the assessment focused on the primary shipping route.
1523.1	round 1	Kitsumkalum First Nation	6.5 (Figure 6.5-2)	Marine Use and Navigable Waters	how was the "small vessel route" (especially on the west side of the channel) rationalized? What is the characterization of "small vessel"? It is our understanding that proponent had very little in the way of small vessel traffic information (baseline) ("While no reliable marine data were available to quantify these vessel movements in a systematically and spatially relevant way, common boating routes and other relevant marine features (e.g., marine parks and marinas) are discussed in Recreation and Tourism (see Section 6.5.3.2)"; therefore, clarity is needed to understand the effects to "small vessel" traffic (which would generally represent Aboriginal travel marine use). Characterization of residual effects is currently inappropriate with out this assessment.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
1524.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	The summary of key concerns associated with the assessment of Marine Use and Navigable Waters (and within the potential effects) does not assess the effects to marine use (and Aboriginal rights) from perceived changes to marine safety.	The key concerns used to help develop the assessment of Marine Use and Navigable Waters were devised through engagement with Aboriginal Groups, as described in Section 6.5.2.2. Table 6.5-2 describes the key concerns scoped into the assessment as a result of this consultation; Table 6.5-13 and Table 6.5-14 outline the mitigation measures proposed to address Project-related impacts to marine use. The assessment of effects on Kitsumkalum First Nation's harvesting-related Aboriginal Interests (Section 12.5.7.6), cultural wellbeing (Section 12.5.7.7), use of trails and travelways (Section 12.5.7.11), and current use of lands and resources for traditional purposes (Section 11.3.10.3) found that marine safety and access to traditional use sites will be maintained with the implementation of mitigation measures. As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG will engage with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders in the development of this plan. Additional input to the planning process will result from the safe-shipping workshops and the recommendations from the TERMPOL study.

1525.1	round 1	Kitsumkalum First Nation	6.5 (Table 6.5-5)	Marine Use and Navigable Waters	In order to characterize "magnitude" of effects to marine use and navigable waters there must be some threshold established (especially since the measurable parameters are quantitative in nature), a "measurable change" is not sufficient to appropriately characterize residual effects.. These thresholds should be decided in consultation with regulatory agencies and affected Aboriginal groups.	The thresholds used for the characterization of significant adverse effects on Marine Use and Navigable Waters were developed because there were no established or existing federal, provincial, municipal, or industryquantitative benchmarks for Marine Use and Navigable Waters. The threshold was not quantitative but was based on knowledge of the baseline conditions for Marine Use and Navigable Waters, the potential Project effects, and concerns identified by stakeholders. The threshold provides a reasonable cut off point above which the potential Project effects are predicted to become significant. A determination of significant residual effects for Marine Use and Navigable Waters is one where the proposed Project activities are not compatible with established marine use plans or policies, or where the Project will create a change or disruption that widely restricts or degrades present marine uses to a point where the activities cannot continue at current levels and for which this change cannot be mitigated (see Section 6.5.2.8). Key elements of this threshold are explained further:"Not compatible" indicates that the Project completely eliminates the option to practice a marine activity."change or disruption that widely restricts or degrades present marine use" indicates that the potential Project effect has a large geographical extent or severely reduces the ability to practice a marine activity relative to the existing conditions."Cannot continue at current levels and for which this cannot be mitigated" indicates that the current marine practices cannot continue even with mitigation. The assessment used extensive data, including: literature, government reports, other Environmental Assessment Applications from similar projects in the regions, and Traditional Use and Knowledge studies (however, issues specific to Aboriginal Groups were assessed in Part C of the Application). Data were obtained from Fisheries and Oceans Canada (DFO), the Pacific Pilotage Authority (PPA), the British Columbia Marine Conservation Analysis (BCMCA) online database (see Section 6.5.3 for more information on the information sources, and the technical memo: "Effects of Lost Fishing Time" for further assessment of marine fisheries). This technical memo will be filed with the BC EAO. The assessment made conservative assumptions to improve prediction confidence. Discussions of the assumptions made and prediction confidence are provided in Sections 6.5.5.1 and 6.5.8, respectively. Overall, Aurora LNG is confident in their understanding of the baseline conditions, the assumptions made, and the conclusion of no significant adverse effects on Marine Use and Navigable Waters.
1526.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	A commitment to develop a Marine Activities Management Plan is insufficient. Management plans must be presented in sufficient detail at this stage to provide a comprehensive sense of mitigations and commitments. These elements need to be in place to inform the assessment process.	As described in Section 6.5.3.3 of the Application (and further detailed in Section 14.11), Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. The safe-shipping workshops, TERMPOL study, and participation on the Prince Rupert Port Authorities' Marine Construction and Coordination Committee are expected to lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention). Additional information on the nature of the Marine Activities Plan will be shared as the plan is developed. The level of detail provided in Section 14.11 aligns with that provided for applications of similar scope within northwest BC and meets the requirements of the AIR.
1527.1	round 1	Kitsumkalum First Nation	6.5 (page 6.5-38)	Marine Use and Navigable Waters	"Kitsumkalum First Nation harvests marine resources according to a system where specific resource harvesting locations (e.g. stretches of beach, kelp beds) are owned by house groups; only house group members are allowed to harvest from harvesting locations they own (Kitsumkalum First Nation and Crossroads 2016; LNG Canada 2014). It is reported that Flora Bank and Horsey Banks (near Lelu Island) are important fishing and marine harvesting locations, as well as a number of freshwater systems nearby. Kitsumkalum First Nation members generally do not target eulachon as a result of declining stocks and suspected contamination in local spawning populations. Fish species harvested by Kitsumkalum include halibut, various species of salmon, steelhead, red snapper, herring and herring eggs, eulachon, abalone, crab, mussels, clams, cockles, sea cucumber, sea prune, and seaweed/kelp (Kitsumkalum First Nation and Crossroads 2016; Kitsumkalum Indian Band 2014; LNG Canada 2014; Kitsumkalum First Nation nd)." There is erroneous information presented in this statement in the Application. If this information is considered as baseline for consideration of effects to Kitsumkalum from changes to marine use and navigable waters then there is an issue.	Aurora LNG apologizes for the misleading statement and has included it in the erratum to be submitted to the BC EAO. This statement is misleading because it generalizes information that is relevant to only a few eulachon fishing sites and applies it to the broader understanding of Kitsumkalum's eulachon fishing practices. Consequently, the statement: "Kitsumkalum First Nation members generally do not target eulachon as a result of declining stocks and suspected contamination in local spawning populations.", will be removed from the Application. As described in the report by Kitsumkalum First Nation and Crossroads (2016), eulachon are important for dietary, social, and cultural reasons. In particular, eulachon are rendered down to make highly valued eulachon grease that is eaten and traded. Monitoring eulachon populations and restoring their habitat is of the utmost importance for the Kitsumkalum not only for cultural reasons but also because they are an endangered species (Kitsumkalum First Nation and Crossroads 2016). This errata will not alter the effects determination for marine fisheries. That is, the conclusions in the Application remain the same, and no significant adverse effects are predicted on marine fisheries.
1528.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	Because of the scale of the figures throughout the assessment of effects to marine use and navigable waters is not clear the overlap of many of the marine uses and the Casey cove area. Nor is it clear the combined effects (to marine use and navigable waters) here from the pioneer dock, MOF construction and operations, temporary floating work camp and intake and effluent pipes (on sea bed). One would assume that no access will be allowed in Casey cove once project activities (construction and through operations) start, but the assessment and significance of this have not been made clear in the Application.	The figures produced in Section 6.5 of the Application used a geographical scale relevant to the features it was designed to show. Additional details regarding marine construction and access will be determined during the permitting phase through Transport Canada with input provided from the proposed safe shipping workshops and TERMPOL study.
1529.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	Kitsumkalum disagrees with the removal of the turning basins from the quantification of project effects. Regardless of duration marine use and navigation will be restricted while ships conduct berthing operations (within the turning basin).	The assessment of Marine Navigation considered the Project footprint, safety zones, and turning zones. However, the two turning basins (one associated with each berth) were not included in the areal calculations because they involve areas that will be used only temporarily during docking as opposed to areas within which navigation will be permanently restricted (i.e. the permanent infrastructure and control zones). During use of the turning basins, all national and international maritime rules and regulations apply, in addition to those set forth by the Prince Rupert Port Authority (PRPA). Turning and docking will make use of four tugs and take approximately 0.5 hours. The PRPA and Pacific Pilotage Authority (PPA) will continue to coordinate large commercial shipping traffic so that turning and docking processes do not interfere with each other, or pose a safety concern (i.e., at present, large shipping traffic do not pass each other in the inner harbour). The PRPA and PPA work collaboratively to design and implement safe turning and docking procedures for use in Prince Rupert Harbour. In most cases, these agencies work with proponents to develop recommendations that are specific for the vessel and the marine terminal. Sophisticated marine simulators are often used to determine what docking scenarios (e.g., location for turning, and number and power of tugs to be used) are best suited to the terminal and vessels involved. Scenarios are tested under various environmental conditions (see Section 6.5.3.2 for further details).
1530.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	Kitsumkalum disagrees with the assumption:"The assessment focuses on potential effects of LNG carriers, rather than smaller marine vessels associated with the Project (e.g. tugs). Similarly, the cumulative effects assessment does not include current levels of small vessel transits, which would have made the contribution of the Project to overall shipping traffic appear much less. Large vessels are less maneuverable and require more space and time to make course changes, making them more likely to interfere with the VC compared to other Project-related traffic. For more information on why construction traffic was not included, see Section 6.5.3.2," as the transits across the channel from pilot vessels and tugs (as it is not clear where operational tugs will be housed) will affect marine use and navigation. The characterization of effects is insufficient without consideration of shipping traffic (barges and tugs from construction , tugs transits, pilot vessel transits (attributable to the project)	See the "Effects of Additional Project-related Traffic" technical memo which will be filed with the BC EAO.
1531.1	round 1	Kitsumkalum First Nation	6.5 (Table 6.5-13)	Marine Use and Navigable Waters	How is it that every other project within the PRPA boundary has stipulated (as mitigation) participation on the PRPA's Marine Construction Coordination Committee, but the proponent has not mentioned this as mitigation for effects to Marine Use and Navigable Waters? Nor is there commitment to a Marine Traffic Management Plan? None of the 4 listed mitigation measures are deemed appropriate by Kitsumkalum to avoid or offset adverse effects to Marine Use and Navigable Waters.	As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or minimize effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. It is expected that the safe-shipping workshops, TERMPOL study, and Aurora LNG's participation on the Prince Rupert Port Authorities' Marine Construction and Coordination Committee will lead to additional mitigation measures related to ship design/operation, terminal design, navigational routes, and pollution prevention. Additional information on the nature of the Marine Activities Plan will be shared as the plan is developed.
1532.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	The Characterization of residual effects for changes in navigation is misleading. Presenting % of area lost for navigation due to project footprint does not represent the significance of the loss of a t travel route for used for traditional or current uses. If it is the only route used by a community then it represents a 100% loss.	Aurora LNG maintains that, with implementation of the proposed mitigation measures, navigational routes around the marine terminal and into the Port of Prince Rupert will be maintained. The area where the physical structures of the Project will be built will be unavailable for marine navigation, however, the marine terminal will be built close to shore and out of the main navigation channel. As such, it is expected that mariners will be able to navigate around the marine terminal with reasonable ease. The marine terminal will be clearly marked with all appropriate navigational aids. Also, see the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
1533.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	Kitsumkalum disagrees with the characterization of residual effects for change in marine fisheries and other uses (salmon fishing specifically) as it is not clear what percentage of salmon fishing time is lost compared to days open for commercial (aboriginal) salmon fishing due to operational LNG traffic and berthing in the LAA. (same could be asked for the characterization of the other fisheries)	See the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
1534.1	round 1	Kitsumkalum First Nation	6.5	Marine Use and Navigable Waters	Confidence is low in the assessment of residual and cumulative effects to marine use and navigable waters, at minimum the proponent should commit to follow-up programs and monitoring to ensure validity of predictions in the EA.	At present, follow-up monitoring plans are not proposed; however, Aurora LNG is committed to working with regulators and Aboriginal Groups to develop the Marine Activities Plan which could include potential follow-up programs. As described in Section 6.5.3.3 and 14.11 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. Safe-shipping workshops and the TERMPOL study are expected to lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention.More information on the nature of the Marine Activities Plan will be shared as it becomes available.
1535.1	round 1	Kitsumkalum First Nation	Table 6.6-4	Community Health	Administrative Boundaries - should include Kitsumkalum Territory.	The local assessment area (LAA) for Community Health reflects the spatial extent to which Project-related change in population and employment and income could contribute to a direct, predictable, and measurable adverse change in community health and wellness or change in availability of harvested foods. Potential effects on Kitsumkalum are captured within the LAA for potential effects on change in harvested foods, and the regional assessment area (RAA) for change in community health and wellness and change in harvested foods. Administrative boundaries include spatially-defined limits of municipalities, regional districts and health authorities as well as fish and wildlife management areas. The description of existing conditions, both within the LAA and RAA, is largely constrained by administrative boundaries.Administrative boundaries do not include the extent of First Nation territories.
1536.1	round 1	Kitsumkalum First Nation	Section 6.6.2.5	Community Health	Technical Boundaries - although it is difficult to predict the magnitude of potential effects, a commitment to monitoring with established thresholds of impacts to community health could be implemented.	Regarding community health monitoring, while not specifically identified as a proposed mitigation measure, mitigation measures identified in Table 6.6-18 are included in higher-level plans (e.g., the Health and Medical Services Plan, and Social Management Plan) which include varying levels of monitoring. These higher-level plans are identified in Table 6.6-18 under the column 'Management and/or Compensation Plans' with additional information provided in Section 14.
1537.1	round 1	Kitsumkalum First Nation	Section 6.6.2.8	Community Health	Significance of Thresholds for Residual Effects. The words "distinguishable" and "persistent and substantial" need to be defined as they are open to interpretation.	"Distinguishable" means that the adverse effect is measurable, predictable, and attributable to one or more project or cumulative interactions (i.e., it is not within the boundaries of normal variation of the measurable parameter under baseline conditions). "Persistent" refers to effects that exist for a long period of time; in this instance, beyond Project activities. "Substantial"refers to a high magnitude measurable change from baseline conditions.
1538.1	round 1	Kitsumkalum First Nation	Page 6.6-16	Community Health	The sub-index data provided show the people living in the region are extremely vulnerable to impacts to community health. This emphasizes the need for mitigation by the governments and by the proponents collaboratively of all projects to manage socioeconomic effects from large resource developments.	Mitigation described in Tables 6.6-18 and 6.6-21 of the Application will reduce the Project's contribution to cumulative effects on change in health and wellness. Other projects will also likely be subject to similar mitigation through the environmental assessment and permitting process which also would be expected to reduce each project's contribution to cumulative effects. Aurora LNG has committed to participating in provincial and/or regional led initiatives to further reduce cumulative adverse effects on community health and wellness.
1539.1	round 1	Kitsumkalum First Nation	Page 6.6-49	Community Health	The reasons given for focusing only on communities included in the LAA for the assessment of change in community health and wellness are not sufficient. People in the RAA are vulnerable and will be affected.	For the assessment of change in community health and wellness, as noted in Table 6.6-3 of the Application:The LAA reflects the spatial extent to which Project-related physical works and activities could affect the change in community health and wellness.RAA captures an area that establishes context for the determination of significance of Project specific residual effects as well as encompasses the spatial extent where cumulative effects are most likely to occur.These spatial boundaries align with those established in the AIR (see Section 3.3 and 6.6 of the AIR). Section 6.6.5.2 assesses residual effects on community health and wellness within the LAA (noting the potential for vulnerable populations to be disproportionately affected) while Section 6.6.6.3 assesses cumulative residual effects on community health and wellness within the RAA (noting the potential for vulnerable populations to be disproportionately affected).
1540.1	round 1	Kitsumkalum First Nation	Table 6.6-18	Community Health	There is no mitigation to address any of the potential effects to community health from the increased cost of housing resulting in increased homelessness and there is no firm commitment to hiring Aboriginal Peoples to offset these impacts. A Local Content plan is needed with commitments for Nexen to facilitate the hiring of Aboriginal Peoples. For example a commitment could be made to include in its contracts with suppliers (and their subcontractors) that the contractors and subcontractors must hire Aboriginal Peoples first who live within the region. In addition, an Accommodation Plan is needed to address non camp related accommodation issues as there will be impacts to vacancy rates that will drive up the cost of housing. The mitigation measures currently proposed will not address negative impacts to vulnerable people.	The assessment of change in accommodations is provided in Section 6.3 (Infrastructure and Services) with addition of cost of living addressed in Section 13.5.4. Aurora LNG proposes to implement mitigation measures to increase local content (mitigation 5.2.1, 5.2.2, and 5.2.5) and reduce Project-related demand on accommodations (mitigation 6.3.10). Aurora LNG is confident that, when combined with accommodation policies (i.e., the closed-access camp, Project controlled logistics for FIFO workers), mitigation measures to address adverse effects on community health and wellness (not limited to the Social Management Plan [mitigation 6.3.1], Community Engagement Plan [mitigation 6.3.4] and Worker Lodging Plan [Mitigation 6.3.10]) adverse effects on community health and wellness due to changes in accommodations will be effectively managed. Aurora LNG acknowledges that vulnerable populations may disproportionately realize higher magnitude effects than the average LAA and RAA population (as discussed throughout Section 6.6). Commitments or targets to hire Aboriginal persons is currently not proposed. Aurora LNG is an equal opportunity employer and will consider all qualified persons for Project-related employment.

1541.1	round 1	Kitsumkalum First Nation	Page 6.6-68	Community Health	Income and Social Status. It is difficult to ascertain how unemployed or vulnerable populations will be able to secure employment with mitigation measures proposed in this EA. There are no firm commitments to assist these groups in obtaining and maintaining employment but only information providing and engagement. Contractors and sub-contractors will be free to hire who they wish likely to be people from outside the region who have worked on other projects with the companies who win the contracts. It is very difficult to compete with people who have this advantage of training, experience and personal connection and history with the contractors and subcontractors and also unions.	Aurora LNG will inform local residents and Aboriginal Groups of jobs and procurement opportunities in advance of and during Project phases as well as develop work packages that consider the capacity and capabilities of local and regional businesses (mitigation 5.2.1). This mitigation is anticipated to increase local content and enhance beneficial effects of the proposed Project on local communities. Aurora LNG acknowledges that should individuals choose not to work for the proposed Project or have insufficient skills or education, the ability of the proposed Project to employ local workers is lowered. Aurora LNG will identify specific skill requirements and potential shortages of workers in those skill sets, and work with training and education facilities to identify and implement suitable training programs. Aurora LNG will work with Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain the training required for Project participation (mitigation 5.2.5). Aurora LNG further recognizes, as assessed in Section 6.6.5.3 (subsection 'Income and Social Status'), despite mitigation, not all unemployed and vulnerable populations who seek employment during Project construction and operations will be successful in securing work (direct, indirect, and induced).
1542.1	round 1	Kitsumkalum First Nation	Section 6.6	Community Health	Impacts to Community Health General. The EA has provided good baseline and good characterization of the impacts (with the exception of sometimes not including the Terrace area and the Kitsumkalum people, however falls short of providing effective mitigation to minimize effects so that they can be deemed Not Significant.	Aurora LNG is confident that the suite of mitigation measures proposed in Table 6.6-18 (50 referenced mitigation measures) and Table 6.6-21 (108 referenced mitigation measures) will effectively manage adverse residual effects on community health.
1543.1	round 1	Kitsumkalum First Nation	Section 6.6	Community Health	Summary - for the small amount of local and regional employment as identified in the Economic Section of the EA (appears to be a low number inclusive of indirect and induced jobs) the benefits to community health due to increased family income would apply to a small number of people especially considering the short term of employment as the types of trades needed for construction will change throughout the five year period.	Beneficial effects of employment and income on community health and wellness as realized by local residents of the LAA and RAA, based on local employment estimates, would be limited to the estimated 5% of the peak construction workforce. During operations, the percentage of local hire is estimated to increase to 12%, representing a greater number of local residents that could experience beneficial effects on community health and wellness due to changes in employment and income.
1544.1	round 1	Kitsumkalum First Nation	Table 6.6-22	Community Health	With the various ratings of residual effects in this table the effects to community health and wellness with the currently proposed mitigation must be Significant.	Table 6.6-22 of the Application provides a summary of the Project residual effects on Community Health. Since multiple effects (with additional consideration to vulnerable populations) are assessed in Section 6.6.5, numerous characterizations are provided. The detailed assessment which informed the summary provided in Table 6.6-22 is provided in the preceding Sections 6.6.4, 6.6.5 and continues until the completion of the Section. Section 6.6.7 provides significance determinations for Project residual and cumulative residual effects. Significance determinations draw on residual and cumulative effect characterizations provided in Sections 6.6.5 and 6.6.6 and significance thresholds established in Section 6.6.2.8.
1545.1	round 1	Kitsumkalum First Nation	Section 6.6.3	Community Health	Cumulative effects. As per comments made for other Sections of this EA, Kitsumkalum are not happy with the mitigation that has been proposed or the content of the Social Management Plans provided by either PNW LNG or LNG Canada. Also to note is the Aurora LNG project is larger than the PNW LNG project and LNG Canada is in Kitimat.	The proposed content of the Social Management Plan (SMP) as currently detailed in Section 14.12 of the Application represents a preliminary outline of the objectives and potential content which may be included in the SMP. The SMP will be developed with regulators, Aboriginal Groups and interested stakeholders. The level of detail provided in Section 14.12 is consistent with that provided in applications of similar size and scope in northern BC.
1546.1	round 1	Kitsumkalum First Nation	Page 6.6-108	Community Health	The statement is made once again vulnerable people may obtain employment, however there is no information provided on how this will be possible. There is no mitigation offered to enhance this potential benefit.	Section 5.2.5 of the Application outlines proposed mitigation that may help to increase the likelihood of persons defined as "vulnerable populations" in obtaining employment on the Project. These include, but may not be limited to:Mitigation No. 5.2.1: Inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases. Develop work packages that consider the capacity and capabilities of local and regional businesses.Mitigation No. 5.2.5: Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation. Mitigation proposed by Aurora LNG, such as those defined above will be further refined and, where applicable, be captured as part of the Social Management Plan (SMP) and procurement planning. Both the SMP and procurement planning will be informed through engagement with regulators, Aboriginal Groups, and concerned stakeholders. While implementation of the above noted mitigation measures may assist LAA and RAA populations, including vulnerable populations, in securing employment, all candidates will be subject to standardized employment requirements. For example, all workers (not inclusive of summer students) 19 years and younger will be required to have completed grade 12 or have obtained an appropriate equivalency to secure employment with the Project (in order to prevent young people from leaving school prematurely; see mitigation No. 5.2.3). Noted in Section 6.6.5.3 (subsection 'Income and Social Status'), Aurora LNG recognizes that not all unemployment and vulnerable populations who seek employment during Project construction and operations will be successful in securing work (direct, indirect, and induced).
1547.1	round 1	Kitsumkalum First Nation	Section 6.6.7	Community Health	Significance of Project Residual Effects. The effect to community health and wellness on Kitsumkalum as a vulnerable population to increased cost of housing and health related effects from boom and bust dynamics is completely missed. In addition, the reliance of access to traditional foods is essential for members' health and sustenance. Reduced access could occur as more income will be required to pay for housing and less will be available to harvest foods, e.g. boat gas, truck gas, etc. No mitigation is proposed to minimize these effects. With current mitigation residual effects to community health is Significant.	Regarding changes in demand for housing from construction to operations see the response to comment 1500.1. Noted in the response, 'boom-and-bust' effects on the supply and demand of accommodations are not expected as increased demand is predicted during the transition from construction (short-term) to operations (long-term). However, as concluded in Section 13.5.4 (Cost of Living), while mitigation measures (i.e., 5.2-1, 5.2-2, 5.2-5, 6.3-1, 6.6-12, 6.3-15, 6.4-8, and 6.4-9) are expected to reduce the magnitude of adverse effect on cost-of-living, Project-related changes in population are anticipated to increase demand for housing and goods and services within the LAA and lead to increased costs. Assessed in Section 6.6.5.3, changes in population and employment and income could have beneficial or adverse effects on the health status of LAA and RAA residents depending on their current situation and ability to secure employment. In some instances, vulnerable populations may realize disproportionate effects (as is characterized in Section 6.6.5.3). With respect to changes in access to harvesting locations, Section 6.6.54 recognizes that if access to preferred harvesting locations is affected, alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields). As noted by the commenter, increased percentages of income spent on increased housing costs could also affect access and participation in harvesting activities. While Aurora LNG is confident that Project design (i.e., a closed-access camp), FIFO worker logistics plans, and the suite of mitigation measures proposed in Sections 5.2, 6.3, 6.4, 6.5, 6.6 and 13.5.4 will reduce Project residual adverse effects on accommodations, health, harvesting, and cost of living, it is recognized that these mitigation measures do not mitigate existing trends and conditions within the region that are not attributable to the Project. To help address cumulative adverse effects within the RAA, Aurora LNG has committed to participating in provincial and/or regional led initiatives to address cumulative adverse effects on community health and wellness and infrastructure and services. Conclusions regarding the significance of the predicted residual effects on change in community health and wellness remain unchanged and not significant.
1548.1	round 1	Kitsumkalum First Nation	Section 6.6.7	Community Health	Significance of Cumulative Residual Effects. The effect to community health and wellness on Kitsumkalum as a vulnerable population to increased cost of housing and health related effects from boom and bust dynamics is completely missed. In addition, the reliance of access to traditional foods is essential for members' health and sustenance. Reduced access could occur as more income will be required to pay for housing and less will be available to harvest foods, e.g. boat gas, truck gas, etc. No mitigation is proposed to minimize these effects. With current mitigation residual effects to community health is Significant.	Regarding cumulative changes in demand for housing, 'boom-and-bust' effects on the supply and demand of accommodations could occur. However, most proponents of industrial development considered in the cumulative case (see Table 6.3-28 of the Application) have proposed similar mitigation measures as Aurora LNG and most will use project-dedicated or open-camp accommodations to lodge their construction workforce. As such, while 'boom-and-bust' effects could occur, increaseddemand for housing will likely occur during the transition from construction (short-term) to operations (long-term); this is similar to the Project case. Effect characterizations provided in Section 6.3.6.4 and the determination of significance (significant cumulative adverse effects on accommodations; Section 6.3.7.2) remain valid. Assessed in Section 6.6.6.3, cumulative changes in population and employment and income could have beneficial or adverse effects on the health status of RAA residents depending on their current situation and ability to secure employment. In some instances, vulnerable populations may realize disproportionate effects (as is characterized in Section 6.6.6.3). For the purpose of the assessment of change in community health and wellness, Aboriginal Groups are considered vulnerable. With respect to cumulative changes in access to harvesting locations, Section 6.6.6.4 recognizes that if access to preferred harvesting locations is affected, alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields). As noted by the commenter, increased percentages of income spent on increased housing costs could also affect access and participation in harvesting activities. While Aurora LNG is confident that Project design (i.e., a closed-access camp), logistics plans, and the suite of mitigation measures proposed in Sections 5.2, 6.3, 6.4, 6.5, 6.6 and 13.5.4 will reduce the Project's contribution to cumulative adverse effects on accommodations, health, harvesting, and cost of living, it is recognized that these mitigation measures do not mitigate existing trends and conditions within the region that are not attributable to the Project. To help address cumulative adverse effects within the RAA, Aurora LNG has committed to participating in provincial and/or regional led initiatives to address cumulative adverse effects on community health and wellness and infrastructure and services. Conclusions regarding the significance of residual effects on change in community health and wellness remain unchanged and not significant.
1549.1	round 1	Kitsumkalum First Nation	7.2.2.4	Heritage	Increased human presence should be considered during construction, operations and closure as a potential adverse effect on archaeological sites. Sites such as coastal shell middens are particularly sensitive to increase human presence and it is known that there currently are and will likely to continue to be exposed archaeological materials in the LSA.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1550.1	round 1	Kitsumkalum First Nation	7.2.2.5	Heritage	The RAA should be larger that than the LAA. As there is no regional setting provided it is not possible to assess the significance of the sites that will be impacted (How rare are the site types that are being impacted? Is the density of sites in the project area normal for this region? . The LAA and RAA are limited to ground disturbance from construction but do not consider disturbance to archaeological sites as a result of increased human presence on the island. Both the LAA and RAA should be increased in size to take this into consideration.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. For these reasons, no change to the Application is considered warranted.
1551.1	round 1	Kitsumkalum First Nation	7.2.2.6	Heritage	The assessment assumes that archaeological sites will only be impacted during the construction phase. This needs to be revised to account for increased human presence that will also occur during operations and construction and closure that may result in impacts to sites. Additionally, buried deposits such as shell midden sites may be disturbed during closure and reclamation.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1552.1	round 1	Kitsumkalum First Nation	7.2.3.2	Heritage	Kitsumkalum is very concerned with the lack of testing on Spire Island where two rock overhangs were identified and visually examined but not tested. High potential areas like these must be tested or more information provided on the rationale for not testing.	Two rock overhangs were identified on Spire Island during the AIA. Visual examination of the areas did not identify any archaeological materials or remains. However, given the potentially sensitive nature of these features as potential burial places, intrusive subsurface inspection was not conducted. As per the AIA report (Appendix W), avoidance is recommended. If avoidance is not feasible, additional archaeological study would be undertaken prior to construction.
1553.1	round 1	Kitsumkalum First Nation	7.2.9	Heritage	With the large number of sites in very close proximity to the Project, on going monitoring to ensure the sites are not impacted is required. Kitsumkalum would like to see monitoring during construction and yearly monitoring of the sites during operations and monitoring during closure and reclamation activity. In addition due to lack of any Kitsumkalum inclusion in field works to date, Kitsumkalum Must be involved in such field work moving forward!	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including marine dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including marine dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, monitoring of the sites after initial construction (tree removal and ground disturbance) may not be required however Aurora LNG will review the requirement for monitoring on a site by site basis in discussion with the appropriate regulatory authorities. Aurora LNG welcomes further discussions with Kitsumkalum First Nation regarding heritage and archaeological resources. Please refer to the "Aurora LNG's Approach to Consultation with Aboriginal Groups" technical memo for information regarding the field programs conducted for the project. This memo will be filed with the BC EAO. Aurora LNG endeavoured to identify and create opportunities where it could involve Aboriginal Groups in field work. As part of this process, Aurora LNG has prioritized the involvement of those Aboriginal Groups located in closest proximity to the location of the Project on the basis that these Aboriginal Groups have a higher likelihood of being effected by any potential effects associated with the Project. Due to logistical and operational limitations associated with field operations, Aurora LNG has had to limit participation by Aboriginal Groups further removed from the location of the Project including Kitsumkalum First Nation.
1554.1	round 1	Kitsumkalum First Nation	7.2.3.2	Heritage	Fossil sites have been attributed to Digby Island, however the report states that there is no potential for fossil finds. It is not clear from the Paleontology report if a qualified professional paleontologist conducted this assessment. Please state the qualifications of the person who did the study.	Edits were made to Sections 7.2.1, 7.2.2.1, 7.2.2.8, 7.2.3.1, 7.2.3.2, 7.2.3.3, 7.2.8, and 7.2.9 in response to comments from the Heritage Branch during the screening of the application in December 2016 which address this comment. To clarify, a high-level review of paleontology has been conducted for the Project. The review was conducted by a professional Palaeontologist with a PhD who is a member of the British Columbia Paleontological Alliance. A paleontological assessment will be conducted prior to construction and will include review of relevant information and databases. The assessment and reporting will be conducted under a permit issued by the province. If any fossils are identified, they will be managed in consultation with the Heritage Branch. The Archaeological and Heritage Resources Management Plan will include measures to manage any unexpected fossil finds during project activities. The plan will meet Heritage Branch standards regarding management of fossil sites. The management plan will be prepared prior to construction. An edit was made to Table 7-7 during screening to reflect that the Heritage Branch will be consulted during its preparation.

1555.1	round 1	Kitsumkalum First Nation	7.2.4	Heritage	This section needs to include potential impacts from increased human presence throughout the project lifecycle, and impacts to buried deposits during construction, decommissioning and closure.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1556.1	round 1	Kitsumkalum First Nation	7.2.5.1	Heritage	Kitsumkalum disagrees with the assumption that the affects of the Project on Heritage resources are well understood based on the work done in the LAA and RAA. The LAA and RAA are too small to understand the affects of the Project and Heritage resources and need to be expanded. Additionally, the authors do not appear to fully understand the potential affects of the Project.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. For these reasons, no change to the Application is considered warranted.
1557.1	round 1	Kitsumkalum First Nation	7.2.5.2	Heritage	Kitsumkalum disagrees with the assessment of residual effects. The assessment has not considered the significance of the sites regionally. This project area has a very high density of archaeological and historic sites and is evidence of the high use and significance of the area over a long period of time. There a few places on the coast that have such a high density of sites in such a small area and location. It is also an excellent area for public interpretation to occur. The loss of these sites would have a significant residual impact on the population of archaeological and heritage sites in the larger region. Lack of all first nations involvement has added to this.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA. Aurora LNG acknowledges the concern of Kitsumkalum First Nation regarding the archaeological and heritage sites in the PDA. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1558.1	round 1	Kitsumkalum First Nation	7.2.5.3	Heritage	The assessment of residual effects needs to be revised to reflect the significance of the very high density of archaeological and heritage sites in this location and how the loss of this resource will carry forward in to the future and result in the loss a significant resource. Mitigation through data recovery and monitoring of the sites will not be enough to offset losing an area like this that has this time depth of occupation, density and diversity of sites.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA. Aurora LNG acknowledges the concern of Kitsumkalum First Nation regarding the archaeological and heritage sites in the PDA. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1559.1	round 1	Kitsumkalum First Nation	7.2.6 Heritage	Heritage	A cumulative effects assessment is necessary for this project as the logic that the mitigation will offset the residual effects is flawed. The current mitigation plan does not offset the significant loss the collective archaeological and heritage resources in this area.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
1560.1	round 1	Kitsumkalum First Nation	7.2.1 section	Heritage	"There are 110 sites currently recorded on Digby Island of which 62 are within the Project development area PDA" This over 50% of the known sites on Digby island are located within the PDA and have potential to be disrupted or disturbed. Of which most are located directly across from Casey point which is a Kitsumkalum Village site that was destroyed by the railway.	Aurora LNG acknowledges the comment. Archaeological sites within the PDA will be avoided, where practicable, or mitigated through systematic data recovery and/or archaeological monitoring under a Section 12 alteration permit issued by the Archaeology Branch.
1561.1	round 1	Kitsumkalum First Nation	7.2.1 section	Heritage	Although "In BC there are established processes for identifying, assessing and managing impacts to archaeological and heritage resources, and any potential effects will either be avoided or subject to mitigation measures in accordance with the Heritage Conservation Act (HCA) prior to construction." Kitsumkalum has not been involved in works on site to date, has not had our requests to be involved with cultural works and does not necessarily agree to all mitigations under the HCA.	Aurora LNG's consultation objectives are described in Table 3-1 of Appendix S2 (Second Aboriginal Consultation Report [ACR#2]). In that table, each objective is listed along with specific sections of the ACR#2 that demonstrate Aurora LNG's related consultation activities undertaken to meet the objectives. Section 8 of ACR#2 details engagement and consultation activities undertaken with Kitsumkalum First Nation. Table 8-1 outlines the issues and concerns as understood by Aurora LNG, any recommendations provided by Kitsumkalum, Aurora LNG's proposed response, and the status of the issue/concern. Please refer to technical memo "Aurora LNG's Approach to Consultation with Aboriginal Groups" for additional information regarding the field programs conducted for the project. This technical memo will be filed with the BC EAO.
1562.1	round 1	Kitsumkalum First Nation	7.2.1 section	Heritage	"The provincial HCA automatically protects archaeological and heritage resources that pre-date AD 1846 as well as Aboriginal rock art and human remains, regardless of their age. The HCA also protects heritage wrecks (e.g., aircraft and ships) more than two years old. Sites that post-date AD 1846 may also be protected by the HCA if they have heritage value for BC, a community or an Aboriginal Group." While this is true, it is misleading in that a section 12 alteration permit can be obtained to remove and or destroy heritage features. Kitsumkalum has found that Aboriginal interest has minimal to no impact on this decision.	Aurora LNG acknowledges the comment. Section 7.2.1 provides rationale for selecting archaeological and heritage resources as a VC. The protection status that the HCA provides certain resources is described in this section to support this selection. Aurora LNGrespectfullysuggests that Kitsumkalum First Nation contact theArchaeologyBranch and/or the OGC to discuss the Section 12 alteration permitting process.
1563.1	round 1	Kitsumkalum First Nation	7.2.1 section	Heritage	"Potential archaeological, cultural, and heritage resources have been identified as being of concern to regulators, Aboriginal Groups, stakeholders, and the public." once again, Kitsumkalum has not been involved in order to assess the level of concern on these sites.	Aurora LNG's consultation objectives are described in Table 3-1 of Appendix S2 (Second Aboriginal Consultation Report [ACR#2]). In that table, each objective is listed along with specific sections of the ACR#2 that demonstrate Aurora LNG's related consultation activities undertaken to meet the objectives. Section 8 of ACR#2 details engagement and consultation activities undertaken with Kitsumkalum First Nation. Table 8-1 outlines the issues and concerns as understood by Aurora LNG, any recommendations provided by Kitsumkalum, Aurora LNG's proposed response, and the status of the issue/concern. Please refer to technical memo "Aurora LNG's Approach to Consultation with Aboriginal Groups" for additional information regarding the field programs conducted for the project. This technical memo will be filed with the BC EAO.
1564.1	round 1	Kitsumkalum First Nation	page 7.5	Heritage	HCA values and level of conservation do not always align with FN values.	Aurora LNG acknowledges the commentand welcomes further discussions with from Kitsumkalum First Nation during preparation of the Archaeological and Heritage Resources Management Plan.
1565.1	round 1	Kitsumkalum First Nation	page 7.5	Heritage	"The BCEAA requires consideration of potential significant adverse heritage effects." Although this is true, it is seemingly more and more apparent that Nexen' s view of significant and that of First nations is drastically different.	The significance of adverse effects was evaluated according to methods included in the approved AIR. Aurora LNG will incorporate input from Schedule B and C Aboriginal Groups during preparation of the Archaeological and Heritage Resources Management Plan to supplement conclusions reached in the Application.
1566.1	round 1	Kitsumkalum First Nation	section 7.2.2 page 7.6	Heritage	"The BCEAA requires consideration of potential significant adverse heritage effects." Although this is true, it is seemingly more and more apparent that Nexen' s view of significant and that of First nations is drastically different. The application for Heritage Inspection Permit 2015-0007 and a subsequent permit amendment was sent by the Archaeology Branch to Lax Kw'alaams Band, Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation and Kitselas First Nation for review as part of their standard permit approval process. The Archaeology Branch received comments on the application from Gitxaala Nation and Kitsumkalum First Nation." at this time Kitsumkalum continued to voice our concerns over heritage resources and were not included in field programs.	Aurora LNG's consultation objectives are described in Table 3-1 of Appendix S2 (Second Aboriginal Consultation Report [ACR#2]). In that table, each objective is listed along with specific sections of the ACR#2 that demonstrate Aurora LNG's related consultation activities undertaken to meet the objectives. Section 8 of ACR#2 details engagement and consultation activities undertaken with Kitsumkalum First Nation. Table 8-1 outlines the issues and concerns as understood by Aurora LNG, any recommendations provided by Kitsumkalum, Aurora LNG's proposed response, and the status of the issue/concern. Please refer to technical memo "Aurora LNG's Approach to Consultation with Aboriginal Groups" for additional information regarding the field programs conducted for the project. This technical memo will be filed with the BC EAO.
1567.1	round 1	Kitsumkalum First Nation	section 7.2.2 page 7.8	Heritage	"Metlakatla First Nation was also involved in preparing the Guidelines for the Protection of Archaeological Resources on Digby Island, BC (Nexen 2015), a best management practices (BMPs) document that was adhered to during the AIA field investigations after its issuance in August 2015." Why were other Tsimshian groups not involved?	Aurora LNG has shared archaeological information, including the Archaeological Impact Assessment with all Aboriginal Groups on the Section 11 Order (as amended) including Kitsumkalum First Nation. The Guidelines for the Protection of Archaeological Resources on Digby Island, BC (Nexen 2015) were developed jointly between Kleanza Consulting Ltd, a local archaeological firm and Aurora LNG, with input from Metlakatla First Nation. For further information that provides context related to Aurora LNG's approach to consultation please see the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the EAO.
1568.1	round 1	Kitsumkalum First Nation	7.2.2.8	Heritage	"For archaeological sites protected under the HCA, the scientific, public, ethnic and economic significance is defined using methods outlined in the BC Archaeological Impact Assessment Guidelines (Archaeology Branch 1998). For palaeontological sites, significance is defined in consultation with the Heritage Branch. For CMTs post-dating AD 1846 and other non-protected heritage resources, significance is determined in consultation with the Heritage Branch and potentially affected Aboriginal Groups, or other stakeholders, as appropriate, and typically follows established provincial best practices." As mentioned above, Kitsumkalum has not been included on site field works and thus has not been adequately consulted in regards to this.	Aurora LNG's consultation objectives are described in Table 3-1 of Appendix S2 (Second Aboriginal Consultation Report [ACR#2]). In that table, each objective is listed along with specific sections of the ACR#2 that demonstrate Aurora LNG's related consultation activities undertaken to meet the objectives. Section 8 of ACR#2 details engagement and consultation activities undertaken with Kitsumkalum First Nation. Table 8-1 outlines the issues and concerns as understood by Aurora LNG, any recommendations provided by Kitsumkalum, Aurora LNG's proposed response, and the status of the issue/concern. Please refer to technical memo "Aurora LNG's Approach to Consultation with Aboriginal Groups" for additional information regarding the field programs conducted for the project. This technical memo will be filed with the BC EAO.
1569.1	round 1	Kitsumkalum First Nation	7.2.3.1	Heritage	"AIA field studies were conducted for the Project under two HCA Section 14 inspection permits: 2013-0101 and 2015-0007. The AIAs followed the Archaeological Impact Assessment Guidelines (Archaeology Branch 1998), and the terms and conditions of Inspection Permits 2013-0101 and 2015-0007, and included representation from Lax Kw'alaams Band and/or Metlakatla First Nation" Again this is Tsimshian territory. These two bands do not represent the nation as a whole. Kitsumkalum was not included in this and therefore have not been adequately involved or consulted.	Further information that provides context related to Aurora LNG's approach to consultation and fieldwork participation is provided in the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the EAO.
1570.1	round 1	Kitsumkalum First Nation	7.2.3.3	Heritage	"In summary, AIAs have been conducted for the project under two HCA inspection permits, 2013-0101 and 2015-0007, and have covered the entire LAA/RAA, except small areas where there were minor revisions to the northern portion of the PDA (see Section 7.2.9)." then the entire area has not been covered by AIA's. Is there a plan to do this prior to any disturbance on site?	Prior to construction, further field assessment will be completed for the small areas in the revised northern portion of the PDA that have not been assessed. These areas are situated inland and have low potential for archaeological or heritage resources with high scientific significance (e.g. shell middens) however, other types of resources (e.g. CMTs) could potentially be present. The field assessment and reporting will be conducted in accordance with Archaeology Branch standards with input from local Aboriginal Groups (as identified in Schedule B of the amended Section 11 Order) . If any archaeological or heritage resources are identified, they will be managed in accordance with provincially-regulated procedures and policies in consultation with regulatory agencies and local Aboriginal Groups.
1571.1	round 1	Kitsumkalum First Nation	General	Heritage	Although AIA's have been completed, the area is reasonably dense forest and wetland complexes. It is unlikely that all resources have been discovered. This is evident in the density of use and features that have been identified. The project will undergo extreme disturbance using heavy machinery. Any features not identified will be lost. There are Tsimshian stories of grave sites in the project vicinity that have not been identified. We are concerned that these will be found at the end of a bulldozer, or worse, be lost forever.	The archaeological impact assessment consisted of 100% pedestrian survey of the PDA, which is significantly more than the standard practice. However, it is recognized that there is always a possibility that not all archaeological sites will be discovered even in the most thorough archaeological inspection. Accordingly, a Chance Find Procedure will be included in the Archaeological and Heritage Resources Management Plan to specifically address the chance find of an archaeological site during construction. With respect to grave sites, the survey did account for contexts which are most commonly associated with grave sites, such as was identified on Spire Island. When identified, these were either thoroughly inspected, or the appropriate management recommendations were made.

1572.1	round 1	Kitsumkalum First Nation	General	Heritage	It is not only the loss of information that Kitsumkalum has concerns with. Just because a historical item is dug up and put in a museum, it does not mean the impact is mitigated. This is a disruption of sites and a loss of locations of historic significance that has been ongoing since European contact.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1573.1	round 1	Kitsumkalum First Nation	table 7-7	Heritage	See above two comments. Searching for artifacts and items of significance is a needle in a haystack. I find it hard to believe the high likelihood of success determination. Although these are the SOP's it is hard to believe that these are implementable at all sites.	The archaeological impact assessment consisted of 100% pedestrian survey of the PDA, which is significantly more than the standard practice. However, it is recognized that there is always a possibility that not all archaeological sites will be discovered, even in the most thorough archaeological inspection. Accordingly, a Chance Find Procedure will be included in the Archaeological and Heritage Resources Management Plan to specifically address the chance find of an archaeological site during construction. Aurora LNG welcomes further discussion with Kitsumkalum First Nation during preparation of the Archaeological and Heritage Resources Management Plan.
1574.1	round 1	Kitsumkalum First Nation	page 7-25	Heritage	"However, there are nine archaeological sites with other types of archaeological or cultural features within the PDA that will be wholly or partially affected by the construction of the Project: GbTo…." should read there are nine known arch sites……	Aurora LNG agrees that this statement refers to 'known' archaeological sites. The sentence will be updated to read "...there are nine known archaeological sites...". An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
1575.1	round 1	Kitsumkalum First Nation	General	Heritage	The density of non HCA CMT's shows the level of continued use and importance of this area to the Tsimshian	Aurora LNG acknowledges the comment.
1576.1	round 1	Kitsumkalum First Nation	Table 7-8	Heritage	"Systematic data recovery" Will Kalum and the other Tsimshian be involved in this or will this be another exclusion of our people while traditional heritage is disrupted?	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan which will include the mitigation measure of systematic data recovery.
1577.1	round 1	Kitsumkalum First Nation	7.2.5.3	Heritage	mitigation measures determined in consultation with regulatory agencies, local governments and local Aboriginal Groups will be implemented to recover data where avoidance is not feasible. This statement is misleading! Please include which Aboriginal groups.	In this context "local Aboriginal Groups" refers to those groups identified by the Archaeology Branch (FLNRO).
1578.1	round 1	Kitsumkalum First Nation	Table 7-9	Heritage	I am baffled how the magnitude of impact to archaeological and heritage resources will be negligible for construction!	Negligible magnitude is defined as "No measurable change from existing (baseline) conditions (i.e., no loss of information". While the construction phase may result in permanent and irreversible alteration to site contents or context, this will be offset by the data gathered from those sites as a mitigation measure determined by the Archaeology Branch (FLNRO), and, therefore, and any loss of information is predicted to have a negligible magnitude.
1579.1	round 1	Kitsumkalum First Nation	7.2.6	Heritage	§ Proposed Project is assessed as having residual effects on the VC § Residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Kitsumkalum disagrees	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1580.1	round 1	Kitsumkalum First Nation	7.2.6.2	Heritage	"While other past, present, or reasonably foreseeable projects and physical activities may impact archaeological and heritage resources in the region, the implementation of mitigation measures will result in the absence of Project residual effects and, therefore, means the Project will not contribute to cumulative effects." Kitsumkalum strongly disagrees with this statement!!! The north coast has historically been rich with Aboriginal tradition, artifacts and historic sites. Removing these sites affects our culture, history and presence on the land. Just because there is another historical site somewhere else does not negate the fact there are sites being destroyed here. It is the same if I were to come and pave your backyard and put in a factory, with the explanation that there are lots of other backyards around so really the impact is negligible. And don't worry, the memory of your backyard was documented with a picture and put in the archive. This would be absurd and not accepted but is what the projects justification is.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1581.1	round 1	Kitsumkalum First Nation	7.2.9	Heritage	"Prior to construction, further field assessment will be completed for the small areas in the revised northern portion of the PDA that have not been assessed. The field assessment and reporting will be conducted in accordance with Archaeology Branch standards with input from local Aboriginal Groups." There needs to be commitment and discussion on which Aboriginal groups!	In this context "local Aboriginal Groups" refers to those groups identified by the Archaeology Branch (FLNRO).
1582.1	round 1	Kitsumkalum First Nation	7.2.10	Heritage	Kitsumkalum feels this is wrong. In an area with a total of 530 known CMT's and say that there is no residual effect is absurd. Cumulatively this is a huge impact, especially when other projects are taken into account. How can the project determine not having cumulative affect	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1583.1	round 1	Kitsumkalum First Nation	Table 7-10	Heritage	"Loss of information about or alteration to archaeological and heritage site contents or context" "Not Significant. Effects to archaeological or heritage resources will be mitigated through avoidance where feasible, systematic data recovery where appropriate, and/or archaeological monitoring of development. Residual effects on archaeological and heritage resources are, therefore, not significant." this is another faulty determination. there will be a loss of information and alteration to the site. Heritage is more than the age of a CMT scar and a picture! you are altering the site, so by your own definition of potential effects this is false. Culturally, to collect cedar bark, be on site with the smells and sounds of the coastal rainforest in a traditional site. this will be disturbed and lost at this location. Buried tools and undiscovered features etc. will be lost. to say "not significant" is wrong.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order)(as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
1584.1	round 1	Kitsumkalum First Nation	7.2.2.4	Heritage	Increased human presence should be considered during construction, operations and closure as a potential adverse effect on archaeological sites. Sites such as coastal shell middens are particularly sensitive to increase human presence and it is known that there currently are and will likely to continue to be exposed archaeological materials in the LSA.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1585.1	round 1	Kitsumkalum First Nation	7.2.2.5	Heritage	The RAA should be larger that than the LAA. As there is no regional setting provided it is not possible to assess the significance of the sites that will be impacted (How rare are the site types that are being impacted? Is the density of sites in the project area normal for this region? . The LAA and RAA are limited to ground disturbance from construction but do not consider disturbance to archaeological sites as a result of increased human presence on the island. Both the LAA and RAA should be increased in size to take this into consideration.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1586.1	round 1	Kitsumkalum First Nation	7.2.2.6	Heritage	The assessment assumes that archaeological sites will only be impacted during the construction phase. This needs to be revised to account for increased human presence that will also occur during operations and construction and closure that may result in impacts to sites. Additionally, buried deposits such as shell midden sites may be disturbed during closure and reclamation.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1587.1	round 1	Kitsumkalum First Nation	7.2.4	Heritage	Kitsumkalum disagrees with the assessment of potential project interactions with archaeological sites. This section needs to include potential impacts from increased human presence throughout the project lifecycle, and impacts to buried deposits during construction, decommissioning and closure.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
1588.1	round 1	Kitsumkalum First Nation	7.2.5.3	Heritage	The assessment of residual effects needs to be revised to reflect the significance of the very high density of archaeological and heritage sites in this location and how the loss of this resource will carry forward in to the future and result in the loss a significant resource. Mitigation through data recovery and monitoring of the sites will not be enough to offset losing an area like this that has this time depth of occupation, density and diversity of sites.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.

1589.1	round 1	Kitsumkalum First Nation	7.2.6	Heritage	A cumulative effects assessment is necessary for this project as the logic that the mitigation will offset the residual effects is flawed. The current mitigation plan does not offset the significant loss the collective archaeological and heritage resources in this area.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
1590.1	round 1	Kitsumkalum First Nation	8	Human Health	According to the human health assessment, emissions during the operations phase will exceed those associated with construction of the Project. For that reason, the construction phase of the Project was not assessed in the human health assessment. However, the air quality assessment indicates that construction emissions will exceed operations emissions for certain air contaminants (e.g., PM2.5 and PM10 emissions; see Table 4.2-11 and Table 4.2-12). The health risks associated with construction of the Project should be quantitatively assessed.	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase.
1591.1	round 1	Kitsumkalum First Nation	8.3.1	Human Health	Other applications in BC that included a marine traffic component have needed to assess the health effects of diesel particulates. Rationale should be provided why diesel emissions were excluded from the Application. If such rationale cannot be provided, diesel emissions should be included in both the air quality and human health assessment.	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase.
1592.1	round 1	Kitsumkalum First Nation	8.2.2.8	Human Health	The relevance of the significance threshold should be further described. For example, according to Table 8.2-5, "*if the baseline HQ for food or water ingestion is greater than 0.2, the significance threshold is reached when the Project or cumulative case HQ is greater than baseline HQ + 0.2* ". No information is provided for why the "HQ + 0.2" benchmark constitutes a significance threshold (i.e., the metric seems somewhat arbitrary). Additional information should be provided as to why this benchmark is considered significant.	The application of adding 0.2 to the baseline CR/HQ was made following comments from the Ministry of Health. The Ministry of Health has commented in working group meetings that the project's contribution to health risk should not exceed 20% (i.e., a CR or HQ of 0.2) of the applicable regulatory guideline.
1593.1	round 1	Kitsumkalum First Nation	8.2.2	Human Health	The Application only focused on a select number of COPC (e.g., CACs like CO, PM, SO2 and NO2). No rationale is provided for excluding trace air contaminants like PAHs, VOCs or metals. Other (similar) applications in BC have included a detailed characterization of health risks associated with TACs. Information should be provided why only CACs were considered.	The Application focused on criteria air contaminants that could be produced in sufficient amounts so as to reasonably pose a risk to human health. The scope of the assessment was determined in collaboration with federal and provincial regulators and other stakeholders. Polycyclic aromatic hydrocarbons, volatile organic compounds and metals were not included in the Application Information Requirements under Section 8 for the assessment of human health. Volatile organic compounds in LNG are predominantly methane, ethane, propane and other short chained hydrocarbons which are not toxic when inhaled. There is no pathway for the project to contribute metals in the air. The assessment of metals in air are typical of mine projects, which produce mineralized dust. A rationale for excluding a chemical substance is only provided for substances that were identified in the Application Information Requirements, which defines the scope of the Application.
1594.1	round 1	Kitsumkalum First Nation	8.2.4	Human Health	Boiling water will neither change the pH nor metal concentrations of water. There is an assumption that the residents use a point of source filtration device rather than boiling the water.	The Application does not state that boiling water will change the pH or metal concentrations in the water, noting that the predicted change in water pH (less than 0.3 pH units in the Dodge Cove water reservoir) does not result in a health concern as described in Section 8.2.4 of the Application (Human Health VC - 8.2.4 Project Interactions with Human Health). The boil water advisory is intended to protect residents from water-borne diseases caused by Escherichia coli (E.coli) and fecal coliforms that could be present in untreated or unboiled water. The Project does not affect fecal coliform levels in the Dodge Cove drinking water reservoir. The Application also states that "some Dodge Cove residents apply a point-of-use personal water filtration system for surface waters collected from Digby Island". This statement only indicates that some residents choose to apply a water filtration device as a personal preference.
1595.1	round 1	Kitsumkalum First Nation	8.2.5.3	Human Health	COPC were selected by comparing measured sediment concentrations against sediment quality guidelines that are intended for the protection of aquatic life. This pathway is not immediately relevant to human health. As a result, it is unclear if the human health includes all COPCs relevant or applicable to the Project. Other screening criteria should be considered for the identification of COPC and the subsequent characterization of multiple exposure pathways.	Aurora LNG stands by the methods used to screen chemicals of potential concern to apply to marine traditional foods. As noted in Section 8.2.2.5.4 of the Application, there are no sediment quality guidelines for the protection of human health from any provincial, federal or international regulatory agency. Other screening criteria (e.g., screening against soil quality guidelines for the protection of human health) would encounter similar issues where guidelines are not entirely applicable. The screening was conducted in a manner that consistent with the assessments of other projects that involved dredging (e.g., Pacific Northwest LNG, Prince Rupert Gas Transmission Pipeline, LNG Canada (in Kitimat)). Aurora LNG acknowledges that during the AIR development in 2014, the Ministry of Health (MOH) indicated that the use of CCME sediment quality guidelines as a screening tool for food pathways is not appropriate. A request was made at that time for MOH to suggest alternative screening methods because the proponent recognized that no environmental guidelines would be entirely applicable. Ministry of Health declined to provide alternative screening methods that would be acceptable. Aurora LNG had considered applying the following methods as screening tools: - Canadian Food Inspection Agency tissue residue limits for dioxins and furans. - BC Contaminated Sites Regulations Soil Quality Guidelines for the Protection of Human Health (residential land). However, if these screening methods were applied, copper, dioxins and furans would be screened out of the assessment because the concentration of dioxins and furans were below the CFIA tissue residue limit, and the concentrations of copper, dioxins and furans in the sediment are below the BC CSR soil quality guidelines defining them as contaminants. Therefore, in order to be consistent with the methods used in other LNG projects that propose dredging, the CCME sediment quality guidelines were applied.
1596.1	round 1	Kitsumkalum First Nation	8.2.5.3	Human Health	Consumption rates lower than those documented by Aboriginal Groups were used in the exposure assessment.	Refer to the document "Supplemental Information for Traditional Marine Foods", which will be submitted to the EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1597.1	round 1	Kitsumkalum First Nation	8.2.5.3	Human Health	PAH that were below the detection limits were not included in the assessment.	Of the polycyclic aromatic hydrocarbons (PAH's) identified during screening, only a few samples were above the applicable sediment quality guideline. However, the assessment of PAHs in clams and crab meat considered all PAHs in the tissue samples. PAHs are not assessed individually. Since they are a group of substances with similar effects to humans, the standard protocol is to convert the toxicity of all PAHs into an equivalent concentration of benzo-a-pyrene, which is the most toxic PAH. This method was applied in the assessment of human health.
1598.1	round 1	Kitsumkalum First Nation	8.2.5.3	Human Health	Arsenic concentrations were not speciated and were not considered in the assessment although exposure pathways for arsenic are identical to those presented for copper, which was assessed. The rationale for excluding arsenic from further analysis is inconsistent with retaining copper as a COPC (i.e., COPC selection criteria should be consistent).	Arsenic in seafood such as fish, crustaceans and molluscs is predominantly in the form of arsenobetaine, an organometallic which is largely considered non-toxic and harmless to humans when consumed. This rationale was provided in the Human Health Technical Data Report (Appendix R, Section 4.1.2.1 - Rationale for Excluding Arsenic from Marine Harvested Foods). In contrast, there is no supporting body of research that indicates different levels of toxicity associated with inorganic and organic forms of copper. Therefore, all forms of copper were assumed to have the equivalent level of toxic potential. Please refer to the following literature sources regarding the relative toxicity of arsenobetaine in seafood and marine life in general: https://www.iupac.org/publications/pac/pdf/2010/pdf/8202x0373.pdf http://ceqg-rcqe.ccme.ca/download/en/230
1599.1	round 1	Kitsumkalum First Nation	8.2.5.3	Human Health	No analytical results for the crab tissue or the crab hepatopancreas are provided. No details regarding the crab tissues are provided. Analysis should be crab muscle, total crab (including hepatopancreas) and hepatopancreas in order to adequately assess exposure.	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
1600.1	round 1	Kitsumkalum First Nation	8.2.5.3	Human Health	The results of the analysis of 5 clam samples are provided and the mean concentrations of copper from the 5 samples are used in the assessment. Given the small sample size risk for the maximum concentrations should also be calculated. Would a sample size of 5 be a statistically valid sample size?	Health Canada's "Supplemental Guidance on Human Health Risk Assessment for Country Foods" recommends that for simple risk assessments, a minimum of 5 to 10 tissue samples be taken for each species and tissue of interest. Greater sampling numbers are recommended for complex sites with multiple active sources of contaminants. However, the proposed dredge footprint is not near any active effluent discharge pipes or other sources of chemical discharge and thus, would not be considered a complex site. As such the sampling density used to assess COPC levels in marine country foods is considered to be adequate for the Project.
1601.1	round 1	Kitsumkalum First Nation	9	Accidents or Malfunctions	The LNG industry has and exceptional safety record. First of all this is subjective. Second, what about environmental record which is also a main concern as this is an Environmental Assessment?	Comment noted. Natural gas is a clean burning fuel when compared to other fossil fuels. Reference to the exceptional LNG industry safety record is reflected by the GIIGNL 2012 report on the safety of commercial LNG shipping. Stringent safety and environmental regulations in Canada will only serve to improve this record further.
1602.1	round 1	Kitsumkalum First Nation	9.1	Accidents or Malfunctions	The response plans must address FN capacity to respond to emergencies, Communication plans need to involve FN communities and be agreed on between the company and FN (also local small communities such as dodge cove) this includes evacuation plans, who to notify and how. Not just a plan on the web site but how to implement it in real life in case of emergency.	Topics such as appropriate methods for emergency notification and the options available for evacuation, if necessary, will be considered through consultation with First Nations and local communities during the development of the Emergency Response Plan.

1603.1	round 1	Kitsumkalum First Nation	9.1	Accidents or Malfunctions	The HSE plan does not address cumulative environmental impact but does it address cumulative health and safety concerns. Impact to human health and such?	Section 9.11 of the Application describes how cumulative effects are assessed in the context of accidents and malfunctions. In accordance with federal policy (Government of Canada 2012), the environmental effects of accidents or malfunctions are considered in the assessment of cumulative environmental effects if they are likely to result from the interaction between the Project and other physical activities that have or will be carried out. Project accidents or malfunctions that are considered likely to result from the Project in combination with other physical activities that have been or will be carried out within the RAA are limited to those associated with vessel-to-vessel collisions. Cumulative effects associated with other accidents and malfunctions are considered to be highly unlikely given the low probability of these scenarios occurring, and the low probability of temporal or spatial overlap with other projects and activities. If a vessel-to-vessel collision were to occur, resulting in a spill of diesel and/or bunker oil, the potential cumulative effects are expected to be significant for marine mammals and marine birds, but not for community health (see Section 9.9). Effects to human health related to accidents and malfunctions are assessed based on each accident and malfunction scenario independently. Since the nature of the scenario would result in different types of chemical releases (e.g., release of criteria air contaminants, oils and fuels, cryogenic LNG releases), the effects are not the same and are not cumulative in nature. Reference: Government of Canada. 2012. Operational Policy Statement. Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act. Available at: http://www.ceaa.gc.ca/default.asp?lang=En&n=1DA9E048-1
1604.1	round 1	Kitsumkalum First Nation	9.1	Accidents or Malfunctions	The response plans must address FN capacity to respond to emergencies, Communication plans need to involve FN communities and be agreed on between the company and FN (also local small communities such as dodge cove) this includes evacuation plans, who to notify and how. Not just a plan on the web site but how to implement it in real life in case of emergency.	Topics such as appropriate methods for emergency notification and the options available for evacuation, if necessary, will be considered through consultation with First Nations and local communities during the development of the Emergency Response Plan.
1605.1	round 1	Kitsumkalum First Nation	9.1	Accidents or Malfunctions	The HSE plan does not address cumulative environmental impact but does it address cumulative health and safety concerns. Impact to human health and such?	Section 9.11 of the Application describes how cumulative effects are assessed in the context of accidents and malfunctions. In accordance with federal policy (Government of Canada 2012), the environmental effects of accidents or malfunctions are considered in the assessment of cumulative environmental effects if they are likely to result from the interaction between the Project and other physical activities that have or will be carried out. Project accidents or malfunctions that are considered likely to result from the Project in combination with other physical activities that have been or will be carried out within the RAA are limited to those associated with vessel-to-vessel collisions. Cumulative effects associated with other accidents and malfunctions are considered to be highly unlikely given the low probability of these scenarios occurring, and the low probability of temporal or spatial overlap with other projects and activities. If a vessel-to-vessel collision were to occur, resulting in a spill of diesel and/or bunker oil, the potential cumulative effects are expected to be significant for marine mammals and marine birds, but not for community health (see Section 9.9). Effects to human health related to accidents and malfunctions are assessed based on each accident and malfunction scenario independently. Since the nature of the scenario would result in different types of chemical releases (e.g., release of criteria air contaminants, oils and fuels, cryogenic LNG releases), the effects are not the same and are not cumulative in nature. Reference: Government of Canada. 2012. Operational Policy Statement. Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act. Available at: http://www.ceaa.gc.ca/default.asp?lang=En&n=1DA9E048-1
1606.1	round 1	Kitsumkalum First Nation	table 9.3-1	Accidents or Malfunctions	Facility impacts from air craft. I do not see any reference to impacts of the facility to aircraft? Such as changing micro climate, potential re-routing of air craft etc. What are these impacts?	The Application assessment focuses on potential effects of an aircraft collision with the facility, as required by the final approved Application Information Requirements. Please refer to the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo which has been prepared in response to comments relating to potential effects of Project related Accidents or Malfunctions on aviation associated with the Prince Rupert Airport. The technical memo will be filed with the BC EAO.
1607.1	round 1	Kitsumkalum First Nation	table 9.3-1	Accidents or Malfunctions	Vessels grounding or collision would certainly affect vegetation and wetland resources. Salt marshes, seaweed and kelp beds and harvest, intertidal vegetation, wildlife that feed on inter tidal substances such as be as and deer could likely come into contact with hazardous materials, the economic impact have been proven to be enormous to local economies when disasters like a collision and spill occur. Not to mention the visual eye sore of the spill, wreckage and damage caused by such incidents. Or the change in land and resource use near to the site of a crash, grounding or spill. Table 9.3.1 does not appear well thought out, justified or inclusive of all the potential impacts.	Potential effects of vessel grounding or collision on salt marshes, seaweed and kelp beds, intertidal vegetation are included within the assessment of Marine Fish and Fish Habitat (p. 9-38). The interactions in 9.3-1 are considered based on the measurable parameters, potential effects and characterization of residual effects as described for each VC in their respective sections in Part B. There are other interactions that may occur as a result of these accident or malfunction scenarios however based on the characterization of residual effects criteria, they are not expected to be of concern. Section 9.3 on page 9-5 describes how these determinations where made.
1608.1	round 1	Kitsumkalum First Nation	9.4.1 conclusion	Accidents or Malfunctions	" there are no interactions between motor vehicle collisions within the PDA with any VC's" what about fuel delivery? Service trucks? Crew busses? Heavy equipment?	The potential interactions between a motor vehicle collision involving a fuel delivery truck or other large vehicle and VCs could arise if the collision resulted in an on-shore spill. Potential interactions between an on-shore spill and VCs are described in the Application, Section 9.6.
1609.1	round 1	Kitsumkalum First Nation	9.6.2	Accidents or Malfunctions	Aurora will perform fire and explosion analysis as per company requirements.....What does this look like in comparison to provincial and or federal guidelines (if any) how will this be monitored and recorded? I assume Aurora will be meeting regulations plus, however what does that mean?	The LNG Plant will be designed and built according to the CSA standard for LNG facilities (including completion of a Quantitative Risk Assessment) as well as the fire code standards.
1610.1	round 1	Kitsumkalum First Nation	9.6.2	Accidents or Malfunctions	heated vaporizers? What are these?	Heated vaporizers are systems that provide a heat source to allow cryogenic fluids to be turned to gaseous phase such liquefied natural gas (LNG) vaporized into a natural gas state.
1611.1	round 1	Kitsumkalum First Nation	9.6.2	Accidents or Malfunctions	Old forest communities you have listed that they require 100-250 years to recover. Full old growth recovery is estimated to take 300-500 years to fully recover (http://www.ancientforest.org/what-is-old-growth-forest/). This time can range up to 700 years depending on the plant communities. As mentioned this is much longer than the expected life of the project. Therefore it is imperative to only disturb areas that are absolutely necessary.	Section 4.6.5.3 of the Application states that clearing of old forest will be limited to within the PDA. The loss of old forest within the PDA will be up to 75 ha, which is <1% of old forest in the terrestrial RAA. The loss of old forest is far below the approvec threshold for the landscape units in the Great Bear Rainforest Order, which allows for up to 40% loss of old forest. Therefore, an accidental fire is not likely to approach these threshold areas. The Emergency Response Plan, described in Section 14.16 of the Application, will prioritize the protection of the environment in an emergency, along with protection of emergency response staff, workers, the public and property. This will aid in mitigating the area of old-forest potentially affected by an on-shore fire or explosion.
1612.1	round 1	Kitsumkalum First Nation	9.7.1	Accidents or Malfunctions	"....Full emergency shutdown of a maximum of one production train with associated flaring." What does this mean? What about worse case scenario of all trains shutting down?	The probability of an emergency shutdown of one train is low but more likely than an emergency shutdown of all four trains. Potential effects of an emergency shutdown of one train are therefore assessed for Wildlife Resources (Terrestrial), Marine Birds, Infrastructure and Services (see Table 9.3 1). Potential effects of a four train shutdown are assessed for Air Quality, GHGs , and Human Health VCs, as a result of "worst case" air emission and dispersion modelling assumptions.
1613.1	round 1	Kitsumkalum First Nation		General	What exclusions or shutdowns to vessels or vehicle traffic will occur? Either by order of Nexen, the Port Authority or transport Canada.	As noted in Section 6.5.2.5 of the Application, Aurora LNG has proposed a control zone of 500 m radius surrounding each marine terminal berth which is expected to define the ignition-free areas and areas that will be used to dock the LNG vessels. Other marine traffic will be required to avoid these zones as a matter of safety and security while the LNG carrier is loading. The final size of the control zones is subject to change based on the results of a detailed risk assessment to be undertaken as part of facility design (see Figure 6.5-2). Aurora LNG will be participating in a TERMPOL process and will abide by the recommendations resulting from this process related to safe shipping practices. The recommendations will serve as the basis for additional mitigation measures and may lead to the refinement of the proposed control zone.
1614.1	round 1	Kitsumkalum First Nation	9.7.3	Accidents or Malfunctions	"Flaring activities could temporarily interfere with civil aviation." As the project is in close proximity to the airport, this seems absurd. In the event of emergency flaring how does this impact the airport or aviation in general?	Please see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issues raised by this comment. The technical memo will be filed with the BC EAO.
1615.1	round 1	Kitsumkalum First Nation	9.7.3	Accidents or Malfunctions	"concentrations of sulphur dioxide, nitrogen dioxide and particulate matter would be less than applicable health based ambient air quality objectives" does this include if a second plant such as PNW is operating? What will nexin do in the event of an exceedance? does this result in an immediate shut down?	Dispersion modelling was used to predict air quality concentrations relative to a four-train emergency shutdown. resulting in flaring of the full LNG plant inventory. Model predictions were found to be below applicable ambient air quality objectives. If emergency flaring is required as a result of a full scale shutdown, Aurora LNG will activate the Emergency Management Plan (EMP) and inform applicable jurisdictions. Air quality will be monitored relative to applicable thresholds established during facility emissions permitting. If ambient air quality concentrations are found to exceed the applicable thresholds as a result of an emergency shutdown, Aurora LNG will follow the EMP procedures to advise the public. The assessment of multiple concurrent LNG facility malfunctions is considered highly unlikely and is not within the scope of the AIR. As such, this scenario was not included in the assessment.
1616.1	round 1	Kitsumkalum First Nation	9.7.4	Accidents or Malfunctions	"...and accidents and malfunctions scenario involving an LNG plant malfunction, will result in no significant effect to the VC's (i.e. air quality, GHG's, wildlife resources (terrestrial), Marine birds, infrastructure and services, and human health)". What about a major flaring event, large leak or catastrophic failure? Although the table is listed for residual effects, there would be significant acute effects.	Flaring as a result of an all train shutdown is assessed in Section 9.7. Onshore hazardous spills are assessed in Section 9.8. Potential effects of ignited leaks (i.e., natural gas, flammable liquids and vapours) are assessed in Section 9.6.
1617.1	round 1	Kitsumkalum First Nation	9.8.2	Accidents or Malfunctions	"Drainage systems will be in place to collect contaminated water and process effluents" This material must be avoided in the first place but if it occurs it must be treated and mitigated.	Aurora LNG acknowledges and agrees with the comment; this is why spills are considered to be accidents or malfunctions, as opposed to part of normal operations. Contaminated water will be handled as hazardous material and be treated as disposed of in accordance with legislation.
1618.1	round 1	Kitsumkalum First Nation	9.9.1	Accidents or Malfunctions	"Released marine fuel is expected to spread quickly .....Diesel quickly degrades within one to two months through naturally occurring processes." In the event of a grounding and spill of bunker and/or diesel, large impacts to local economies, health and ways of life may be felt. the local communities rely on the ocean for sustenance, for employment and health. in the event of a grounding event, the implications could be severe to many in the local communities. This is particularly true for Bunker oil as you mention on page 9-38 "bunker oil is persistent in the environment". this has potential to significantly impact the community!	Section 9.9.3 recognizes the potential effects of spills resulting in localized closure to marine harvesting of country foods as well as commercial fishing (Community Health). Aurora LNG acknowledges a closure to marine harvesting may affect local communities. The predicted effects are expected to be limited in geographic extent to the LAA and short-term in duration (as defined in the characterization of residual effects tables for these VCs). Aurora LNG notes that the severity of potential effects, on marine fish and fish habitat, from a spill in the marine environment, will vary depending on various factors including the type and volume of material spilled, the location, weather (during and following the spill) and season, marine fish (and life stages) and habitat present; tidal influences, response time and response measures.
1619.1	round 1	Kitsumkalum First Nation	page 9-41 section 9.9.1	Accidents or Malfunctions	Community health: and in Human health: In the event of a spill of diesel or bunker oil you mention that a localized fishing ban will be implemented. There are people and groups who do not have choice on where to fish through house territories, size of boat or issues as simple as no mode of transportation or money and must harvest food close to where they live. A large spill would be catastrophic. For some people to stop harvesting from the ocean is like to say they should stop breathing.	Aurora LNG acknowledges the concern of Kitsumkalum First Nation and understands that Project-related effects on fishing may be felt more acutely by Kitsumkalum First Nation fishers because of their fishing practices, barriers to increased participation in the fishing sector, and the sensitivity of Kitsumkalum First Nation fishing practices to change. As a result of these considerations, in the assessment of effects on Kitsumkalum First Nation Current Use of Lands and Resources for Traditional Purposes (see Section 11.3.10.3) Aboriginal Socio-Economic Conditions (see Section 11.3.10.5), Aurora LNG characterized Kitsumkalum First Nation's fishing practices as having a low level of resilience. See pages 11-233 and 11-251 for this assessment. As described in Section 11.6, Aurora LNG acknowledges that the cumulative effects of a vessel-to-vessel collision causing a release of diesel and/or bunker oil could be significant to Aboriginal Current Use and Aboriginal Physical and Cultural Heritage through the loss or change in quality of harvested resources, or culturally or spiritually important species.
1620.1	round 1	Kitsumkalum First Nation	9.2.2	Accidents or Malfunctions	The assessment of the potential risk of effects from an accident or malfunction is based on a risk matrix that combines the likelihood of a residual effect after mitigation and response measures and the consequence (i.e., severity or magnitude) of the residual effect after mitigation and response measures. Since the mitigation and response measures relevant to accidents that have the potential to affect marine water quality are not described in detail, it is difficult to evaluate the appropriateness of the conclusions made about the risk of an accident and whether that accident will have significant effects.	Mitigation measures for on-shore or marine spill events are provided in section 9.8.2. and 9.9.2, respectively, and will be further detailed in the Emergency Response Plan (described in Section 14.16). Aurora LNG will engage with regulators, Aboriginal Groups, and interested stakeholders in the development of the Emergency Response Plan.
1621.1	round 1	Kitsumkalum First Nation	9.2	Accidents or Malfunctions	In the listing of Accidents or Malfunction scenarios, neither the accidental spill of large volumes of bunker oil due to vessel collision or sinking nor the operational spill of small amounts of oil and other mechanical fluids are mentioned. Please add both of these scenarios to this list and assess their potential risks for the environment.	A spill of marine fuel (bunker or diesel) is considered within section 9.9 (Vessel Grounding or Collision). The On-shore Hazardous Spills section (9.8) assesses the potential for spills (small or large) reaching the marine environment.
1622.1	round 1	Kitsumkalum First Nation	9.9.3	Accidents or Malfunctions	At the end of this chapter it is stated that "Residual effects on marine water quality from diesel or bunker fuel due to vessel grounding or collision event are predicted to be not significant." This sentence does not apply to this chapter where the residual effects for marine fish and fish habitat are supposed to be stated. Please change this sentence and re-think the categorization based on the report statement that "e.g., bunker fuel can persist in the marine environment and if left to weather, clean-up efforts can be difficult and continue over the long-term." In addition, please consider the residual effects of the Exxon Valdez deposition of oil into intertidal habitats that persisted for more than two decades.	Aurora LNG acknowledges that there are two repeated errors in Section 9.9.3 of the Application under the sub-heading Marine Fish and Fish Habitat. The final sentences of paragraphs two and four on p. 9-39 should read: 'Residual effects on marine fish and fish habitat from diesel or bunker fuel due to a vessel grounding or collision event are predicted to be not significant.' An errata document is being created that will capture these corrections and it will be filed with the BC EAO. The potential persistence of portions of unrecovered and stranded oil that may become buried in intertidal sediments is not expected to be synonymous with the persistence of effects on marine fish and fish habitat. The loss of lighter fractions of hydrocarbons through evaporation, dispersal and other weathering processes in the days and weeks after a release is expected to reduce the potential for toxic effects where pathways to exposure exist. Furthermore, pathways to exposure are expected to be limited through burial of weathered oil portions or hard crusts formed over their surface (formation of 'tar balls'). The emergency response community has benefited through experience and technological improvements in oil containment and recovery techniques in the over 27 years since the Exxon Valdez incident. Emergency response to a release of bunker fuel will focus on the containment and recovery of floating oil, and the deflection away from, and booming of, sensitive shorelines to limit the stranding of oil.

1623.1	round 1	Kitsumkalum First Nation	9.8.3	Accidents or Malfunctions	The Application determined that spills are not likely to cause adverse effects on Aboriginal and commercial marine harvest. Accidental discharges of fuel, oil or bilge will likely occur during the life of the project despite all regulations cited as being in place. Should there be an accidental spill of oil or fuel at an anchorage or on route, there may be adverse local effects to fish, invertebrates or marine seaweed/plants depending on the magnitude, location, and timing. To the extent that these effects might be significant will depend on many factors including the time of year, the marine receptors present, and the response measures enacted. For example, a large diesel spill during sensitive egg and larval fish life history stages may have a significant effect on that population if not contained quickly.	Aurora LNG agrees that the severity of potential effects, on marine fish and fish habitat, from a spill in the marine environment, will vary depending on various factors. This is described in Section 9.9.3 of the Application. The levels of mortality that could occur are not expected to measurably affect species at a population level, and are predicted to be not significant (as defined in the threshold for significance in the Marine Fish and Fish Habitat assessment: Section 4.9 of the Application). It is predicted that some amount of mortality may occur. However, with mitigation and relevant response measures in place, these effects should be limited to the immediate spill area but could potentially extend out to the LAA.. The extent of the spill will depend on various factors including the type and volume of material spilled, the location, weather (during and following the spill) and season, marine fish (and life stages) and habitat present; tidal influences, response time and response measures. An LNG spill would be expected to vaporize rapidly (i.e., within hours) and would not leave any residue in the marine environment. A diesel spill would be expected to spread more rapidly due to its lighter nature and evaporate and disperse/break down over the short term. A bunker fuel spill would be expected to spread more slowly and persist for a longer period of time due to its thicker consistency. The potential effects from each event may vary depending on the combination of influencing factors and will need to be evaluated and considered in the Emergency Response Plan developed for the Project.
1624.1	round 1	Kitsumkalum First Nation	9	Accidents or Malfunctions	The Proponent has concluded that the accidental releases of hydrocarbons into the marine environment would have Significant residual and cumulative effects on marine birds, but these conclusions are limited to one sentence in the application. The Proponent has not made the connection between these types of accidents and the chronic effect of oiling that is a common occurrence and threat in coastal waters.	Section 9.0 Accidents and Malfunctions assesses the potential residual effects on marine birds as a result of small-scale and large-scale on-shore hazardous spills, vessel grounding or collision, and releases from LNG carriers (while loading). A description of potential effects of hydrocarbon releases was provided in Sections 9.8, 9.9, and 9.10. As noted in these sections, the potential for exposure and the extent of residual effects for small and large-scale spills depends on the volume and location of the spill, the toxicity of the spilled hazardous substance, the speed of response and containment, in combination with the seasonal presence, abundance, and distribution of different marine bird species. Depending on the nature of the interaction (considering the factors described above), exposure to hazardous materials, including hydrocarbons, could result in acute or chronic effects. The mechanisms for exposure and resulting acute or chronic effects to marine birds are described in each subsection, as applicable. Accidental releases were considered to be have a significant effect to marine birds if a hazardous spill were to result in acute mortality or long-term chronic exposure to the extent that could cause population level effects. Aurora LNG has committed to several preventative measures designed to limit chronic hydrocarbon releases and the Project is not expected to contribute to existing cumulative effects of chronic oiling. See Sections 9.8, 9.9, and 9.10 for more details on these preventative measures. Project accidents or malfunctions that were most likely to result in a potential cumulative effect with other Projects and physical activities within the RAA were associated with vessel-to-vessel collisions. The likelihood of such an event was considered highly unlikely, however, mitigation and response measures are outlined in Section 9.11.
1625.1	round 1	Kitsumkalum First Nation	9.8.3, 9.8.4	Accidents or Malfunctions	The Proponent has stated, "After mitigation and response measures have been implemented following an on-shore hazardous spill, the likelihood and consequence of residual effects to water quality from both small-scale and large-scale spills are very low. Based on these factors, the risk matrix ranking is remote and the residual effects are not significant." However, a large-scale spill of diesel oil into the marine environment would be difficult to clean up, making the consequence (i.e., severity of effects) and likelihood of residual effects both moderate or high (not “very low”) and resulting in residual effects that are significant. A fact sheet cited in Chapter 9 of the EAC application (US FWS 2004) states that "light oils [including diesel] leave a film on intertidal resources and have the potential to cause long-term contamination." In addition, an expert report on oil spill response prepared for the City of Vancouver and the Tsleil-Waututh and Tsawout First Nations stated that “collecting and removing oil from the sea surface is a challenging, time-sensitive, and often ineffective process, even under the most favourable conditions” (Nuka Research and Planning Group, LLC 2015). Therefore, spilled oil is likely to remain in the environment after mitigation and response measures, meaning there could be a determination of significant effects according to the definition provided in Section 4.5.12.8: "A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota (toxicity for contaminants, habitat and physical damage to fish for suspended sediments). A health risk is identified considering the water and sediment quality guidelines, the conservatism built into those guidelines, and spatial extent and duration of exposure to altered water quality." Nuka Research and Planning Group, LLC. 2015. Oil Spill Response Analysis: Technical Analysis of Oil Spill Response Capabilities and Limitations for Trans Mountain Expansion Project. Expert Report prepared for Tsleil-Waututh Nation, City of Vancouver, and Tsawout First Nation. Available at: http://vancouver.ca/images/web/pipeline/NUKA-oil-spill-response-capabilities-and-limitations.pdf. Accessed: February 2017.	Following a release of diesel, natural attenuation by evaporation and dispersal are expected to reduce the hydrocarbons toxicity to marine organisms over the short term. If unrecovered following containment and recovery operations, and not cleaned up from shorelines, heavier hydrocarbon fractions may persist in shoreline sediments; however, the toxicity and bioavailability of these heavier fractions is expected to be rapidly reduced through weathering processes (including physical losses and biodegradation) (Lee et al. 2003; Page et al. 2002). Considering the elements of the significance threshold (e.g.,..spatial extent and duration of exposure to altered water quality) the characterization of residual effects from an onshore spill with respect to water quality, remains valid. References Lee, K., R.C. Prince, C.W. Greer, K.G. Doe, J.E.H. Wilson, S.E. Cobanli, G.D. Wohlgeschaffen, D. Alroumi, T. King and G.H. Tremblay. 2003. Composition and toxicity of bunker C fuel oil in intertidal sediments after 30 years. Spill Science & Technology Bulletin, 8(2):187-199. Page, D.S. Page, P.D. Boehm, G.S. Douglas and A.E. Bence. 2002. Identification of hydrocarbon sources in the benthic sediments of Prince William Sound and the Gulf of Alaska following the Exxon Valdez oil spill. In P.G. Wells, J.N. Butler, J.S. Hughes (Eds.), Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters. ASTM STP1219, American Society for Testing and Materials, Philadelphia, PA (1995), pp. 41–83.
1626.1	round 1	Kitsumkalum First Nation	9.9	Accidents or Malfunctions	For Accidents or Malfunctions, Significant Impacts are expected for On-shore Spills, Vessel Grounding or Collision (only bunker oil, not LNG or diesel), and LNG Spills at Loading Zone. For the Significant impacts, residual effects were deemed to be of moderate magnitude with a medium likelihood, but reversible. It is confusing why LNG Spills at the Loading Zone are assessed to be Significant whereas LNG releases from a Vessel Grounding or Collision are not deemed to have Significant impacts. If residual effects from an LNG spill are assessed to be potentially Significant at the loading zone, they should also be of moderate magnitude, likelihood and consequence, and thus Significant during a Vessel Grounding or Collision.	Aurora LNG acknowledges this discrepancy and agrees that the two accidental LNG release events assessed, whether at the loading facility or along the shipping route, may both result in significant effects to marine mammals if the release results in acute effects (e.g., mortality) on marine mammal species at risk, either from direct exposure or injury from a pressure explosion. We also suggest that the likelihood of a residual effect to marine mammals following the release of LNG under either scenario is more accurately characterized as 'low likelihood' and of 'moderate consequence'. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1627.1	round 1	Kitsumkalum First Nation	9.9.2	Accidents or Malfunctions	While response measures to a vessel grounding or collision are outlined briefly in this section, a full oil spill response plan should be included as part of the EAC application. It appears that a spill response plan will be included in the Emergency Response Plan (Section 14.16), but this plan is currently under development.	Emergency response plans are typically prepared during a project's detailed design phase when more information is available to identify appropriate emergency response countermeasures and site-specific emergency response resources.
1628.1	round 1	Kitsumkalum First Nation	Section 9.9.3, 9.9.4	Accidents or Malfunctions	The Proponent has stated, "After mitigation and response measures have been implemented following a vessel grounding or collision event with a spill of diesel or LNG, the likelihood and consequence of residual effects to water quality is low. Based on these factors, the risk matrix ranking is low. Residual effects on marine water quality from a release of diesel or LNG due to a vessel grounding or collision event are predicted to be not significant." However, while a website cited in Chapter 9 of the EAC application (NOAA 2014) states that "Small diesel spills will usually evaporate and disperse naturally within a day or less," it also states that "what is commonly referred to as "marine diesel" is often a heavier intermediate fuel oil that will persist longer when spilled. When spilled on water, diesel oil spreads very quickly to a thin film of rainbow and silver sheens, except for marine diesel, which may form a thicker film of dull or dark colors." In addition, "it is possible for the diesel oil that is dispersed by wave action to form droplets that are small enough [to] be kept in suspension and moved by the currents" (NOAA 2014). Therefore, dispersed oil droplets could have an ongoing effect on marine water quality. Furthermore, in October 2016 a tug boat carrying almost 60,000 gallons (> 200,000 litres) of diesel fuel ran aground near Bella Bella and the spill response was hampered by bad weather. The diesel spread across the water and contaminated the clam beds used by the Heiltsuk First Nation (CBC 2016). The Final Situation Report on this incident from Spill Response BC states that 107,552 litres of the 237,262 litres of diesel fuel (45%) on board the tug was recovered (Seaforth Channel Incident Unified Command 2016). In addition, it took over a month to complete the spill cleanup efforts on the water (Seaforth Channel Incident Unified Command 2016). This is evidence that diesel oil can remain in the water during and after a spill response. Therefore, the consequence (i.e., severity of effects) and likelihood of residual effects could both be moderate or high (not “low”) and result in residual effects that are significant. Since tug boats will be escorting the LNG vessels, there is the potential for a large diesel spill having lasting significant adverse environmental effects on marine water quality. CBC (Canadian Broadcasting Corporation). 2016. Bella Bella diesel spill cleanup complicated by severe weather. Available at: http://www.cbc.ca/news/canada/british-columbia/bella-bella-diesel-spill-cleanup-complicated-by-severe-weather-1.3806058. Accessed: January 2017. Seaforth Channel Incident Unified Command. 2016. Final Situation Report – Nov 21. Seaforth Channel Incident Unified Command Information Site. Available at: http://spillresponsebc.ca/2016/11/22/final-situation-report-nov-21/. Accessed: February 2017.	As noted in this comment, in total, 107,552 litres of diesel out of a loaded volume of 237,262 litres was recovered following the grounding of the tug Nathan E. Stewart. It is important to note that the volume recovered does not account for any evaporative loss in volume (i.e., only a portion of the total 237,262 litres would have been potentially recoverable). Further, the referenced Final Situation Report (November 21, 2016) does not appear to suggest that spill clean up, that was specifically on-water, took one month. Shoreline cleanup assessment technique surveys (SCAT) were conducted between October 14 and November 20, 2016 (Seaforth Channel Incident Unified Command 2016), but involved the assessment of oiling on potentially affected shorelines. The potential persistence of heavier, weathered, hydrocarbon fractions in the marine environment is not expected to be synonymous with an increase in consequence ranking for water quality because toxicity, concentration and bioavailability of these fractions is expected to be reduced through weathering in the short term (e.g., by evaporation, dispersal, dissolution, spreading). Reference Seaforth Channel Incident Unified Command. 2016. Final Situation Report – Nov 21. Seaforth Channel Incident Unified Command Information Site. Available at: http://spillresponsebc.ca/2016/11/22/final-situation-report-nov-21/. Accessed: February 2017.
1629.1	round 1	Kitsumkalum First Nation	9.9.3, 9.9.4	Accidents or Malfunctions	The Proponent has stated, "After mitigation and response measures have been implemented following a vessel grounding or collision event with a spill of bunker oil, the likelihood of residual effects to water quality is low, while the consequence is moderate. Based on these factors, the risk matrix ranking is low. Residual effects on marine water quality from a release [of] bunker oil due to a vessel grounding or collision event are predicted to be not significant." While admitting that a bunker oil spill would have a larger consequence on marine water quality than an LNG or diesel spill, the Proponent still concludes that the risk is low and effects are not significant. However, bunker C oil is persistent. A website discussing bunker C spills (NOAA 2017) says "the oil can be carried hundreds of miles in the form of scattered tar balls by winds and currents. The tar balls will vary in diameter from several yards to a few inches and may be very difficult to detect visually or with remote sensing techniques." In addition, an expert report on oil spill response prepared for the City of Vancouver and the Tsleil-Waututh and Tsawout First Nations stated that “collecting and removing oil from the sea surface is a challenging, time-sensitive, and often ineffective process, even under the most favourable conditions” (Nuka Research and Planning Group, LLC 2015). Therefore, spilled oil is likely to remain in the environment after mitigation and response measures and there could be a health risk to a local population of marine biota, meaning that a vessel grounding or collision resulting in a spill of bunker oil could have a significant residual adverse environmental effect on marine water quality. NOAA (National Oceanic and Atmospheric Administration). 2017. No. 6 Fuel oil (Bunker C) Spills. Available at: http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/no-6-fuel-oil-spills.html. Accessed: January 2017.	In the unlikely scenario that portions of released bunker fuel are not recovered through containment and recovery operations and are not cleaned up from shorelines, heavier hydrocarbon fractions may persist in shoreline sediments or on the water surface. The toxicity of these fractions to marine organisms is, however, expected to be rapidly reduced through weathering processes (including physical losses and biodegradation) (Lee et al. 2003; Page et al. 2002). Floating tar balls may be transported by winds and currents. The hard crust-like surface of tar balls, formed through the oxidation of high-viscosity unrecovered hydrocarbons floating on the sea surface, reduces the bioavailability of contaminants of potential concern (Martin 2011). The prediction for the significance of residual effects remains valid. References Lee, K., R.C. Prince, C.W. Greer, K.G. Doe, J.E.H. Wilson, S.E. Cobanli, G.D. Wohlgeschaffen, D. Alroumi, T. King and G.H. Tremblay. 2003. Composition and toxicity of bunker C fuel oil in intertidal sediments after 30 years. Spill Science & Technology Bulletin, 8(2):187-199. Martin, J.D. 2011. Comparative toxicity and bioavailability of heavy fuel oils to fish fish using difference exposure scenarios. Master of Science Thesis, Department of Biology, Queen's University, Kingston, ON, Canada. Available at: https://qspace.library.queensu.ca/bitstream/handle/1974/6610/Martin_Jonathan_D_201107_MSc.pdf?sequence=1 (Accessed: February 2017). Page, D.S. Page, P.D. Boehm, G.S. Douglas and A.E. Bence. 2002. Identification of hydrocarbon sources in the benthic sediments of Prince William Sound and the Gulf of Alaska following the Exxon Valdez oil spill. In P.G. Wells, J.N. Butler, J.S. Hughes (Eds.), Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters. ASTM STP1219, American Society for Testing and Materials, Philadelphia, PA (1995), pp. 41–83.
1630.1	round 1	Kitsumkalum First Nation	Section 9.10.3	Accidents or Malfunctions	There appears to be a typo in the Water Quality Section on p. 9-46. The text states "Consequently, the magnitude of residual effect to air quality is negligible and within the geographic extent of the LAA." Since this is in the Water Quality section it is assumed the words "air quality" should be replaced with "water quality."	Aurora LNG acknowledges this is a wording error. The word 'air' in the sentence on p. 9-46 should be 'water' and this correction will be included in an erratum. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1631.1	round 1	Kitsumkalum First Nation	Section 14.9	Environmental and Operational Management Plans	The information on the Marine and Freshwater Resources Management Plan in Section 14.9 (approximately half a page) is insufficient to evaluate the adequacy of the plan. For example, the frequency and locations of water quality monitoring have not been provided.	The Marine and Freshwater Resources Management Plan will be developed prior to commencement of construction activities. The plan will outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects to marine fish and fish habitat during Project construction and operation. The plan will include, at a minimum, the following information (as described in Section 14.2 of the Summary of Proposed Environment and Operational Management Plans, Chapter 14):Purpose and scope of the plan, including which Project phases it applies to Relevant regulatory background, environmental issues and environmentally sensitive areasRoles and responsibilities Key emergency and Aurora LNG contact information Project and site orientation and training requirements Mitigation measures and written procedures, specifications, and controls that direct Project activities Monitoring (e.g., compliance and/or effectiveness) and reporting requirements. Input will be required from front end engineering and design (FEED) to determine appropriate water quality monitoring locations and frequency as these may adjust depending on construction activities planned. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan.
1632.1	round 1	Kitsumkalum First Nation	14.9	Environmental and Operational Management Plans	The Marine and Freshwater Resources Management Plan does not include any information regarding post-dredging sediment characterization. Considering that some contaminants of concern (COCs; e.g., dioxins/furans) are present in dredged sediments, it is recommended that a follow-up sediment characterization monitoring program is implemented to analyze deposited sediments within the MOF, Berth 1, and Berth 2 areas.	Section 4.5.15 of the Application concluded that contaminant re-settling will be limited at and around the dredge pockets. Baseline sediment sampling indicated that dioxins and furan levels above CCME ISQG were contained in the upper 0.2 m of sediment. As such, the upper 0.5 m of sediment will be removed during dredging and disposed of on land. A small amount of sediment containing elevated dioxins and furans will re-settle in and around the dredge site, likely at reduced concentrations. Much of this re-settled sediment will be removed in subsequent dredging (down to -15 m chart datum) or covered subsequently with dispersed sediment of lower PCDD/F concentrations. Therefore, it is expected that surface sediment contaminant levels will decrease relative to existing conditions and that post-dredging sediment monitoring is not necessary.
1633.1	round 1	Kitsumkalum First Nation	11 (Table 11.2-2	CEAA 2012	The summary of assessment of CEAA requirements, under Aquatic Species (as defined by SARA) is incorrect. There is a significant effects determination for effects to harbour porpoise (and listed "aquatic" species) and has not been summarized as such in Table 11.2-2	The definition of "aquatic species" under SARA includes fish as defined under the Fisheries Act. To avoid duplication, the summary of effects on aquatic species in Table 11.2-2 indicates "Fish are addressed above under Section 5(1)(a)(i)." The summary for effects as defined under Section 5(1)(a)(i) includes the potential effects to marine mammals, including harbour porpoise.

1634.1	round 1	Kitsumkalum First Nation	11.3 (Seciton 11.3.2.2	CEAA 2012	This statement is false: "Aurora LNG held workshops with Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Kitselas First Nation to discuss the use of their Traditional Knowledge (TK) and Traditional Use (TU) information in the assessment of the Section 5(1)(c) Effects, and to discuss proposed assessment methods, residual effects characterization definitions, and significance thresholds." Kitsumkalum was not "consulted" or engaged in the development of assessment methods, residual effects characterization definitions, and significance thresholds for the characterization of CEAA 2012 5(1)(c) effects. Until such time that the proponent engages on these components of the assessment Kitsumkalum cannot agree with any of the determinations of 5(1)(c) effects (to Kitsumkalum).	Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). During a technical workshop with Kitsumkalum First Nation in July 2016, Aurora LNG reviewed and proposed changes to some characterization criteria definitions for the assessment of Project effects under CEAA 2012, section (5)(1)(c), see section 8.2.2.3 of Aboriginal Consultation Report #2. Kitsumkalum First Nation had the opportunity to review the draft Part C and Section 11.3 prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Throughout Technical Workshops, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback.
1635.1	round 1	Kitsumkalum First Nation	11.3 (Seciton 11.3.2.2 and Table 11.7-4	CEAA 2012	This statement is mis-leading and affects the assessment of consultation activities associated with the proponent and Kitsumkalum: "In addition, prior to the submission of this Application, Aurora LNG held workshops with all of the Schedule B Aboriginal Groups to review drafts of the portions of Sections 11.3 (Requirements under CEAA 2012 Section 5(1)(c)) that related to each Aboriginal Group. Aurora LNG, as part of the workshops, recorded the views provided by each Aboriginal Group with respect to the CEAA 2012 Section 5(1)(c) Effects (in accordance with Section 11.3.10 of the AIR). In some instances the discussion at the workshops resulted in revisions to this Section of the Application. The views of Aboriginal Groups and Aurora LNG's response are provided in Section 11.7." This workshop (really an 8 hour meeting) with Kitsumkalum was held 7 working days prior to halting of editing the Application for submission (meeting was October 25th 2016, pens down was November 4th and Application submission was November 14th). There has been no meaningful consultation regarding Section 5(1)(c) effects (on Kitsumkalum) with Kitsumkalum. The "views" presented in Table 11.7-4 absolutely do not represent the discussion at the "workshop" (October 25th 2016) and although the Proponent's response is to "continue consultation" discussion regarding 5(1)(c) effects this engagement is proposed for the beginning of April 2017, 4.5 months into a 6 month Application review period. How can meaningful discussion be capture in the EAO EA report at that stage, if in fact there is agreement on issues? Until such time that the proponent engages on these components of the assessment Kitsumkalum cannot agree with any of the determinations of 5(1)(c) effects (to Kitsumkalum).	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups. Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). During a technical workshop with Kitsumkalum First Nation in July 2016, Aurora LNG reviewed and proposed changes to some characterization criteria definitions for the assessment of Project effects under CEAA 2012, section (5)(1)(c), see section 8.2.2.3 of Aboriginal Consultation Report #2. Kitsumkalum First Nation had the opportunity to review the draft Part C and Section 11.3 prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. In addition to the October 2016 workshop referenced in the information request, Aurora LNG also conducted a 2-day workshop (January 25-26, 2017) for all Aboriginal Groups, including Kitsumkalum First Nation. The workshop focused on assessment conclusions related to Part B Valued Components. As the assessments of Valued Components are a key information source for assessment of CEAA 5(1)(c) effects, this workshop was held early in the Application review period to help guide future discussions regarding CEAA 5(1)(c) effects during Technical Workshop #5. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Throughout Technical Workshops, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback.
1636.1	round 1	Kitsumkalum First Nation	11 (Table 11.3-2)	CEAA 2012	Why is the measureable parameter for changes to harvested foods a qualitative assessment (when the parameters are quantitative in nature, e.g. volume of foods harvested)?	Changes in harvested foods is a qualitative assessment as it considers both volume of foods harvested as well as the quality of harvested food. The quality of harvested food can be measured qualitatively by persons engaged in harvesting and quantitatively measured through potential contaminates in harvested foods as described in the Human Health VC.
1637.1	round 1	Kitsumkalum First Nation	11 (Table 11.3-3)	CEAA 2012	Kitsumkalum suggests that there are missing potential project environmental effects (interactions) on Section 5(1)c effects in Table 11.3-3. For example it is not understood why effects to Aboriginal Socio-Ec conditions related to changes to fish and fish habitat, wildlife resources etc. are expected to be assessed / covered off under the assessment of visual quality and community health. Are the quantitative and/or qualitative (and perceived) changes to traditional or current use then assessment as they related to changes to economic-socio conditions?	The assessment provided in Section 11 is limited to changes to the environment which may affect Section (5)(1)(c) factors (e.g. Aboriginal socio-economics). Effects that are outside of the scope of the Aboriginal Socio-Economic Conditions assessment (and are marked with a dash in Table 11.3-3) are excluded because of: Lack of effects predicted to the environment that would interact with the Section 5(1)(c) Effect (e.g., change in labour supply, change in accommodations, change in transportation infrastructure are not changes to the environment and are excluded) Absence of a clear pathway to the Section 5(1)(c) Effect Residual effects were not predicted in the Part B VC Effects relying on other (already included) VCs for conclusions Potential effects associated with changes in harvested foods are assessed in Section 6.6, Community Health. The assessment of change in harvested foods integrates conclusions from the Land and Resource Use VC and Marine Use and Navigable Waters VC, which rely on results from the following VCs and therefore the potential effects are marked with an asterisk in Table 11.3-3: Vegetation and Wetland Resources, Wildlife Resources (Terrestrial), Freshwater Fish and Fish Habitat, Marine Fish and Fish Habitat, Marine Mammals, Marine Birds. Potential effects on commercial fisheries are assessed in Section 6.5, Marine Use and Navigable Waters. The effects described in that section apply to Kitsumkalum First Nation commercial fishers. The assessment of potential effects associated with changes in harvested foods in the Community Health VC integrates conclusions from the Marine Use and Navigable Waters VC and an asterisk indicating this should have been included in the appropriate row ("marine fisheries and other uses"), acknowledging this interaction. An errata document is being compiled that captures this correction and will be filed with the BC EAO.
1638.1	round 1	Kitsumkalum First Nation	11	CEAA 2012	Kitsumkalum continues to disagree with the boundary of the LAA for economic and socio effects. This carries through to the characterization of Section 5(1)c effects. The LAA for the assessment of socio-economic conditions should include Terrace (and not just the Kitsumkalum IR 1). Please do not suggest in your response that this is because it was presented in the AIR, as Kitsumkalum has expressed this concern since before and during the acceptance of the AIR. Please refer to comments on the dAIR.	In response to comments provided by Kitsumkalum First Nation (IR 376) on the draft AIR, the boundaries for the LAA and RAA for the assessment of potential Project effects were changed to include Terrace and adjacent communities.
1639.1	round 1	Kitsumkalum First Nation	11	CEAA 2012	why under the "Administrative Boundary" has it been limited to "land use planning"? There are marine planning agreements and marine use plans available.	The following marine use plans were considered in the assessment (see Section 11.10) Gitxaala Nation. 2011. Draft Marine Use Plan. Submitted as part of the Enbridge Northern Gateway hearings. Kitsumkalum First Nation. n.d. Marine Use Plan Executive Summary. Lax Kw'alaams Indian Band (LKIB). 2004. Lut'ak Dil Loomsk Txamii Laxyuup Ksi'aamks dil Laxsuulda. Interim Land and Marine Resource Plan of the Allied Tsimshian Tribes of Lax Kw'alaams. June 3, 2004. Confidential Report Provided to Nexen.
1640.1	round 1	Kitsumkalum First Nation	11 (Section 11.3.2.7)	CEAA 2012	Kitsumkalum cannot agree with the significance determination for effects to current use as Kitsumkalum was not consulted on the determination of viability as described in Section 11.3.2.7: "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activity is no longer considered viable within existing conditions, it would be considered significant. The determination of viability is guided by information provided by Aboriginal Groups and applying professional judgement."	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). In the context of the significance threshold for Current Use, "viability" is the consideration of whether it remains realistically possible and/or feasible to continue to participate in a specific traditional use activity at, or near, current levels (potentially with some level of modification). In accordance with the AIR and the Canadian Environmental Assessment Agency (CEA Agency) document entitled "Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects: A Framework" this evaluation considers the assessments of magnitude, geographic extent, duration, reversibility and context (i.e. resilience) for each of the measurable parameters identified for current use. In accordance with the AIR, professional judgement is applied as part of this evaluation in a manner that is consistent with the guidance provided in CEA Agency's document entitled "Technical Guidance for assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012" (December 2015) (see pg. 11). Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, the re-assessment, as suggested, is neither warranted nor required.
1641.1	round 1	Kitsumkalum First Nation	11 (Section 11.3.5.1	CEAA 2012	There is a concern that since only "Identify residual effects from those VCs to be referenced in the Section 5(1)(c) Effects assessment (these become the Section 5(1)(c) Effect's CEAA component and subcomponent effects)" that there may in fact be effects to Kitsumkalum (via changes in the environment) which are not assess under 5(1)(c) because those effects were not residual for that particular VC.	The environmental effects from Part B VCs relevant to the assessment of Section 5(1)(c) Effects were established in accordance with the AIR and informed by pre-Application consultation with Aboriginal Groups. As described in Section 11.3.2.3 of the Application, if a residual effect was not predicted in the Part B VC (i.e., changes to human health from changes in water quality), then this potential effect was not carried forward to the CEAA Section 5(1)(c) assessment. A rationale and discussion as to why no residual effect was predicted is contained within the applicable Part B VC. It should be noted that the CEAA Section 5(1)(c) assessment included potential effects related to CEAA 5(1)(c) factors that were not included in the Part B VC assessments, including: Changes in consumptive land and resource use for traditional purposes (Hunting, Trapping, Fishing and Vegetation Gathering);Changes in non-consumptive land and resource use for traditional purposes (Spiritual and cultural species and Spiritual and cultural sites and landscapes); andChanges to socio-economic conditions including, barriers to increased participation in the fishing sector and sensitivity of the fishing practices to change. This comment and Aurora LNG's response was discussed as part of Technical Workshop #5. Additional detail regarding Technical Workshop #5 will be provided in Aboriginal Consultation Report #3.
1642.1	round 1	Kitsumkalum First Nation	11 (Seciton 11.3.10.4	CEAA 2012	Effects to aboriginal health have been characterized similarly to the Human Health VC. Kitsumkalum disagrees with this characterization and therefore disagrees with the characterization of Section 5(1)c effects to Aboriginal health conditions. The only two species used as baseline for the HHRA were crab and horse clams. Neither of these species well represent the consumption of seafoods for northcoast Aboriginal groups (and thus the risk associated with that consumption). Although crabs are used frequently both as a food source and as a test species for tissue analysis they are a highly mobile species; therefore there is likely and underestimation of the potential uptake of (local, project PDA) sediment contaminants. As per the Application citation in the HHRA (Chan et al., 2011) horse clam are not a species frequently harvested / consumed by northcoast First Nations. To adequately assess risks to Aboriginal health different and more species should be considered in the HHRA.	Aurora LNG acknowledges that Kitsumkalum First Nation does not agree with the findings of the Human Health assessment. The assessment of human health related to marine foods is intended to investigate the potential risk to people who harvest and consume seafoods from within the proposed dredge footprint and surrounding plume area. As noted in the Human Health Technical Data Report (Page 10: Appendix R of the Application), seafood species must meet certain criteria to be considered in the assessment; these are: 1. The species are commonly harvested by local people for consumption. 2. The species live and feed in close association with benthic sediments. 3. The species have relatively small home range and would spend the majority of their lives within the proposed dredge footprint and plume area. Marine species that do not meet these criteria remain important traditional foods for Kitsumkalum First Nation, but they are not suitable indicators for changes in marine food quality related to chemicals in dredged sediments. The selection of crabs and horse clams for the assessment was made by First Nations attending working group meetings in November and December, 2014, and were confirmed as suitable indicator species, noting that there is a strong basis in scientific literature for using crabs and bivalves to investigate the types of chemicals in the region.
1643.1	round 1	Kitsumkalum First Nation	11 (Table 11.3-11	CEAA 2012	None of the mitigation measures suggested in Table 11.3-11, Table 11.3-12 and Table 11.3-13 are specific to Kitsumkalum (and 5(1)c effects to Kitsumkalum). In fact Tables 11.3-12 and 13 do not even consider mitigation to offset effects to human health nor to offset socio economic conditions via harvested foods consumption. As stated in previous comments Kitsumkalum disagrees with many of the characterizations of 5(1)c effects; therefore, there may be potential effects to Kitsumkalum which differ from the residual effects characterized in the assessment of Part B VCs, which would required Kitsumkalum specific mitigation measures. How will this be rectified?	The mitigation measures proposed in Part B of the application, and summarized in Tables 11.3-11, 11.3-12, and 11.3-13, are anticipated to avoid or reduce effects relevant to Current Use, Aboriginal Health and Socio-Economic Conditions for all Aboriginal groups. Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.

1644.1	round 1	Kitsumkalum First Nation	11 (Section 11.3.10.3)	CEAA 2012	The following statement is incorrect: "Potential interference with access to terrestrial hunting locations is not expected outside the PDA and marine infrastructure exclusion zone discussed above. Information on Kitsumkalum First Nation TU did not identify specific trails or travel ways that cross through the PDA." Exclusion zones around the marine berth do in fact intersect with traditional travel routes of Kitsumkalum. The proponent has been provided (on several occasions) an addendum to the Kitsumkalum TU study document (Appendix IV - Addendum of July 2016). Therefore there is potential interference with current use access which has not been adequately assessed. Kitsumkalum does not agree with the characterization of effects to marine use and navigable waters, especially as it pertains to specific travel routes of Kitsumkalum. The loss of a travel route does not equate to a percent of available area in the LAA for travel (as assessed in the Marine Use and Navigable Waters section), it is a significant loss to Kitsumkalum.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The Application, including Section 11.3, was developed in accordance with the Application Information Requirements and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). The specific characterizations for Current Use presented in Section 11.3.10.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.10.2 (Existing Conditions for Kitsumkalum First Nation) and Section 7 (Kitsumkalum First Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). Aurora LNG notes that Section 11.3.10.3 was compiled based on the best information available at the time that the Application was drafted. Subsequently, Aurora LNG has prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation" to consider the information contained in the Addendum, including any new information provided in relation to travel ways, and to determine the influence of this information on Sections 11.3 and 12 of the Application. A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG also notes that on April 4, 2017, it held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application.
1645.1	round 1	Kitsumkalum First Nation	11 (Table 11.3-26)	CEAA 2012	Kitsumkalum disagrees with the characterization of residual effects to marine fish and fish habitat; therefore, Kitsumkalum also disagrees with the characterization (and significance determination) of Section 5(1)c effects to quantity and quality of current use locations and access routes. The assessment of the quantity of affected fish habitat and marine use and navigable waters does not adequately assess the potential losses of quantity and quality of current use location and access routes for Kitsumkalum. Loss of one current use sites and/or one current use access route for Kitsumkalum does not equate to a % loss in the LAA if that is the only site or access route available to Kitsumkalum under traditional law..	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The Application, including Section 11.3, was developed in accordance with the Application Information Requirements and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). The residual Project effects to current use of lands and resources for traditional purposes were assessed according to the methods outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects). In the context of each of the each Current Use sub-component (e.g., fishing, vegetation gathering) and the measureable parameters related to "Quantity (Area) and Quality of Current Traditional Use Locations Where Use Will Be Affected" and "Quantity (Area) and Quality of Current Access Routes Where Use Will Be Affected" assessed thereunder the assessment was conducted using the following two-part Application drafting framework (see pg. 11-221): "The first part summarizes information and findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects (i.e., based on steps #1 and #2 from Section 11.3.5.1) under headings that reflect the… measurable parameters…" "The second part… provides conclusions regarding the characterization of residual effects... based on the results of the first part of this section, the findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects), the understanding of current [use] (based on existing conditions) and the criteria and definitions outlined in Section 11.3.2.5." Using this process, the specific characterizations for Current Use sub-component (e.g., fishing, vegetation gathering) presented in Section 11.3.10.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.10.2 (Existing Conditions for Kitsumkalum First Nation) and Section 7 (Kitsumkalum First Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). Significance was then evaluated against the thresholds established in Section 11.3.2.7 (Significance Thresholds for Residual Effects). Aurora LNG notes that Section 11.3.10.3 was compiled based on the best information available at the time that the Application was drafted. Subsequently, Aurora LNG has prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation" to consider the information contained in the Addendum, including any new information provided in relation to current use, and to determine the influence of this information on Sections 11.3 and 12 of the Application. A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG also notes that on April 4, 2017, it held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments". Regarding Kitsumkalum First Nation's disagreement with the characterization of residual effects to marine fish and associated habitat, please see the responses provided for comments received on the Marine Fish and Habitat VC.
1646.1	round 1	Kitsumkalum First Nation	11 (Table 11.3-26)	CEAA 2012	Kitsumkalum disagrees with the characterization of residual effects to marine fish and fish habitat; therefore, Kitsumkalum also disagrees with the characterization (and significance determination) of Section 5(1)c effects to quantity and quality of current use for vegetation gathering. The assessment of the quantity of affected fish habitat does not adequately assess the potential losses of quantity and quality of current use vegetation gathering for Kitsumkalum. Loss of one vegetation gathering site for Kitsumkalum does not equate to a % loss in the LAA if that is the only vegetation gathering site in that area available to Kitsumkalum under traditional law.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The Application, including Section 11.3, was developed in accordance with the Application Information Requirements and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). The residual Project effects to current use of lands and resources for traditional purposes were assessed according to the methods outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects). In the context of each of the each Current Use sub-component (e.g., fishing, vegetation gathering) and the measureable parameters related to "Quantity (Area) and Quality of Current Traditional Use Locations Where Use Will Be Affected" and "Quantity (Area) and Quality of Current Access Routes Where Use Will Be Affected" assessed thereunder the assessment was conducted using the following two-part Application drafting framework (see pg. 11-221): "The first part summarizes information and findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects (i.e., based on steps #1 and #2 from Section 11.3.5.1) under headings that reflect the… measurable parameters…" "The second part… provides conclusions regarding the characterization of residual effects... based on the results of the first part of this section, the findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects), the understanding of current [use] (based on existing conditions) and the criteria and definitions outlined in Section 11.3.2.5." Using this process, the specific characterizations for Current Use sub-component (e.g., fishing, vegetation gathering) presented in Section 11.3.10.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.10.2 (Existing Conditions for Kitsumkalum First Nation) and Section 7 (Kitsumkalum First Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). Significance was then evaluated against the thresholds established in Section 11.3.2.7 (Significance Thresholds for Residual Effects). Aurora LNG notes that Section 11.3.10.3 was compiled based on the best information available at the time that the Application was drafted. Subsequently, Aurora LNG has prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation" to consider the information contained in the Addendum, including any new information provided in relation to current use, and to determine the influence of this information on Sections 11.3 and 12 of the Application. A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG also notes that on April 4, 2017, it held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments". Regarding Kitsumkalum First Nation's disagreement with the characterization of residual effects to marine fish and associated habitat, please see the responses provided for comments received on the Marine Fish and Habitat VC.
1647.1	round 1	Kitsumkalum First Nation	11 (page 11-246)	CEAA 2012	These are misleading statements: "The overall result could be a reduction in health risk over time to Aboriginal people who harvest and consume marine foods from Frederick Point, Delusion Bay and Casey Cove" and "The magnitude of residual effects for changes to human health from changes in marine food quality is rated as negligible during the construction phase because the quality of marine foods is anticipated to improve after dredging occurs." What is not stated is that currently the layer of sediment containing higher than background levels of COPCs is capped with "cleaner" sediments and that disturbance of this cap through project activities (such as dredging) will in fact uncap those sediments containing higher levels of COPCs into the marine environment. This is but one example in the Application of many mis-leading (or leading) statements which should not be part of, what should be, a scientific review of data and information for assessment purposes. Perhaps the proponent should conduct a monitoring program to ensure the that these predictions are true (especially as they pertain to Aboriginal Health).	Aurora LNG adheres to strict guidelines such as the Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines for the Protection of Aquatic Life. As stated in Section 11 of the Application, "Removal of up to the top 0.5 m of sediment is expected to improve sediment quality after dredging activities are completed. Once dredging is complete, benthic marine life in the dredge footprint would be exposed to lower concentrations of PCDD/F and PAH in the sediment than under present conditions." As described in Section 14, each Environmental and Operational Management Plan will be developed in accordance with industry best management practices and standards, and applicable regulatory requirements. The Marine and Freshwater Resources Management Plan set out in Section 14.9 describes water quality monitoring programs that will be developed and implemented, including details on water quality thresholds, monitoring frequency, and monitoring locations. Aurora LNG will develop these plans prior to the start of construction. The plans will also set out monitoring (e.g., for compliance and/or effectiveness purposes) and reporting requirements. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the environmental management plans.
1648.1	round 1	Kitsumkalum First Nation	11 (Section 11.4)	CEAA 2012	Kitsumkalum disagrees with the cumulative effects assessment of Section 5(1)c effects. How do we tie the following together: effects to the environment (and socio-economic and health conditions) and the fact those impacts will be different to each Aboriginal Group because of their differing Interests (Part C)? CEAA 2012 doesn't address this, the BC EAA doesn't address this, yet common sense would say that there is no way that there will not be cumulative impacts to Aboriginal way of life from the development proposed in the Prince Rupert area. There is also currently no appropriate way (although we have management plans coming on all fronts!) to monitor these effects in a timely manner to avoid or reduce those impacts. As stated in the Application p. 11-402 "Aurora LNG anticipates that Current Use of lands and resources by Aboriginal Groups will be able to continue with some modification." The loss of one travel route, one current use location etc.is significant to Kitsumkalum. This process is amazingly frustrating.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The Application, including Section 11.4 (Assessment of Cumulative Effects for CEAA 2012 Section 5(1)(c)), was developed in accordance with the Application Information Requirements. Aurora LNG acknowledges that past, present, and future development in the Prince Rupert region has the potential to result in cumulative effects to various elements of importance to Aboriginal Groups. As described in Section 11.4 (pg. 11-380), Aurora LNG undertook a combined cumulative effects assessment for all of the Aboriginal Groups due to the incomplete nature of the information available within the respective RAAs for CEAA Section 5(1)(c) Effects for those past, present and future projects listed in Table 11.4-1 of the Application. In particular, Aurora LNG notes data deficiencies related to the extent and duration of Section 5(1)(c) Effects from past, present and reasonably foreseeable future projects in the RAAs, and usage relevant to possible interactions throughout the RAAs. This comment and Aurora LNG's response was discussed as part of Technical Workshop #5. Additional detail regarding Technical Workshop #5 will be provided in Aboriginal Consultation Report #3.
1649.1	round 1	Kitsumkalum First Nation	11 (Section 11.6)	CEAA 2012	As discussed in the comments related to the Part B VC Accidents and Malfunctions there has been no assessment of major spill releases (of petrochemicals) from a breach in a LNG carrier vessel.; therefore, the assessment of Accidents or Malfunctions with respect to CEAA 5(1)c is not complete. Regarding the cumulative effects from Accidents or Malfunctions the proponent states that the senarios assessed (although missing at least one senario as stated above) are "highly unlikely given the low probability of these scenarios occurring", but what is missed is the consequences to Aborinal groups is potential high should even one event occur which destroys important current use, culturally important sites.	Aurora LNG agrees that Project-related accidents or malfunctions would have a variable effect on Section 5(1)(c) Effects depending on the type and scope of the accident or malfunction. As described in Section 11.6 of the Application (starting on page 11-418), several of the accidents or malfunctions assessed in Section 9 would have the potential for significant adverse effects to CEAA 5(1)(c) factors if they were to occur such that they cause a loss or change in quality of harvested or culturally-important species or sites.
1650.1	round 1	Kitsumkalum First Nation	11 (Section 11.8)	CEAA 2012	There were over 190 Conditions attached to the Federal approval of the PNW LNG Project, does Nexen really believe that the 12 follow-up and monitoring program listed in Section 11.8 are sufficient to ensure that the effects assessed in the EA are as predicted? Does CEAA and the Federal government believe this is appropriate also?	Aurora LNG is confident that, in combination with the mitigations listed in Section 11.3.6, the follow-up and monitoring programs in Section 11.8 will effectively mitigate effects on CEAA 5(1)(c) factors. In addition, Aurora LNG is currently reviewing specific feedback on proposed mitigation measures received from Aboriginal Groups during Technical Workshops #4 and #5 and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.

1651.1	round 1	Kitsumkalum First Nation	12.5.7	Aboriginal Consultation	Kitsumkalum suggests that Aurora LNG should be embarrassed to have submitted this section. They are painting a picture as if they have consulted with Kitsumkalum. This is not true. Kitsumkalum has been actively and continuously prevented by the proponent and BC to engage in consultation and to be involved in field work in assess the survey methodologies and ethics of the proponent and their consultants. Kitsumkalum requests that throughout this application, the phrase: continued consultation gets changed to a commitment by the proponent to consult with Kitsumkalum. The entire Part C is uninformative, untrue and unethical. If the proponent hopes to change the current sour relationship with Kitsumkalum, we suggest a meeting with Kitsumkalum to rewrite this section.	Aurora LNG believes that the assessment set out in Part C of the Application is fair and reasonable given the information available to Aurora LNG at the time of writing. As a result, the re-assessment, as suggested, is neither warranted nor required. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. Kitsumkalum First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Further information that provides context related Aurora LNG's approach to consultation and fieldwork participation, is provided in the technical memo entitled "Aurora LNG's approach to Consultation with Aboriginal Groups".
1652.1	round 1	Kitsumkalum First Nation	12.5.7.3	Aboriginal Consultation	This section needs to be updated. Kitsumkalum shared with Nexen in July 2016 and again in October 2016 a specific past and current use addendum for the project footprint. Statements like: "Kitsumkalum has not shared information of specific past use" is incorrect.	In preparing the Summary of Past, Present, and Anticipated Future Use of the Project Vicinity (Section 12.5.7.3 starting on page 12-197), Aurora LNG reviewed Kitsumkalum First Nation's project-specific study, publicly-available information, and available information from ongoing consultation activities with Kitsumkalum First Nation. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Aurora LNG prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation". A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements.
1653.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	The proponent needs to take out any reference to Agreement-in Principle discussions and information. The information is not updated. These are active negotiations that are being changed an updated weekly. The statement that Kitsumkalum "would have treaty rights to harvest wildlife and migratory birds for domestic purposes..." is misleading if not incorrect. Kitsumkalum holds shared Title and Rights to the shared Tsimshian lands in and around the project, as well as Kitsumkalum specific Title and Rights to specific lands.	Aurora LNG recognizes that treaty negotiations are ongoing and will evolve over time and the language in Section 12.5.7.2 clearly indicates that the treaty is subject to final agreement and ratification. Information in the publicly-available Kitsumkalum Agreement-in-Principle is relevant to Aurora LNG's understanding of anticipated future use by Kitsumkalum First Nation. The Kitsumkalum Agreement-in-Principle also provided valuable information regarding Kitsumkalum First Nation's efforts toward self-government and the importance of continued use of Sm'algyx language by Kitsumkalum First Nation members. In addition, Aurora LNG provided a draft of Section 12.5.7 to Kitsumkalum First Nation for review and comment prior to submission of the Application for screening. Kitsumkalum First Nation did not indicate a concern with the use of the Kitsumkalum Agreement-in-Principle as a source of information at that time.
1654.1	round 1	Kitsumkalum First Nation	12.5.7.4	Aboriginal Consultation	Kitsumkalum has not been offered the opportunity to engage nor design or review Potential Effects Mechanisms. To state that Kitsumkalum "put forth" these mechanisms is wrong. We did not get a change to do so.	Aurora LNG reviewed Kitsumkalum First Nation's Project-specific study for specific potential effect mechanisms of concern to Kitsumkalum First Nation. As a result of that review, Aurora LNG incorporated new potential effect mechanisms into the assessment of Project-related effects on Kitsumkalum First Nation's Aboriginal Interests. For example, Aurora LNG assessed the effect of perceived risk associated with dredging on harvesting activities (see Section 12.5.7.6 starting on page 12-214) because of Kitsumkalum First Nation's description of that potential effect mechanism in its Project-specific study. Another example of where Aurora LNG incorporated information from Kitsumkalum First Nation is in its description of potential effect mechanisms on page 12-210 ("Increased Pressure on Resources"). There are several other examples throughout Section 12.5.7 of potential effect mechanisms included in the assessment of Aboriginal Interests as a result of input from Kitsumkalum First Nation. In addition, Aurora LNG provided a draft of Section 12.5.7 to Kitsumkalum First Nation for review and comment prior to submission of the Application for screening.Kitsumkalum First Nation was invited to review and request changes to the assessment at that time.
1655.1	round 1	Kitsumkalum First Nation	12.5.7.5	Aboriginal Consultation	Kitsumkalum has made it clear to the proponent and to BC and Canada that the word "asserted" is not acceptable to us. Kitsumkalum holds Title and Rights to their territory, some are shared with other Tsimshian and some are exclusively Kitsumkalum. We again request to delete the word "asserted".	Kitsumkalum First Nation's disagreement with the use of the term "asserted" was included in Table 12.9-1 "Pre-Application Views of Aboriginal Groups on Part C" (see pg. 12-330 of the Application). As described in Table 12.9-1, Aurora LNG responded to this concern by removing the term "asserted" in certain instances where it was not necessary (Section 12.5.7.2, Section 12.5.7.7, Section 12.5.7.9, and Section 12.5.7.11 of the Application in reference to the assessment of Kitsumkalum First Nation's Interests). In addition, in Section 12.2.6.2 and Section 12.5.7.3, Aurora LNG will replace use of "asserted" and "asserts" with substitute language through a filing of an errata document. However, Aurora LNG has chosen to retain the use of the the term "asserted" (as well as related terms "asserts", "assert" etc.) in other sections of the Application when discussing Kitsumkalum First Nation Aboriginal Interests in circumstances where the rights in question have not been specifically determined by a court or included expressly in a finalized treaty.
1656.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Kitsumkalum has issues with the statement by Aurora LNG that they are "committed to continued consultation with Kitsumkalum.." We reject the assertion by the proponent that they have consulted. Canada has signed on to the United Nations declaration on rights of indigenous peoples in May 2016. This would have allowed ample time for the proponent, BC and Canada to start actual consultation with Kitsumkalum. We are still waiting for this to happen. Kitsumkalum does not share Aurora LNG's confidence that this has been or will be a positive relationship.	Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase to discuss issues and concerns related to the Application.In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.
1657.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	The statement that the project "has the potential" to affect Kitsumkalum's ability to decide the land use and management is somewhat ridiculous and needs to be deleted. Is the proponent saying that the leveling out of the footprint and the erection and operation of this proposed project will have any, even the slightest, chance that Kitsumkalum can manage or use the land under the plant? If that is the opinion of the proponent, please explain. If not, change this language to The Project will affect Kitsumkalum... This also goes for other topics such as The Project will affect Kitsumkalum's use of the project area for its own economic purposes.	Aurora LNG is of the opinion that there is not enough specific information available regarding how Kitsumkalum First Nation would manage the PDA, including for economic development, if the Project were to not proceed. Without this information, Aurora LNG is unable to state with confidence that the Project "will" affect these aspects of Kitsumkalum First Nation's Aboriginal Interests. Given the complex and ongoing land and marine use planning initiatives currently underway in the region, including Kitsumkalum First nation's own initiatives, it is unclear to Aurora LNG how Kitsumkalum First Nation would manage the PDA in the absence of the Project. Kitsumkalum First Nation's marine use planning documents do not specify specific planning objectives for the Project vicinity. Aurora LNG remains confident that through continued consultation with Kitsumkalum First Nation throughout the life of the Project, collaborative methods could be developed to help balance Kitsumkalum First Nation's land and marine use planning objectives and Project needs.
1658.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	The proposed mitigation measures were not discussed with Kitsumkalum. Aurora LNG needs to commit to consult with Kitsumkalum, rather than "will continue to consult with Aboriginal Groups". Have any actual benefits and accommodation negotiations happened? Are they progressing if they have not started yet?	Kitsumkalum First Nation had the opportunity to review the draft Part C prior to submission of the Application, including mitigation measures proposed to reduce potential effects on Kitsumkalum First Nation Aboriginal Interests, and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase regarding the development of mitigation measures. Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90. Aurora LNG will use reasonable efforts to progress negotiations regarding appropriate long-term benefits and accommodation for project effects with Aboriginal Groups.
1659.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Out of the 4 mitigation measures proposed by Aurora LNG, 3 are requirements under BC and Canadian laws, regulations and directions. Please delete those from this section. The only one acceptable is that Aurora LNG will commit to negotiating benefits with Kitsumkalum.	Comment noted. Aurora LNG believes that the mitigations listed in Section 12.5.7.5 are relevant and appropriate, and looks forward to on-going consultations with Kitsumkalum First Nation to identify new mitigation measures.
1660.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Please delete "has the potential" and replace with "will".	Without more specificity, Aurora LNG is unable to address this comment. Please see the response to comment #1314 for a related response.
1661.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Kitsumkalum would appreciate to hear how construction, operations and decommissioning could NOT preclude Kitsumkalum from using the PDA for its own economic purposes. Please explain.	Based on information available at the time of preparing the Application, Aurora LNG was not able to determine what specific plans, if any, Kitsumkalum First Nation may have to develop the PDA for its own economic purposes.
1662.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Kitsumkalum takes objection to this section. The proponent has told us that this is a requirement from BC. If this is so and this section needs to stay, we expect the proponent to explain the irrelevance of this information. Kitsumkalum has informed the proponent several times that any one area belongs to a specific house group, or tribe or family. There is no such thing as "if you cant go here, just go to the next bay?! Going to someone else's area without permission, will be illegal according to Tsimshian laws. Going somewhere else with permission will be humiliating and will also put undue strain on the resources. Kitsumkalum requests this addition to the text and also the deletion of the last sentence under this heading as it is not correct.	Without a specific section heading or page number associated with this Kitsumkalum First Nation comment, Aurora LNG is unable to address the comment more directly. Also see the "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" technical memo which will be filed with the BC EAO.
1663.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	The proponent needs to address the level of reclamation of the site and the expected duration of bringing this site back to current state.	As described in Section 1.2.8 of the Application, the decommissioning phase is anticipated to take two to five years and will be completed in accordance with the laws, regulations, and standards in effect at that time.
1664.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Kitsumkalum vehemently and categorically rejects the statement by the proponent on page 12-204 under this heading. The interference is not restricted to the PDA. As described to the proponent, the Kitsumkalum villages at Casey Point and at Barrett Rock would be seriously impacted, the life in those villages would be possible with the presence of the plant and the activities associated with it. The travel routes would be impacted if not unsafe or impossible to use, the harvesting and hunting would be impacted. Does the author think that if a Walmart would be built across the street from his or her house, that there would be no impact to their way of live? The listed mitigation measures are not mitigation measures at all. Kitsumkalum rejects the entire section 12.5.7.5. This is a disgrace.	Aurora LNG acknowledges that Kitsumkalum First Nation disagrees with the assessment; however, the assessment was conducted in accordance with the requirements of the AIR and was informed by the pre-application consultation conducted with Kitsumkalum First Nation.
1665.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	There are 8 points listed by the proponent as mitigation measures. None were discussed with Kitsumkalum.	Kitsumkalum First Nation had the opportunity to review the draft Part C prior to submission of the Application, including mitigation measures proposed to reduce potential effects on Kitsumkalum First Nation Aboriginal Interests, and to discuss any views or feedback at Technical Workshop #3 , which was held on October 25, 2016. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase regarding the development of mitigation measures. Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.

1666.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	1. Please delete the word "continue" as this has not happened yet.	Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase to discuss issues and concerns related to the Application.In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.
1667.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	2. Please change the word "Aboriginal Groups" to Kitsumkalum to ensure that Kitsumkalum is consulted.	Aurora LNG has made the requested changes in the "Mitigation Measures" section of Section 12.5.7.6, third paragraph, second bullet of the Application so that it reads as follows:"Aurora LNG will consult withKitsumkalum First Nationon the design and implementation of Mitigation 6.5-13, which outlines communication protocols regarding Project activities that may interact with Marine Navigation and Use" An errata document has been created that captures these corrections and will be filed with the BC EAO.
1668.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	3. This is at best a riparian or visual buffer required by most forestry or other related projects. Even through this could be considered a partial mitigation on visual effects, it will not diminish any of the expected impacts of this project and related activities to Kitsumkalum. Please remove.	Aurora LNG respectfully disagrees with Kitsumkalum First Nation on this point. The buffer described in the mitigation measures on page 12-215 will effectively mitigate several potential Project effects related to Kitsumkalum First Nation's Aboriginal Interests:Change in visual quality for Kitsumkalum First Nation members travelling via marine travelways south or east of Digby Island or using the site at Casey Point (see assessment starting on page 12-213)Change in harvested species (see assessment starting on page 12-204)Changes in locations, landforms, natural features, and access routes associated with cultural and spiritual use (see assessment starting on page 12-219)This mitigation measure is relevant to the assessment of effects on Kitsumkalum First Nation Aboriginal Interests.
1669.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	4. Please change "will continue to consult with Aboriginal Groups" to "will consult with Kitsumkalum".	Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website).
1670.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	5. please add Kitsumkalum to this commitment.	Aurora LNG has made the requested changes in the "Mitigation Measures" section of Section 12.5.7.6 of the Application. Aurora LNG will provide timely and on-going information regarding the status of the Project to Kitsumkalum First Nation. An errata document has been created that will capture these corrections and will be filed with the BC EAO.
1671.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	6. Kitsumkalum has already provided specific harvesting sites within the LAA and the PDA. Please update this point to commit that the proponent will, in cooperation with Kitsumkalum, develop mitigation measures to address the impacts to Kitsumkalum, such as monitoring.	Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1672.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	7. Please include Kitsumkalum specifically in this commitment.	Aurora LNG will consult with Kitsumkalum First Nation to identify potentially viable timber and vegetation salvage opportunities. Aurora LNG has made the requested changes in the "Mitigation Measures" section of Section 12.5.7.6 of the Application. An errata document has been created that will capture these corrections and will be filed with the BC EAO.
1673.1	round 1	Kitsumkalum First Nation	12.5.7.6	Aboriginal Consultation	8. Please change "will continue to consult with Aboriginal Groups to identify additional mitigation measures…" to "will consult with Kitsumkalum to identify…" as this has never happened before.	Kitsumkalum First Nation had the opportunity to review the draft Part C prior to submission of the Application, including mitigation measures proposed to reduce potential effects on Kitsumkalum First Nation Aboriginal Interests, and to discuss any views or feedback at Technical Workshop #3 , which was held on October 25, 2016. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase regarding the development of mitigation measures. Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1674.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Aurora LNG did some unacceptable word smithing, rather suspect as there was no reference to their information source cited. It is stated that Aurora LNG understands that Kitsumkalum members "may have certain locations where they harvest" and that they may have to alter their current harvesting practices because of the project. Kitsumkalum clearly and several times explained to Aurora LNG that Kitsumkalum members in accordance with Tsimshian laws, hold certain areas where they harvest and that they cannot go somewhere else if they are displaced from their specific areas. Why does Aurora LNG feel they need to change words and meanings, minimizing and discarding Tsimshian laws? There is no mitigation measure proposed, nor were any discussed with Kitsumkalum. This will without doubt change Kitsumkalum's Section 35 constitutional rights and Aurora LNG does not speak to it!	Comment noted. Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding certain assumptions, is provided in the technical memo titled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1675.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Information in this section is incomplete. Aurora LNG did not include the addendum presented to Aurora LNG in July and again in October 2016. It was again given to them in February 2017. This section needs to be revised with Kitsumkalum's cooperation.	On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Aurora LNG prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation". A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements.
1676.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	This section needs to be revised. It clearly shows how little conversations Aurora LNG has had with Kitsumkalum. A statement like "Aurora LNG does not anticipate that the aesthetic effects to the experience of harvesting would be considerably altered from existing conditions. Kitsumkalum does not care much about what Aurora LNG anticipates what our experience is, Aurora LNG should talk to us and then report what we have to say on this topic.	Kitsumkalum First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1677.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	It is difficult for us to articulate the disappointment and surprise we feel about the first statement in this section. "Aurora LNG assumes that all the terrestrial area in Kitsumkalum First Nation's traditional territory could be used by Kitsumkalum First Nation members for the harvesting of resources". This entire section is wrong and it seems, purposely so. We do not have any other explanation for the twisting of truths by Aurora LNG.	Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO
1678.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Out of the list of 150 mitigation measures listed in the project Kitsumkalum found 15 to be somewhat mitigation measures, none were a full on-mitigation measure that might actually look like it was not totally in Aurora LNG's best interest. That means that 135 mitigation measures where legislative or regulatory requirements. Kitsumkalum has not found any mitigation that resulted in any reduction to anticipated adverse effects by the p[reject on Kitsumkalum. There is no conclusion laid out in this section, only a misleading statement that "Aurora LNG is committed to continued consultation with Kitsumkalum to further reduce any adverse effects…". Kitsumkalum has never been consulted to work with Nexen to reduce any effects, so the word "continue" needs to be deleted. Kitsumkalum also has not see any mitigation or strategies to reduce adverse effects, so the word "further" should be deleted.	In Workshop #4 (January 25-26 2017), Kitsumkalum First Nation indicated its concern with the inclusion of several regulations and management plans as mitigation measures in Table 16-1. In response to this concern, Aurora LNG agreed that it would consider revising the list of mitigation measures to more clearly categorize different types of mitigations (e.g. BMPs, regulatory requirements, etc.). In response, Aurora LNG has drafted a technical memo entitled "Mitigation Measures Categorization Table" that categorizes mitigation measures to indicate whether a mitigation measure is outside of permitting requirements (legal requirement, industry standard/Best management practice and/or Aurora LNG additional mitigation measure). This technical memo will be filed with the BC EAO. In that same workshop, Aurora LNG sought and received feedback from Kitsumkalum First Nation on mitigation measures proposed to mitigate effects on Part B VCs. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase regarding the development of mitigation measures. Aurora LNG requested and received additional feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1679.1	round 1	Kitsumkalum First Nation	12.5.7.7	Aboriginal Consultation	Kitsumkalum has never "indicted an Aboriginal Interest to engage in cultural and spiritual activities …" We have clearly stated to Aurora LNG that we hold Section 35 Title and Rights to our territory. This is more than an assertion, it is Tsimshian Law. We engage in cultural and spiritual activities, please change your language accordingly.	In response to Kitsumkalum First Nation's concern, Aurora LNG has replaced the first paragraph of section 12.5.7.7 with the following: In its "Declaration of the Kitsumkalum Indian Band of the Tsimshian Nation of Aboriginal Title and Rights to Prince Rupert Harbour and Surrounding Coastal Areas" Kitsumkalum First Nation states that its members have Aboriginal rights to "engage in cultural and spiritual activities throughout the coastal part" of Kitsumkalum First Nation territory (KIB 2013). In addition, in their Project-specific traditional use study and socio-economic study, Kitsumkalum First Nation stressed the importance of maintaining a sense of place within the traditional territory and continued cultural transmission between generations of Kitsumkalum people (KFN 2016a)." An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1680.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Aurora LNG states that they *acknowledge* that resource harvesting is an important part of cultural well being for Kitsumkalum members. First of all, we wonder about the relevancy of what Aurora LNG acknowledges? Resource harvesting is what Kitsumkalum depends on and who we are. It is not just an important part of who we are, it defines us in so many ways. From intergenerational teachings to food security to contributing to feasts to defining one's station in society to economics.	Aurora LNG acknowledges your comment. For clarity, the importance of resource harvesting to several elements of the exercise of Kitsumkalum First Nation Aboriginal Interests is considered throughout Section 12.5.7. Specific sections include: Section 12.5.7.6 (Harvesting, starting on page 12-204), Section 12.5.7.7 (Cultural Wellbeing, on page 12-218 and again starting on page 12-223), Section 12.5.7.8 (Traditional Governance, starting on page 12-228), and Section 12.5.7.12 (Economic Opportunities, page 12-237).

1681.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Aurora LNG lists 4 potential effects mechanisms that could affect Kitsumkalum's cultural wellbeing in their minds. Aurora has not discussed this with Kitsumkalum, they have not sought out our information or opinion on this, they have not offered to cooperatively come up with these mechanisms, or offered us the opportunity to do so ourselves. Kitsumkalum rejects these 4 "mechanisms". We invite Aurora LNG to talk to us about this.	Aurora LNG reviewed Kitsumkalum First Nation's Project-specific study for potential effect mechanisms of concern to Kitsumkalum First Nation. As a result of that review, Aurora LNG incorporated new potential effect mechanisms into the assessment of predicted Project-related effects on Kitsumkalum First Nation's Aboriginal Interests. For example, Aurora LNG assessed the effect of perceived risk associated with dredging on harvesting activities (see Section 12.5.7.6 starting on page 12-214) because of Kitsumkalum First Nation's description of that potential effect mechanism in its Project-specific study. Another example of where Aurora LNG incorporated information from Kitsumkalum First Nation in its description of potential effect mechanisms is on page 12-210 ("Increased Pressure on Resources"). There are several other examples throughout Section 12.5.7 of potential effect mechanisms included in the assessment of Aboriginal Interests as a result of input from Kitsumkalum First Nation. In addition, Aurora LNG provided a draft of Section 12.5.7 to Kitsumkalum First Nation for review and comment prior to submission of the Application for screening. Kitsumkalum First Nation was invited to review and request changes to the assessment at that time.
1682.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Aurora LNG states that Kitsumkalum has not specified any species used for cultural purposes. We do not agree with this statement as we believe we have. Besides that point, we did not know that Aurora LNG was going to address this topic, had they actually consulted with us or even just spoken and listened to us, we could have easily broken this information out for them.	During the development of the assessment of effects of the Project on Kitsumkalum First Nation cultural wellbeing, Aurora LNG reviewed Kitsumkalum First Nation's Project-specific study, publicly-available information, and information received through consultation efforts. Throughout those reviews, Aurora LNG did not find any information regarding Kitsumkalum First Nation use of species for cultural purposes other than for harvesting (as indicated on page 12-219). Aurora LNG assessed the use of species for cultural purposes in Section 12.5.7.7 in order to consider the indirect and less tangible potential effects on Kitsumkalum First Nation cultural wellbeing that may occur because of effects to culturally-important (but not harvested) species.
1683.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Kitsumkalum will not go into further detail on these 4 mechanisms as we do not agree with them and the issues we see are too many to list. This needs to be completely rethought and rewritten.	It is unclear to Aurora LNG which specific subsection Kitsumkalum First Nation is referring to in this comment. However, Aurora LNG is of the opinion that the assessment set out in Section 12.5.7 of the Application is fair and reasonable. As a result, the re-assessment, as suggested, is neither warranted nor required. Please see the response to comment #1338 for more information regarding the incorporation of Kitsumkalum First Nation information into the development of potential effect mechanisms.
1684.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Aurora LNG lists 4 mitigation measures they have come up with, without engaging Kitsumkalum. Kitsumkalum rejects that any of the listed points can be called mitigation. We invite Aurora LNG to discuss possible mitigation measures. As it stands now, we see none offered by Aurora LNG.	Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1685.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	1. please change to: Aurora LNG will consult with Kitsumkalum to identify mitigation measures through the life of the project….	As described in Section 12.2 (page 12-39), Aurora LNG is committed to ongoing consultation with Aboriginal Groups through the life of the project to broaden and deepen its understanding of each Aboriginal Groups interests and concerns. Particular attention will be given to identify new measures to reduce adverse effects on the ability of Aboriginal Groups to exercise their Aboriginal Interests in the Project vicinity.
1686.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	2. Kitsumkalum rejects the notion that Aurora's funding of our TUS is a mitigation. It was a baseline study that Aurora LNG had to do for all VC and other information requirements. Kitsumkalum feels that Aurora LNG just paid lip service to this study, as is revealed by their disregard for actually addressing our information.	As described in Section 12.5.7.7 (on page 12-224), Aurora LNG's funding of the Kitsumkalum Traditional Use Study and Socioeconomic Impact Assessment can support Kitsumkalum First Nation cultural transmission by helping to create a record of traditional use and traditional knowledge within the traditional territory as it may relate to the Project vicinity and the proposed shipping route. This mitigation measure directly addresses potential Project effects relating to loss of information about culturally important species, sites, landforms, natural features, and access routes in the Project Vicinity.
1687.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	3. Kitsumkalum's addendum identified some of our traditional and current use and importance of the PDA. This is therefore an erroneous statement that no cultural sites have been identified so far. This is also a requirement of BC regulations and legislation.	On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Aurora LNG prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation". A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements.
1688.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	4. as we have not had any input into the "Indigenous Peoples policy" nor have seen it, we cannot comment on this mitigation proposal other than it should not be listed here as one until Kitsumkalum can at least review it. Kitsumkalum objects to have a policy developed about ourselves without being engaged to co-develop.	Aurora LNG's Indigenous Peoples Policy is a corporate level policy document that helps guide Aurora LNG's engagement with Indigenous Peoples in close proximity to the areas where we operate. More information on this policy can be found on Nexen's website: http://www.nexencnooctld.com/en/ResponsibleDevelopment/SocialResponsibility/AboriginalRelations/IndigenousPolicy.aspx
1689.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	as Aurora LNG has not involved Kitsumkalum in the assessment of effects of the project on Kitsumkalum and as we find many of the statements and assessments faulty	Aurora LNG believes that it has undertaken meaningful consultation with Kitsumkalum First Nation on the Project since the spring of 2013, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.
1690.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	Aurora LNGs assessments and statements under this heading are unacceptable to Kitsumkalum and it shows that Aurora LNG has not listened to Kitsumkalum. This section needs to be rewritten.	Aurora LNG believes that the assessment set out in Part C of the Application is fair and reasonable. The information under the heading "Relative Availability of Other Areas" in Section 12.5.7 fulfills a requirement of the AIR (see Section 12.5 of the AIR, page 12-3). Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments". This technical memo will be filed with the BC EAO. In consideration of the foregoing, the re-assessment, as suggested, is neither warranted nor required.
1691.1	round 1	Kitsumkalum First Nation	12	Aboriginal Consultation	the assessment and conclusions listed here are not acceptable to Kitsumkalum. Aurora LNG once again is putting words in our mouths, ignored our comments and in general has not engaged Kitsumkalum at all in this conclusion. Delete the word "continue" out of the last paragraph in this section. There has been no such work done so far and to imply that by using the word "continue" is false.	It is unclear to Aurora LNG which paragraph Kitsumkalum First Nation is referring to in this comment. However, Aurora LNG's response to comment #1335 may offer relevant context if Kitsumkalum First Nation is referring to Aurora LNG's use of the words "continued consultation."
1692.1	round 1	Kitsumkalum First Nation	12.5.7.8	Aboriginal Consultation	Kitsumkalum has not been involved in the assessment, nor in coming up with the potential effects mechanisms, nor with mitigation measures. As Aurora LNG could not think of any mitigation measures themselves, maybe they should talk to Kitsumkalum?	Aurora LNG reviewed Kitsumkalum First Nation's Project-specific study for specific potential effect mechanisms of concern to Kitsumkalum First Nation related to Traditional Governance. As a result of that review, Aurora LNG incorporated the following potential effect mechanism into the assessment of effects on Traditional Governance: "House groups risk losing access to their laxyuup and may be further estranged from their ability to provide traditional resources to their house groups" (KFN 2016a) (see page 12-228). Aurora LNG also incorporated relevant baseline information and insights from Kitsumkalum First Nation's Project-specific study into the assessment of potential effects on Traditional Governance. That information is referenced throughout Section 12.5.7.8. Kitsumkalum First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. This workshop was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback discussed during Technical Workshop #5. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1693.1	round 1	Kitsumkalum First Nation	12.5.7.9	Aboriginal Consultation	Kitsumkalum has not been involved in the assessment, nor in coming up with the potential effects mechanisms, nor with mitigation measures. Aurora LNG came up with 3 mitigation measures. Kitsumkalum cannot consider them mitigation measures.	Aurora LNG reviewed Kitsumkalum First Nation's Project-specific study for specific potential effect mechanisms of concern to Kitsumkalum First Nation related to traditional governance. As a result of that review, Aurora LNG incorporated the following potential effect mechanism into the assessment of effects on Traditional Governance: "House groups risk losing access to their laxyuup and may be further estranged from their ability to provide traditional resources to their house groups" (KFN 2016a) (see page 12-228). Aurora LNG also incorporated relevant baseline information and insights from Kitsumkalum First Nation's Project-specific study into the assessment of potential effects on Traditional Governance. That information is referenced throughout Section 12.5.7.8. Kitsumkalum First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. This workshop was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback discussed during Technical Workshop #5. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Kitsumkalum First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1694.1	round 1	Kitsumkalum First Nation	12.5.7.9	Aboriginal Consultation	1. this is not a mitigation measure, it is a regulatory requirement	Aurora LNG respectfully disagrees with Kitsumkalum First Nation. A commitment to continued consultation can serve to reduce potential adverse effects on Kitsumkalum First Nation's right to self-government by helping to fully understand the right, and working together to develop additional mitigation measures.
1695.1	round 1	Kitsumkalum First Nation	12.5.7.9	Aboriginal Consultation	2. this is not a mitigation measure, this is a regulatory requirement. Please explain how Aurora LNG had considered Kitsumkalum's information during planning and permitting. What are some concrete examples? How will this works in the future? Will Aurora LNG meet with Kitsumkalum and actually listen and ask for input or will Aurora LNG come up with documents and ideas and ask Kitsumkalum to review? Kitsumkalum has Section 35 Constitutional Aboriginal Title and Rights in and around the PDA for the project, therefor this is a requirement, not a mitigative measure.	Aurora LNG considered Kitsumkalum First Nation's input in Project planning occurred during the January 25-26 2017 workshop (Workshop#2). At this workshop, Aurora LNG informed Kitsumkalum First Nation of two different plans being considered for the construction of the Marine Offloading Facility. Aurora LNG solicited and received feedback from Kitsumkalum First Nation on the topic. Kitsumkalum First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 25, 2016. The views provided by Kitsumkalum First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Kitsumkalum First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Kitsumkalum First Nation opinions, concerns and feedback. This information, and other feedback from Kitsumkalum First Nation, will continue to be considered by Aurora LNG during all stages of the Project.

1696.1	round 1	Kitsumkalum First Nation	12.5.7.9	Aboriginal Consultation	3. this is a mitigation measure? To inform Aboriginal Groups about project schedule and timelines?!?! Please remove this and review regulatory requirements from BC EAO and CEAA.	Aurora LNG is of the opinion that this mitigation measure is appropriate and relevant to the assessment of potential effects to Kitsumkalum First Nation's right to self-government. In particular, the mitigation measure would directly mitigate the following concern from Kitsumkalum First Nation's Project-specific study: "communities are being asked to make decisions that impact present and future generations with limited data and understandings of the long term impacts of the LNG industry" (KFN 2016a) (included in Section 12.5.7.9, page 12-230). By continuing to inform Kitsumkalum First Nation of Project schedules and timelines, Aurora LNG will be providing Kitsumkalum First Nation with important information for incorporation into future decision-making.
1697.1	round 1	Kitsumkalum First Nation	12.5.7.9	Aboriginal Consultation	the assessment and conclusions listed here are not acceptable to Kitsumkalum. Aurora LNG once again is putting words in our mouths, ignored our comments and in general has not engaged Kitsumkalum at all in this conclusion. Delete the word "continue" out of the last paragraph in this section. There has been no such work done so far and to imply that by using the word "continue" is false.	It is unclear to Aurora LNG which paragraph Kitsumkalum First Nation is referring to in this comment. However, Aurora LNG's response to comment #1335 may offer relevant context if Kitsumkalum First Nation is referring to Aurora LNG's use of the words "continued consultation."
1698.1	round 1	Kitsumkalum First Nation	12.5.7.10	Aboriginal Consultation	As with all previous sections, please contact Kitsumkalum to re-write this section. This is silly.	On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Aurora LGN prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation". A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements.
1699.1	round 1	Kitsumkalum First Nation	12.5.7.11	Aboriginal Consultation	As with all previous sections, please contact Kitsumkalum to re-write this section. Aurora LNG needs to update this section to include information from the addendum which we submitted to them several times now. The mitigation measures proposed are not mitigation but regulatory requirements. Please delete and then talk to Kitsumkalum so we can tell you acceptable mitigation measures.	On April 4, 2017, Aurora LNG held Technical Workshop #5 with Kitsumkalum First Nation. Part of the workshop focused on discussing and clarifying the information provided in the Addendum and the influence of that information on the assessments completed in Sections 11.3.10 and 12.5.7 the Application. Aurora LGN prepared a technical memo entitled "Consideration of Additional Information Provided by Kitsumkalum First Nation". A draft of this memo was shared with Kitsumkalum First Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. In addition, Kitsumkalum First Nation had the opportunity to review the draft Part C prior to submission of the Application, including mitigation measures proposed to reduce potential effects on Kitsumkalum First Nation Aboriginal Interests, and to discuss any views or feedback at Technical Workshop #3 , which was held on October 25, 2016. Aurora LNG has been committed to ongoing consultation with Kitsumkalum First Nation throughout the Application Review phase regarding the development of mitigation measures. Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1700.1	round 1	Kitsumkalum First Nation	12.5.7.12	Aboriginal Consultation	As with all previous sections, please contact Kitsumkalum to re-write this section. Aurora LNG did not even bother to come up with mitigation measures. Aurora LNG needs to talk to Kitsumkalum so we can tell you acceptable mitigation measures.	Kitsumkalum First Nation received a draft version of Section 12.5.7.12 of the Application in October 2016 for review and comment prior to submission for screening. Mitigation measures specific to Kitsumkalum First Nation economic opportunities were not included in Section 12.5.7.12 because no potential effect mechanisms were identified that were not already assessed elsewhere in the Application. Aurora LNG believes that the assessment set out in the Application is fair and reasonable. As a result, the re-assessment, as suggested, is neither warranted nor required In addition, Aurora LNG requested and received specific feedback on proposed mitigation measures from Kitsumkalum First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
1701.1	round 1	Gitxaala Nation	3	Assessment Methods	The assessment methodology, as described in the opening paragraph, does not adhere to standard environmental assessment methodology. In the Aurora application, it notes that residual effects will be identified prior to application of mitigation. However, typically, residual effects are determined after the application of mitigation measures. This must be clarified as it is contrary to the process outlined in the Final AIR.	The description of the sequential approach used in the Application has been clarified in an Errata. The Application follows standard environmental assessment methods, consistent with Section 3 of the approved AIR. Residual effects are characterized in consideration of the application of mitigation measures. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1702.1	round 1	Gitxaala Nation	3	Assessment Methods	The key steps in the effects assessment, as listed in the bullet list, do not include identification of residual effects following application of mitigation measures. This must be updated to ensure the description of the process is reflective of the actual process.	The methods for the assessment of Project-specific effects are described in Section 3.6 (Assessment of Project Residual Effects) of the Application, and include the characterization of residual effects following application of mitigation measures.
1703.1	round 1	Gitxaala Nation	3.1.1	Assessment Methods	This section states that potential Project-related issues and effects were identified based on ongoing consultation with Aboriginal groups. However, this ongoing consultation remains largely superficial. Gitxaala has provided numerous instances of comment, including comments on the Proposed Valued Components Document. All of which have been discounted without explanation as Gitxaala VCs were not considered in Part B of the application and not fully considered in Part C.	The draft Application Information Requirements (AIR) was issued to the Working Group for comment in August 2015, and finalized by the EAO in November 2015 after incorporation of comments to the satisfaction of the EAO. Gitxaala provided the Gitxaala Valued Components Report to Aurora LNG in June 2016. The Gitxaala Valued Components Report was incorporated in Part C of the Application. Its consideration in Part B of the Application has been addressed in an Errata Document. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
1704.1	round 1	Gitxaala Nation	3.1.1	Assessment Methods	This section states that the process for selecting VCs involved refinement through on-going discussions with Aboriginal Groups identified in the Section 11 Order. This statement is false as Gitxaala was not collaboratively involved in the VC selection process. In fact, Gitxaala prepared comments on the Proposed Valued Component Document but was not provided a response or rationale for the lack of consideration. This statement must be updated to reflect the actual discussions, rather than a blanket statement.	Aurora LNG incorporated the Gitxaala VC Report into the Part C and CEAA 5(1)(c) assessments. The topics covered in the Gitxaala VC Report, although referred to as Valued Components by Gitxaala Nation, were more relevant to requirements of the AIR for those two Application sections. The AIR was finalized on November 23, 2015. Gitxaala Nation submitted the Gitxaala VC Report to Aurora LNG in June 2016.Aurora LNG consulted with Gitxaala Nation on the selection of VCs and on the development on the AIR prior to finalization of that document. Consultation activities related to the development of the AIR are included in the First Aboriginal Consultation Report and in Section 7.1 of the Second Aboriginal Consultation Report.
1705.1	round 1	Gitxaala Nation	3.1.1	Assessment Methods	The lack of consideration of Gitxaala suggested VCs is apparent in the bulleted listing of selected VCs as well as Table 3-1 of the AIR as no Gitxaala proposed VCs are listed in either document.	Aurora LNG incorporated the Gitxaala VC Report into the Part C and CEAA 5(1)(c) assessments. The topics covered in the Gitxaala VC Report, although referred to as Valued Components by Gitxaala Nation, were more relevant to requirements of the AIR for those two Application sections. The AIR was finalized on November 23, 2015. Gitxaala Nation submitted the Gitxaala VC Report to Aurora LNG in June 2016.Aurora LNG consulted with Gitxaala Nation on the selection of VCs and on the development on the AIR prior to finalization of that document. Consultation activities related to the development of the AIR are included in the First Aboriginal Consultation Report and in Section 7.1 of the Second Aboriginal Consultation Report.
1706.1	round 1	Gitxaala Nation	3.2.2	Assessment Methods	No change to this application section was applied from screening comments. Screening comments still stand: "There is no mention in Section 3.2.2 of use of Traditional Knowledge specifically. This must be explicitly stated."	Section 3.2.2 outlines the influence of consultation on the assessment. Please see Section 3.2.3 for the methods for incorporating Traditional Knowledge into the assessment.
1707.1	round 1	Gitxaala Nation	3.2.3	Assessment Methods	No change to this application section was applied from screening comments. Screening comments still stand: "... the language for inclusion under 3.2.3 is extremely permissive and doesn't specifically require inclusion."	Comment noted. As outlined in Section 3.2.2 of the approved AIR, where made available by Aboriginal Groups, traditional knowledge and traditional use studies and information, First Nation land-use plans, or other documents or sources of information were included in the assessment, where applicable.
1708.1	round 1	Gitxaala Nation	3.2.4	Assessment Methods	As Gitxaala input into VC selection was not completed, there was no Gitxaala information used to identify each potential effect or measurable parameters. This is despite the Section specifying that the application took into consideration the issues and concerns of Aboriginal groups. This statement must be disaggregated to reflect the actual groups involved in selection of the effects and measurable parameters.	Disaggregated consultation information, including information on the consultation efforts related to the development of the AIR and VCs, is described in both the First and Second Aboriginal Consultation Reports. Aurora LNG incorporated the Gitxaala VC Report into the Part C and CEAA 5(1)(c) assessments. The topics covered in the Gitxaala VC Report, although referred to as Valued Components by Gitxaala Nation, were more relevant to requirements of the AIR for those two Application sections. The AIR was finalized on November 23, 2015. Gitxaala Nation submitted the Gitxaala VC Report to Aurora LNG in June 2016.Aurora LNG consulted with Gitxaala Nation on the selection of VCs and on the development on the AIR prior to finalization of that document. Consultation activities related to the development of the AIR are included in the First Aboriginal Consultation Report and in Section 7.1 of the Second Aboriginal Consultation Report.
1709.1	round 1	Gitxaala Nation	4.2.1	Air Quality	This section does not include Aboriginal Interests as being linked to the VC assessment. This is problematic as Gitxaala has submitted a VC report with specific reference to air quality which has not been incorporated or addressed.	References to the links between changes in air quality and effects on Aboriginal Interests are addressed in the Application as follows: Section 4.2.1 includes the following text at paragraph 3 on pg. 4.2-1 that links changes in air quality to effects on Aboriginal Interests and communities: "Other VCs and sections that are supported by components of this assessment include: □ Summary of Statutory Requirements under the Canadian Environmental Assessment Act, 2012 (see Section 11.0) □ Aboriginal Consultation (see Section 12.0)." Traditional knowledge and traditional use information gathered from Project specific studies submitted to Aurora LNG (including the Gitxaala VC Report) and from publicly available sources was reviewed and considered during the preparation of the Application, and was incorporated into the air quality assessment, where applicable. For example; dispersion modelling included Aboriginal Interests-related locations. The findings of the Air Quality VC assessment were carried forward into the assessment of adverse effects on the exercise of Gitxaala Nation Aboriginal Interests in the following sections: 12.5.6.6 Assessment of Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests (Changes in the Harvesting Experience). 12.5.6.7 Assessment of Effects on Gitxaala Nation Cultural Wellbeing (Changes in the experience of using sites and landscape features for rituals and spiritually important purposes) The results of the Air Quality assessment were incorporated into the following CEAA 2012-related sections of the Application that assess Project environmental effects on Gitxaala Nation current use of lands and resources for traditional purposes, the health of Gitxaala Nation members and Gitxaala Nation physical and cultural heritage:"11.3.9.3 Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes"Qualitative Changes in the Current Experience of Traditional HarvestingQualitative Changes in the Experience of Using Sites and Landscape Features for Rituals or Spiritually Important Purposes"11.3.9.4 Assessment of CEAA 2012 5(1)(c)(i) – Aboriginal Health"Changes to Aboriginal Health as a result of changes to human health from changes in air quality."11.3.9.6 Assessment of CEAA 2012 5(1)(c) ii and iv—Aboriginal Physical and Cultural Heritage"Change in Consumptive Land and Resource Use for Traditional PurposesChange in Non-consumptive Land and Resource Use for Traditional Purposes
1710.1	round 1	Gitxaala Nation	Table 4.2-1	Air Quality	This table details that dispersion modelling included Aboriginal Interests locations. However, Gitxaala was not involved in the selection of dispersion modelling sites therefore, this statement is misleading. The Aboriginal Interests information must be disaggregated to show which groups were consulted as part of the air dispersion modelling, and which were not.	Aboriginal Groups were not specifically consulted on the development of dispersion modelling sites. Aurora LNG began developing the list of sensitive receptors (dispersion modelling sites) for use in the model before Project-specific traditional use information was available from any Aboriginal Groups. At that time, Aurora LNG created a list of all known Aboriginal use locations within the Air Quality RAA from publicly-available sources, including recently completed Environmental Assessment Applications for other projects in the vicinity. Upon receipt of a Kitselas First Nation Project-specific use study in April 2015, Aurora LNG added locations identified in this study to the list of sensitive receptors. Aurora LNG then revisited the sensitive receptors list in October 2015 in case any new Aboriginal use locations had been identified in Project-specific studies. At that time, Aurora LNG had not received any additional Project-specific studies from Aboriginal Groups. Upon request, information for any identified site can be extracted from the dispersion modelling output owing to the existence of many thousands of 'gridded receptors' in the modelling domain. The absence of a 'sensitive receptor' in the modelling input files does not hinder that process.

1711.1	round 1	Gitxaala Nation	Table 4.2-1	Air Quality	This table states that "Air Quality findings are carried forward into the Aboriginal Interests section of the Environmental Assessment Certificate Application." However, the Part C volume does not specifically address air quality in terms of effects to Aboriginal groups. For example, Table 12.3-2 indicates that potential adverse effects on VCs related to Air Quality are assessed in the Air Quality Volume. Further, when Air Quality is considered, it is only referred to in terms of the previously considered information in Section 4.2 and is not considered in terms of Aboriginal Interests.	The assessment of effects on Gitxaala Nation considers air quality effects in the context of the exercise of Aboriginal Interests in the following sections:Changes in Enjoyment, Experience, and Use of the Land (Section 12.5.6.5, starting on page 12-158) Changes in the Harvesting Experience (Section 12.5.6.6, starting on page 12-170) Changes in the Experience of Using Sites and Landscape Features for Rituals and Spiritually Important Purposes (Section 12.5.6.7, starting on page 12-180)
1712.1	round 1	Gitxaala Nation	4.2.2.3	Air Quality	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken. Specifically as the example continually given of inclusion in the dispersion modelling was not undertaken with Gitxaala.	Aurora LNG began developing the list of sensitive receptors (dispersion modelling sites) for use in the Air Quality model before Project-specific traditional use information was available from any Aboriginal Groups. At that time, Aurora LNG created a list of all known Aboriginal use locations within the Air Quality RAA from publicly-available sources, including recently completed Environmental Assessment Applications for other projects in the vicinity. Upon receipt of a Kitselas First Nation Project-specific use study in April 2015, Aurora LNG added locations identified in this study to the list of sensitive receptors. Aurora LNG then revisited the sensitive receptors list in October 2015 in case any new Aboriginal use locations had been identified in Project-specific studies. At that time, Aurora LNG had not received any additional Project-specific studies from Aboriginal Groups. Upon request, information for any identified site can be extracted from the dispersion modelling output owing to the existence of many thousands of 'gridded receptors' in the modelling domain. The absence of a specific 'sensitive receptor' in the modelling input files does not hinder that process.
1713.1	round 1	Gitxaala Nation	4.2.2.5	Air Quality	This Section states that "Selection of the RAA included consideration of nearby communities and traditional use areas." However, Gitxaala's traditional use areas were not collected by Aurora LNG until following the establishment of the RAA. Therefore, this statement is incorrect. In fact, Gitxaala used the boundaries defined for the EAC Application in defining the boundaries for the traditional use study. Therefore, the statement is circular.	Aurora LNG began developing the proposed study area including the RAA for use in the Air Quality model in early 2015, before Gitxaala Nation provided any Project-specific TK/TU information. At that time, Aurora LNG created a list of all known Aboriginal use locations within the Air Quality RAA from publicly-available sources, including recently completed Environmental Assessment Applications for other projects in the vicinity. Upon receipt of Kitselas First Nation's Project-specific use study in April 2015, Aurora LNG added to the dispersion modelling sites with locations identified in Kitselas First Nation's study. Aurora LNG then revisited the dispersion modelling sites list in October 2015 in case any new Aboriginal use locations had been identified in Project-specific studies. At that time, Aurora LNG had not received any additional Project-specific studies from Aboriginal Groups, including Gitxaala Nation.
1714.1	round 1	Gitxaala Nation	4.2.2.5	Air Quality	Gitxaala Nation was not consulted on potential Aboriginal administrative boundaries that could have played a role in determining the air quality assessment methodology outside those noted for spatial boundaries.	The Project spatial boundaries and assessment methodology are consistent with the Application Information Requirements (AIR), the final Detailed Model Plan (Appendix 1, Air Quality - TDR) and the British Columbia Air Quality Dispersion Modelling Guideline. The extent of the spatial boundaries was finalized in consultation with BC MOE and included consideration of nearby communities and traditional use areas. The spatial boundaries are sufficiently large so as to encompass the region influenced by the Project and other major emission sources in the region. Previous air quality assessments were reviewed to provide confidence that the selected spatial boundaries encompass areas where potential cumulative effects may occur.
1715.1	round 1	Gitxaala Nation	4.2.3	Air Quality	There is no reference to TLU/TK in the existing conditions for Air Quality. This is despite the Assessment Methods specifically identifying that TLU/TK would be integrated into the existing conditions for each VC. This must be updated to include specific TLU/TK related to Air Quality for Gitxaala Nation, specifically, information contained in the VC Report.	Aboriginal Groups were not specifically consulted on the development of dispersion modelling sites. Aurora LNG began developing the list of sensitive receptors (dispersion modelling sites) for use in the model before Project-specific traditional use information was available from any Aboriginal Groups. At that time, Aurora LNG created a list of all known Aboriginal use locations within the Air Quality RAA from publicly-available sources, including recently completed Environmental Assessment Applications for other projects in the vicinity. Upon receipt of a Kitselas First Nation Project-specific use study in April 2015, Aurora LNG added locations identified in this study to the list of sensitive receptors. Aurora LNG then revisited the sensitive receptors list in October 2015 in case any new Aboriginal use locations had been identified in Project-specific studies. At that time, Aurora LNG had not received any additional Project-specific studies from Aboriginal Groups, including Gitxaala Nation. Upon request, information for any identified site can be extracted from the dispersion modelling output owing to the existence of many thousands of 'gridded receptors' in the modelling domain. The absence of a 'sensitive receptor' in the modelling input files does not hinder that process.
1716.1	round 1	Gitxaala Nation	4.4.2.2	Acoustic Environment	While this section indicates that locations of special importance were incorporated into the sampling program for noise, there is no mention of these locations in the volume and they are not differentiated from other noise receptors. How can Gitxaala have any confidence in the results without specific information related to their rights and interests?	In the Application, Table 4.4-4 lists noise sensitive receptors with a brief description and Figure 4.4-1 shows the receptor locations. Receptors that represent traditional land use areas (ID# R4, R5, R6, R7, R8, R16, R17, R18, R19, and R21) have been included.
1717.1	round 1	Gitxaala Nation	4.4.2.3	Acoustic Environment	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was undertaken.	As a result of the information received from Aboriginal Groups, and summarized in the Aboriginal Consultation Report #2 (see Appendix S.1), TK was used to identify potentially affected locations of special interest to Aboriginal Groups. Sites of Aboriginal importance include residential communities, hunting and gathering, and other habitation and gathering sites. As described in Section 4.4.3 Existing Conditions, noise receptors for the assessment were established at Aboriginal traditional use areas along the islands (i.e., Casey Point, Barrett Rock, Lima Point, Fraser Point, Kinahan Islands, and Pike Island). In addition, noise-related findings at locations of special importance to Aboriginal Groups were used as input for assessing adverse residual effects on Aboriginal resources in Part C of the Application (see Section 12.0). In the Gitxaala VC Report, underwater noise was raised as a potential effect in the context of harvesting. This TK/TLU information is not relevant to the existing conditions in the Acoustic Environment VC, which focuses on existing levels of noise in the region and in nearby communities. Underwater noise was taken into consideration in Section 4.9.5 (Marine Fish and Fish Habitat) and Section 4.10.5 (Marine Mammals) of the Application. In the Gitxaala VC Report, Gitxaala Nation also mentioned that noise effects could affect the experience of exercising Aboriginal Interests. This input has been incorporated into Part C of the Application (see Sections 12.5.6.6 and 12.5.6.7). In the existing conditions for Acoustic Environment VC, noise monitoring was conducted at five locations within the Acoustic Environment local assessment area . These locations represent the closest communities to the Project as well as other uninhabited locations along coastal area of Digby Island. These locations provide representative information on the existing acoustic environment along different coastal area without any land-based residential and land-based commercial activities. The results from the monitoring are applied to other receptors in the assessment, including receptors for traditional land use area (R4 to R8, R16 to R19, and R21) in the Acoustic Environment VC.
1718.1	round 1	Gitxaala Nation	4.4.3	Greenhouse Gases	There is no reference to TLU/TK in the existing conditions for the Acoustic Environment. This is despite the Assessment Methods specifically identifying that TLU/TK would be integrated into the existing conditions for each VC. This must be updated to include specific TLU/TK related to the Acoustic Environment for Gitxaala Nation, specifically, information contained in the VC Report.	As a result of the information received from Aboriginal Groups, and summarized in the Aboriginal Consultation Report #2 (see Appendix S.1), TK was used to identify potentially affected locations of special interest to Aboriginal Groups. Sites of Aboriginal importance include residential communities, hunting and gathering, and other habitation and gathering sites. As described in Section 4.4.3 Existing Conditions, noise receptors for the assessment were established at Aboriginal traditional use areas along the islands (i.e., Casey Point, Barrett Rock, Lima Point, Fraser Point, Kinahan Islands, and Pike Island). In addition, noise-related findings at locations of special importance to Aboriginal Groups were used as input for assessing adverse residual effects on Aboriginal resources in Part C of the Application (see Section 12.0). In the Gitxaala VC Report, underwater noise was raised as a potential effect in the context of harvesting. This TK/TLU information is not relevant to the existing conditions in the Acoustic Environment VC, which focuses on existing levels of noise in the region and in nearby communities. Underwater noise was taken into consideration in Section 4.9.5 (Marine Fish and Fish Habitat) and Section 4.10.5 (Marine Mammals) of the Application. In the Gitxaala VC Report, Gitxaala Nation also mentioned that noise effects could affect the experience of exercising Aboriginal Interests. This input has been incorporated into Part C of the Application (see Sections 12.5.6.6 and 12.5.6.7). In the existing conditions for Acoustic Environment VC, noise monitoring was conducted at five locations within the Acoustic Environment local assessment area . These locations represent the closest communities to the Project as well as other uninhabited locations along coastal area of Digby Island. These locations provide representative information on the existing acoustic environment along different coastal area without any land-based residential and land-based commercial activities. The results from the monitoring are applied to other receptors in the assessment, including receptors for traditional land use area (R4 to R8, R16 to R19, and R21) in the Acoustic Environment VC.
1719.1	round 1	Gitxaala Nation	4.5.2.2	Water Quality	While it is stated that TK/TLU influenced the scope of the assessment, this is not apparent from the assessment itself in regards to Gitxaala TLU/TK information.	Freshwater study design incorporated lakes and streams that were identified as important to Aboriginal groups in TK/TU studies (e.g., Tsook Lake). There was also a focus to incorporate into the freshwater assessment, lakes and streams identified as commercial, recreational, Aboriginal (CRA) fisheries and those identified as supporting culturally critical species. Although no specific freshwater lakes or streams were identified, TK/TU studies noted that hunting and trapping of duck, geese, mink and marten take place on Digby Island and Metlakatla in and around waterbodies and wetlands; therefore the study design incorporated a comprehensive spatial sampling program to assess these areas. Study design details for freshwater and marine water quality were presented at a technical workshop (December 2, 2015) to obtain feedback during development of proposed field programs. Water chemistry of marine and freshwater and storm water runoff was discussed at a subsequent technical workshop (March 16 and 17, 2016).
1720.1	round 1	Gitxaala Nation	4.5.2.3	Water Quality	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken.	Freshwater study design incorporated lakes and streams that were identified as important to Aboriginal groups in TK/TU studies (e.g., Tsook Lake). There was also a focus to incorporate into the freshwater assessment, lakes and streams identified as commercial, recreational, Aboriginal (CRA) fisheries and those identified as supporting culturally critical species. Although no specific freshwater lakes or streams were identified, TK/TU studies noted that hunting and trapping of duck, geese, mink and marten take place on Digby Island and Metlakatla in and around waterbodies and wetlands; therefore the study design incorporated a comprehensive spatial sampling program to assess these areas. Study design details for freshwater and marine water quality were presented at a technical workshop (December 2, 2015) to obtain feedback during development of proposed field programs. Water chemistry of marine and freshwater and storm water runoff was discussed at a subsequent technical workshop (March 16 and 17, 2016).
1721.1	round 1	Gitxaala Nation	4.5.6.3	Water Quality	Gitxaala is concerned with the predicated changes in pH levels for the three streams located on Digby Island. The predicted change is above the biological threshold; and while the application states that the levels are still protective of aquatic biota, there is no consideration of whether or not these levels are protective of Gitxaala's use of that same aquatic biota.	The model used to predict pH changes relates pH to acid neutralizing capacity which was based on lake systems, not stream systems. Therefore the model may overestimate potential effects to streams given the continuous movement of water. At existing conditions, these streams were not considered acid sensitive. Therefore, the streams have buffering capacity against acid inputs. The predicted cumulative emissions can also be considered conservative as they include some regional projects that are not expected to be implemented. A more conservative threshold of pH change of 0.3 units was chosen to align with previous regional studies. However, pH changes of up to 0.4 are considered protective of aquatic biota. In the cumulative emissions case, the modelled pH changes for these three streams are at or below the 0.4 threshold of change. It is anticipated that these streams will be considered for inclusion in future monitoring programs to monitor pH change.
1722.1	round 1	Gitxaala Nation	4.5.9	Water Quality	Gitxaala requires full participation in the identification of waterbodies for the follow-up program. This includes fulsome consultation with Aurora LNG on the identification of waterbodies and participation in the monitoring activities contemplated.	The acidification and eutrophication follow-up program is expected to be developed on a regional level.Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development and implementation of this follow-up program.
1723.1	round 1	Gitxaala Nation	4.5.12.3	Water Quality	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was actually undertaken.	Freshwater study design incorporated lakes and streams that were identified as important to Aboriginal groups in TK/TU studies (e.g., Tsook Lake). There was also a focus to incorporate into the freshwater assessment, lakes and streams identified as commercial, recreational, Aboriginal (CRA) fisheries and those identified as supporting culturally critical species. Although no specific freshwater lakes or streams were identified, TK/TU studies noted that hunting and trapping of duck, geese, mink and marten take place on Digby Island and Metlakatla in and around waterbodies and wetlands; therefore the study design incorporated a comprehensive spatial sampling program to assess these areas. Study design details for freshwater and marine water quality were presented at a technical workshop (December 2, 2015) to obtain feedback during development of proposed field programs. Water chemistry of marine and freshwater and storm water runoff was discussed at a subsequent technical workshop (March 16 and 17, 2016).

1724.1	round 1	Gitxaala Nation	Table 4.5-20	Water Quality	This table states that the spatial extent was chosen as the RAA as it encompasses waters where Aboriginal fish species and important habitats are present and may be affected by the proposed Project. However, this boundary was developed prior to provision of Gitxaala's Use study, therefore Gitxaala information could not have been used to influence the boundary.	The RAA for marine fish and marine water quality is largely bounded by the area defined as the Skeena River Estuary but also includes some marine waters out to Triple Island pilot boarding station. Based on information available at the time of writing, this area also encompasses marine waters known to be of importance from a commercial, recreational, and Aboriginal (CRA) fisheries perspective. Although the presence of CRA fish species and habitats was considered in the selection of the RAA boundary, the current boundaries of the RAA were selected because it encompasses the area within which a suitable context for identifying potential interactions between Project activities and past, present and reasonably foreseeable future projects and activities are assessed. Although effort was made to include all Aboriginal Use studies, the Gitxaala Use Study was received in June 2016, following completion of field programs.
1725.1	round 1	Gitxaala Nation	Table 4.6-10	Vegetation and Wetland Resources	This table proposes mitigation that will include revegetation activities using traditional use species, where practicable. Gitxaala requires consultation with Aurora LNG on specific locales for traditional use species revegetation and on the species which may or may not be appropriate. Further. this table outlines the expected success/risks and uncertainty associated with this practice. It indicates that this mitigation measure is generally considered an industry standard. Please provide additional detail on Projects where traditional use species were successfully revegetated.	Section 14.17 of the Application states that the Decommissioning and Abandonment Plans, which will include the details of revegetation, will be developed as part of the BC OGC LNG permitting process to meet the laws, regulations and standards in place at that time. They will be developed with input from appropriate provincial and federal regulatory agencies, Aboriginal Groups, and key stakeholders. The references to 'industry standard' practice is to revegetation and reclamation using native plant species, many of which have traditional uses; this reference was not intended to convey that revegetation with traditional use plant species is an industr standard. As stated in section 4.6.5.2 of the Application, the traditional use plant species identified in the PDA are widespread, abundant and commercially-propagated within native plant nurseries, therefore, the feasibility of using them for revegetation purposes is high.
1726.1	round 1	Gitxaala Nation	4.6.5.2	Vegetation and Wetland Resources	This section outlines that 37 traditional use species will be lost due to clearing of vegetation during construction in the PDA. This is of great concern to Gitxaala. Particularly, as specific gathering locales are extremely important. Gitxaala harvesters have specific rules of harvest which must be adhered to and certain areas have stories associated with the location. Simply directing Gitxaala to another location in the LAA or RAA to gather is inappropriate and contrary to case law which indicates that mitigation cannot simply direct Aboriginal groups to go elsewhere.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include an assessment of vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together, these sections address the site-specific loss of vegetation resources for traditional use within the PDA. Also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species.
1727.1	round 1	Gitxaala Nation	Table 4.6-13	Vegetation and Wetland Resources	It is unclear from this table if the wildlife habitat recovery and revegetation includes species of importance to Gitxaala. While the expected success does reference plants of traditional importance, the mitigation measure and mitigation mechanism does not specifically reference species of traditional value.	Mitigation measure 4.7.3 in Table 4.6-13 of the Application refers to native plants and traditional use plants in the context of the Decommissioning and Abandonment Plans. However, the details of the Decommissioning and Abandonment Plans will be developed at a later stage during the BC OGC LNG permitting process to meet the laws, regulations and standards in place at that time. The Decommissioning and Abandonment Plans will be developed with input from appropriate provincial and federal regulatory agencies, Aboriginal Groups, and key stakeholders. Since the traditional use plant species within the PDA are widespread, abundant, commercially-propagated within native plant nurseries, and already suited to the site (PDA), they would be suitable for use in the revegetation plans.
1728.1	round 1	Gitxaala Nation	4.6.6.3	Vegetation and Wetland Resources	The characterization of cumulative effect to traditional use plants is concerning. It is identified that there will be cumulative effects to traditional use plants but it is rationalized as there are species of interest occurring within the RAA. Gitxaala Nation members cannot be expected to go elsewhere in the RAA for their gathering activities. Therefore, this justification is not applicable and the effect should be designated as moderate to high.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include an assessment of vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together, these sections address site-specific loss of vegetation resources for traditional use within the PDA. Also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species.
1729.1	round 1	Gitxaala Nation	4.6.6.6	Vegetation and Wetland Resources	This Section states that the Project will contribute to a loss of up to 763 ha, supporting 37 traditional use species within the PDA. This effect is rationalized by indicating that this represents less than 1% of the vegetated area of the RAA. This rationalization is flawed. The species lost represent loss of harvesting locales of importance to Gitxaala; and for Gitxaala Nation, location is important as harvesting protocols are in place. Further, the use of the RAA in this context is inappropriate as it is for the calculation of cumulative effects. At a minimum, the land calculation should have been completed for the LAA instead. However, even this approach would not take into account the location based nature of Gitxaala exercise of their rights.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4, and include an assessment of vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together, these sections address site-specific loss of vegetation resources for traditional use within the PDA. Also see the "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" technical memo that discusses comments pertaining to concerns about access and availability of traditional use species. The technical memo will be filed with the BC EAO.
1730.1	round 1	Gitxaala Nation	4.6.7.1	Vegetation and Wetland Resources	Gitxaala disagrees with the rating of 'not significant' for the change in abundance of traditional plant species based on plant species being abundant elsewhere. This argument is invalid as Gitxaala harvesting has a strong location based component.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include an assessment of vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together, these sections address site-specific loss of vegetation resources for traditional use within the PDA. Also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species.
1731.1	round 1	Gitxaala Nation	4.6.10	Vegetation and Wetland Resources	The conclusion that while 37 traditional use species will be lost form the PDA, they are common throughout the PDA fails to consider that Gitxaala harvesting has a strong location based component.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4, and include an assessment of vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together, these sections address the site-specific loss of vegetation resources for traditional use within the PDA. Also see the "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" technical memo that discusses comments pertaining to concerns about access and availability of traditional use species. The technical memo will be filed with the BC EAO.
1732.1	round 1	Gitxaala Nation	Table 4.7-2	Wildlife Resources (Terrestrial)	As the information within this table is not disaggregated, it is therefore difficult to evaluate the sufficiency of Gitxaala's influence on the Scope of the Wildlife and Terrestrial Resources assessment. Suggest disaggregating this information to identify which party provided which key information or concern.	Aurora LNG acknowledges the comment however the intent of Table 4.7-2 is to provide a summary of the key information and concerns raised during the consultation process and how they influenced the development of the assessment of the Wildlife Resources (Terrestrial) VC. For ease of review, the table focused on the information/concerns and its influence on the assessment.
1733.1	round 1	Gitxaala Nation	Table 4.7-2	Wildlife Resources (Terrestrial)	This table states that "As a result of the comments received, where information is available and relevant, species of importance to Aboriginal Groups are integrated within habitat assessments…" Please provide additional detail on how the determination of relevance was completed for inclusion of species of importance to Aboriginal groups.	For clarification, the use of the term "relevance" is intended to highlight that the assessment considered species that were identified to be of importance to Aboriginal Groups and where there was an identified mechanism for interaction between those species and Project activities and infrastructure.
1734.1	round 1	Gitxaala Nation	4.7.2.3	Wildlife Resources (Terrestrial)	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was undertaken.	Sections 4.7.2.2 and 4.7.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how the information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for wildlife resources. Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources, including identified species and areas of importance for harvesting by Aboriginal Groups; these details are also described in Appendix J. Species identified therein are discussed throughout Sections 4.7.5 and 4.7.6 where there was an identified mechanism for interaction with Project activities and infrastructure.
1735.1	round 1	Gitxaala Nation	4.7.2.5	Wildlife Resources (Terrestrial)	More information is required to elaborate on how traditional ecological knowledge helped form the technical boundaries for the assessment on Wildlife (terrestrial) Resources. This includes specifying which group TEK was collected from that was used to define this boundary and what specific TEK was used and how.	The technical boundaries for wildlife resources were developed in consideration of information included in studies provided by all Aboriginal Groups (described in Section 4.7.2.3 of the Application), and as part of comments raised during consultation. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies, and scientific literature to determine the appropriate extent of spatial boundaries, characterize residual Project and cumulative effects, and to assign significance determinations.
1736.1	round 1	Gitxaala Nation	4.7.3.1	Wildlife Resources (Terrestrial)	This section is vague. It simply states that TEK was acquired from sources and reports and has been incorporated into the assessment. No details are provided on what information was incorporated, how it was incorporated, or what the outcomes of this incorporation were/or hoped to be. Further it refers the reader to Section 4.7.2.3 for additional details; That section, Traditional Knowledge and Traditional Use Incorporation does not have any specific detail either and, in a circular reference, refers the reader to Section 4.7.3 for more details. Additional detail must be provided and circular references removed.	Sections 4.7.2.2 and 4.7.2.3 lists the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment of wildlife resources. Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources and is described in more detail in Appendix J. Species identified therein are discussed throughout Sections 4.7.5 and 4.7.6 where there was an identified mechanism for interaction with Project activities and infrastructure.
1737.1	round 1	Gitxaala Nation	4.7.3.2	Wildlife Resources (Terrestrial)	This section is vague. It does not include a full listing of traditional species with numbers, as previous sections outline for non-traditional species. It does not include numbers of traditional species having potential to occur in the LAA or RAA. It does not outline important habitats or areas or intensive use similar to previously sections and does not outline any modelling or field studies completed for traditionally used species. Overall, this section highlights that standard environmental assessment methodology was not applied to traditional species. Instead, it was treated anecdotally and only "used" where it overlapped with predetermined species already identified for inclusion in the assessment.	Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources and is described in more detail in Appendix J, and outlines important areas of use and harvest as identified in supporting traditional knowledge and use studies. Information presented in Section 4.7 of the Application reflects the nature of how information was presented in supporting traditional knowledge and use studies. These sources of information did not necessarily present information on wildlife resources using systematic methods that facilitate quantifying species presence and abundance following similar procedures used to describe existing conditions during Project field studies. This did not preclude species of importance from being incorporated into the assessment for wildlife resources. Table 4.7-2 outlines the ways in which several species or species groups were addressed in the Application, as influenced by information and concerns raised during consultation (e.g., black bear, black-tailed deer, Pacific marten, little brown myotis, marbled murrelet, waterfowl, western toad). Both the wildlife habitat community modelling and the habitat suitability modelling incorporate species identified to be of importance by Aboriginal Groups, recognizing that species of importance may vary among Aboriginal Groups. Please see Section 4.7.5.2 for a discussion of change in habitat for wildlife resources and the species described therein.
1738.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	This section does not contain a single reference to species of importance to Aboriginal peoples. This is extremely problematic and highlights the cursory and anecdotal treatment these species have been given throughout this assessment.	Aurora LNG acknowledges the comment. Sections 4.7.2.2 and 4.7.2.3 list the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for wildlife resources. Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources and is described in more detail in Appendix J. Species of traditional importance, as outlined in Section 4.7.3.2 (e.g., bear, deer, marten) are described throughout Section 4.7.5 where there was an identified potential for interaction with Project activities and infrastructure.

1739.1	round 1	Gitxaala Nation	Table 4.7-10	Wildlife Resources (Terrestrial)	This mitigation table states that "…activities will be vegetated using … traditional use species, where practicable." This is problematic for a number of reasons. First, Gitxaala has not been consulted by Aurora LNG on specific traditional use species that support wildlife. Secondly, the use of traditional species for revegetation has not been proven or implemented by many, if any, proponents. Therefore this process would require significant consultation between Gitxaala and Aurora LNG, of which none has occurred to date.	Aurora LNG acknowledges the comment. Sections 4.7.2.2 and 4.7.2.3 of the Application list the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how that information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for wildlife resources. Tables 4.7-10 and 4.6-10, cite this same mitigation (Number 4.6.5) to reclaim temporary workspaces using native plant seed and traditional use species where practicable as a measure to prevent establishment of non-native invasive plant species. Section 14.6 notes that an Invasive Plant Management Plan will be developed as part of the OGC LNG permitting process to meet the laws, regulations and standards with input from appropriate provincial and federal regulatory agencies, Aboriginal Groups, and key stakeholders. One of the key components of the plan will be to use "native plant seed and traditional use species where practicable". Traditional use plant species identified in the Application are commercially available in plant nurseries and have been used successfully in previous revegetation efforts. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11Order (as amended) regarding the development of this plan .
1740.1	round 1	Gitxaala Nation	4.7.6	Wildlife Resources (Terrestrial)	This section does not contain any Aboriginal input, specifically, Gitxaala input and, again, highlights the superficial way Gitxaala TEK was used in this assessment.	Aurora LNG acknowledges the comment. Sections 4.7.2.2 and 4.7.2.3 list the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for wildlife resources. Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources and is described in more detail in Appendix J. Species of traditional importance, as outlined in Section 4.7.3.2 are described throughout Section 4.7.6 where there was an identified potential for interaction with Project activities and infrastructure.
1741.1	round 1	Gitxaala Nation	4.8.1	Freshwater Fish and Fish Habitat	This section states that "Fish are important … and have cultural and ceremonial value to Aboriginal communities." However, this misses the key component to Aboriginal fish use: subsistence.	Aurora LNG acknowledges that fish have numerous important roles for Aboriginal communities, and the omission of the acknowledgement that fish being used for subsistence was accidental. This will be included in an errata document being compiled to capture these corrections and it will be filed with the BC EAO.
1742.1	round 1	Gitxaala Nation	4.8.2.3	Freshwater Fish and Fish Habitat	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was undertaken.	Minimal location-specific TK/TLU information was provided for the Freshwater Fish and Fish Habitat assessment on Digby Island. Information that was provided identified regional traditional harvest sites, or locations outside of the LAA and RAA. Where TK/TLU information indicated specific locations of species observed or habitat present, this information was incorporated into the data and used to inform and focus the assessment; however, no Digby Island locations were included in this information. Also, specific locations identified as having a high value for Aboriginal cultural, ceremonial, or food fishery use in the TK/TLU data were incorporated into the baseline data used for the assessment; no sites on Digby Island were identified in the received TK/TLU information. Less spatially specific data (i.e., regionally important considerations) were also noted and accounted for in the assessment. Sections of the assessment for Freshwater Fish and Fish Habitat where TK/TLU specific information was incorporated included 4.8.2.5 (recognizing information from resource management plans), otherwise information was used throughout the assessment of the potential effects on freshwater fish and fish habitat and were not specifically defined as TK/TLU information.
1743.1	round 1	Gitxaala Nation	4.8.3.1	Freshwater Fish and Fish Habitat	This section is vague. It simply states that TEK was acquired from sources and reports and has been incorporated into the assessment. No details are provided on what information was incorporated, how it was incorporated, or what the outcomes of this incorporation were/or hoped to be. Additional detail must be provided.	Minimal location-specific TK/TLU information was provided for the Freshwater Fish and Fish Habitat assessment on Digby Island. Information that was provided identified regional traditional harvest sites, or locations outside of the LAA and RAA. Where TK/TLU information indicated specific locations of species observed or habitat present, this information was incorporated into the data and used to inform and focus the assessment; however, no Digby Island locations were included in this information. Also, specific locations identified as having a high value for Aboriginal cultural, ceremonial, or food fishery use in the TK/TLU data were incorporated into the baseline data used for the assessment; no sites on Digby Island were identified in the received TK/TLU information. Less spatially specific data (i.e., regionally important considerations) were also noted and accounted for in the assessment. Sections of the assessment for Freshwater Fish and Fish Habitat where TK/TLU specific information was incorporated included 4.8.2.5 (recognizing information from resource management plans), otherwise information was used throughout the assessment of the potential effects on freshwater fish and fish habitat and were not specifically defined as TK/TLU information.
1744.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	This section does not identify the CRA fish species which were captured in the 19 different watercourses. This does not allow Gitxaala to verify the accuracy of the fish classified as CRA and cross reference that list with the use data provided by Gitxaala.	Table 4.8-8 identifies the CRA fish species captured in the 19 different watercourse reaches where fish were present. Figure 4.8-2 provides the distribution of CRA fish in the LAA.
1745.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	This section does not identify the use of traditional information for designation of areas as important watercourses. This is problematic, as specific watercourses, while not significant in ecological terms, may be of importance to Gitxaala.	Where traditional information indicated specific locations of species observed or habitat present or where locations were identified as having a high value for Aboriginal cultural, ceremonial or food fishery use, this information was incorporated into the data and used to inform and focus the assessment. Specific TK/TLU data sources are indicated in section 4.8.2.3. Less spatially specific data (i.e., regionally important considerations) were also noted and accounted for in the assessment. Aurora LNG welcomes further discussions with Gitxaala Nation regarding fish and fish habitat.
1746.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	This section states that a "...CFHOP will be developed, and refined, through consultation … with … Aboriginal Groups … to identify effective and relevant methods to offset any residual effects from the Project that cause serious harm to fish." Please identify which Aboriginal Groups will be consulted with on this CFHOP. Gitxaala requires fulsome consultation on this item.	Aurora LNG will engage with appropriate regulatory agencies (primarily DFO) and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the fish habitat offset plan during the Fisheries Act authorization application process. The intent of these consultations is to identify offset options that best meet the fisheries management objectives of Aboriginal groups, that are consistent with provincial and federal perspectives, and provide the greatest chance of benefiting the affected fish populations for perpetuity. Aurora LNG welcomes further discussions with Gitxaala Nation regarding fish habitat offsets.
1747.1	round 1	Gitxaala Nation	4.8.9	Freshwater Fish and Fish Habitat	This section states that a "…detailed Fish Habitat Offsetting Plan will be developed in consultation with … Aboriginal Groups…" Please advise which Aboriginal Groups will be consulted on the development of a Fish Habitat Offsetting Plan as Gitxaala requires fulsome consultation on this item.	Aurora LNG will engage with appropriate regulatory agencies (primarily DFO) and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the fish habitat offset plan during the Fisheries Act authorization application process. The intent of these consultations is to identify offset options that best meet the fisheries management objectives of Aboriginal groups, that are consistent with provincial and federal perspectives, and provide the greatest chance of benefiting the affected fish populations for perpetuity. Aurora LNG welcomes further discussions with Gitxaala Nation regarding fish habitat offsets.
1748.1	round 1	Gitxaala Nation	4.9.1	Marine Fish and Fish Habitat	This section states that "…Marine Fish and Fish Habitat Valued Component (VC) was selected because it … has high cultural, ecological and economic importance to ... Aboriginal Groups..." However, this misses a key component to Aboriginal marine fish use: subsistence. Please amend this section to reflect this important aspect of fishing.	Aurora LNG acknowledges subsistence use of marine fish by Gitxaala Nation. Use of marine fish and fish habitats by Gitxaala Nation is assessed in Section 11.3.9.3 of the Assessment of effects on CEAA 5(1)(c) factors and in Section 12.5.6.6 (Aboriginal Consultation, Part C).
1749.1	round 1	Gitxaala Nation	4.9.2.1	Marine Fish and Fish Habitat	This section states that 5(1)(c) "…requires an assessment of potential effects on marine fish and fish habitat due to its potential to affect Aboriginal peoples. This is not the case. 5(1)(c) requires effects be identified for: (i) health and socio-economic conditions, (ii) physical and cultural heritage, (iii) the current use of lands and resources for traditional purposes, or (iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance." We assume that the passage in the application refers to (iii), in which case, this asks for effects to the use of lands and resources, not the overall health, quality, etc. of the resource itself; which is what the assessment focuses on. Please advise where the assessment looks at the use of marine fish and fish habitat by Gitxaala harvesters.	Use of marine fish and fish habitats by Gitxaala Nation is assessed in Section 11.3.9.3 of the Assessment of effects on CEAA 5(1)(c) factors and in Section 12.5.6.6 (Aboriginal Consultation, Part C).
1750.1	round 1	Gitxaala Nation	4.9.2.3	Marine Fish and Fish Habitat	This section is vague. It simply states that TEK was acquired from sources and reports and has been incorporated into the assessment. No details are provided on what information was incorporated, how it was incorporated, or what the outcomes of this incorporation were/or hoped to be. Additional detail must be provided.	The Marine Fish and Fish Habitat assessment (Section 4.9) incorporated TEK information from publicly-available sources and Project-specific studies submitted to Aurora LNG. TEK was then reviewed to identify marine fish species of Aboriginal importance in the LAA and RAA, and the presence and locations of important fish habitats in the LAA and RAA. This information was considered in the assessment and characterization of potential effects to marine fish habitat and marine fish (including those that are part of, or support, commercial, recreational, and Aboriginal [CRA] fisheries). Fish that are part of CRA fisheries are interpreted to be those fish that fall within the scope of applicable federal or provincial fisheries regulations, as well as those that can be fished by Aboriginal organizations or their members for food, social, or ceremonial purposes (e.g., Pacific salmon, marine fish species at risk, traditional use marine fish species, and marine plants). TEK information considered in the Marine Fish and Fish Habitat assessment is summarized in Section 4.9.3.2 (Overview) and Section 3 of Appendix L (Marine Fish and Fish Habitat TDR). Information about habitat types and marine fish species included in the Gitxaala Valued Components Report (Calliou Group 2016) was considered in the Marine Fish and Fish Habitat assessment; however, the reference to this report is missing from the list of reports identified in Section 4.9.3.2 (Overview) and Section 3 of Appendix L. This reference will be added; an errata document is being compiled that captures this correction and it will be filed with the BC EAO. Reference: Calliou Group. 2016. Gitxaala Valued Components Report. Aurora LNG Project Environmental Assessment Certification Application. Prepared on behalf of Gitxaala Nation. Prepared for Aurora LNG.
1751.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	This section is vague. It simply states that TEK was acquired from sources and reports and has been incorporated into the assessment. No details are provided on what information was incorporated, how it was incorporated, or what the outcomes of this incorporation were/or hoped to be. Additional detail must be provided.	The Marine Fish and Fish Habitat assessment (Section 4.9) incorporated TEK information from publicly-available sources and Project-specific studies submitted to Aurora LNG. TEK was then reviewed to identify marine fish species of Aboriginal importance in the LAA and RAA, and the presence and locations of important fish habitats in the LAA and RAA. This information was considered in the assessment and characterization of potential effects to marine fish habitat and marine fish (including those that are part of, or support, commercial, recreational, and Aboriginal [CRA] fisheries). Fish that are part of CRA fisheries are interpreted to be those fish that fall within the scope of applicable federal or provincial fisheries regulations, as well as those that can be fished by Aboriginal organizations or their members for food, social, or ceremonial purposes (e.g., Pacific salmon, marine fish species at risk, traditional use marine fish species, and marine plants). TEK information considered in the Marine Fish and Fish Habitat assessment is summarized in Section 4.9.3.2 (Overview) and Section 3 of Appendix L (Marine Fish and Fish Habitat TDR). Information about habitat types and marine fish species included in the Gitxaala Valued Components Report (Calliou Group 2016) was considered in the Marine Fish and Fish Habitat assessment; however, the reference to this report is missing from the list of reports identified in Section 4.9.3.2 (Overview) and Section 3 of Appendix L. This reference will be added; an errata document is being compiled that captures this correction and it will be filed with the BC EAO. Reference: Calliou Group. 2016. Gitxaala Valued Components Report. Aurora LNG Project Environmental Assessment Certification Application. Prepared on behalf of Gitxaala Nation. Prepared for Aurora LNG.
1752.1	round 1	Gitxaala Nation	4.9.3.2	Marine Fish and Fish Habitat	This section indicates that TK/TU from Gitxaala Nation was used to identify marine fish, invertebrates and algae traditionally harvested. Please provide a disaggregated list of the species identified. Further, please provide detail on where the use of these species was assessed. The abbreviated list is not appropriate.	The list of marine fish, invertebrates, and algae traditionally harvested by Aboriginal Groups included in Section 4.9.3.2 (Overview - Traditional Knowledge and Traditional Use) of the Marine Fish and Fish Habitat VC was not intended to be comprehensive. A comprehensive list of marine fish, invertebrates, and algae traditionally harvested by Gitxaala Nation is included in Table 6-13 of the Aboriginal Consultation TDR (Appendix S.2). Use of marine fish and fish habitats by Gitxaala Nation is assessed in Section 11.3.9.3 of the Assessment of effects on CEAA 5(1)(c) factors and in Section 12.5.6.6 (Aboriginal Consultation, Part C).
1753.1	round 1	Gitxaala Nation	4.9.3.2	Marine Fish and Fish Habitat	The listing of "Areas located within the LAA that are considered culturally and/or spiritually sensitive…" is incomplete. Please see the Gitxaala Use Study, pages 38-42 for additional sites of importance to Gitxaala; and pages 48-125 for site listings for marine species of importance.	The list of culturally and/or spiritually sensitive areas included in Section 4.9.3.2 (Overview - Traditional Knowledge and Traditional Use) of the Marine Fish and Fish Habitat VC was not intended to be comprehensive. A comprehensive list of the sites known at the time of writing to be culturally and/or spiritually sensitive is included in Table 6-6 of the Aboriginal Consultation TDR (Appendix S.2).

1754.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	There is no information contained in this section that relates to Gitxaala Nation's Use information or VCs. This suggests that Gitxaala information was only included superficially and not considered in the assessment overall.	The Marine Fish and Fish Habitat VC (Section 4.9) considered potential effects to marine fish habitat and marine fish that are part of, or support, commercial, recreational, and Aboriginal (CRA) fisheries. Fish that are part of CRA fisheries are interpreted to be those fish that fall within the scope of applicable federal or provincial fisheries regulations, as well as those that can be fished by Aboriginal organizations or their members for food, social, or ceremonial purposes (e.g., Pacific salmon, marine fish species at risk, traditional use marine fish species, and marine plants). Information provided by Gitxaala Nation was considered to help identify marine fish species and habitats of Aboriginal importance. Additional details are provided in Section 4.9.3 of the Marine Fish and Fish Habitat VC and Section3.0 of the Marine Fish and Fish Habitat TDR (Appendix L). Use of marine fish and fish habitats by Gitxaala Nation is assessed in Section 11.3.9.3 (Assessment of effects on CEAA 5(1)(c) factors) and in Section 12.5.6.6 (Aboriginal Consultation, Part C).
1755.1	round 1	Gitxaala Nation	Table 4.9-11/ Table 4.9-15/ Table 4.9-18/ Table 4.9-20	Marine Fish and Fish Habitat	There are no mitigation measures specific to Gitxaala Nation or any Aboriginal group. This suggests that Gitxaala information was only included superficially and not considered in the assessment overall.	Mitigation measures included in Table 4.9-11 (Mitigation Measures Proposed to Avoid or Reduce Change in Habitat), Table 4.9-15 (Mitigation Measures Proposed to Avoid or Reduce Change in Behaviour), Table 4.9-18 (Mitigation Measures Proposed to Avoid or Reduce Change in Mortality Risk) and Table 4.9-20 (Mitigation Measures Proposed to Avoid or Reduce Change in Health) of the Marine Fish and Fish Habitat VC apply to marine fish and invertebrate species as a whole, including species of importance to the Gitxaala Nation and other Aboriginal groups. Additional mitigation measures to reduce potential effects on the ability of Gitxaala Nation to exercise their Aboriginal Interests are identified in Section 12.5.6 of the Application (Aboriginal Interests).
1756.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	Gitxaala is concerned with the loss of eelgrass as a result of dredging. Further, we disagree that the magnitude of this effect is only moderate. It should be classified as high as per the criteria listed. The effect extends to the LAA, is continuous in nature as the loss is permanent and irreversible. While Casey Cove may be classified as a disturbed environment, it is still used by Gitxaala in the exercise of their rights and therefore important. The evaluation of this effect must be reconsidered.	Aurora LNG acknowledges the ecological value of eelgrass and its importance as fish habitat, which is reflected in the fact that it is one of the focal habitats considered in the Conceptual Fish Habitat Offsetting Plan (Appendix V). The magnitude of the effect of eelgrass loss due to dredging was deemed to be "moderate" since, based on the availability of eelgrass nearby, the use and dependency on this habitat by marine CRA species, existing mitigations and Aurora LNG's commitment to offset any residual serious harm to fish, the long-term persistence of a marine fish population is not expected to be affected via the loss of this eelgrass. Importantly, this ranking reflects Aurora's commitment (and legal requirement) to develop effective offsetting. Further, the residual effectis not considered continuous, but rather, is considered a single event, since the physical removal of eelgrass will only occur once, and will be offset. The rest of the comment echoes the effect characterization for the loss of eelgrass due to dredging: geographic extent - extends to LAA; duration: permanent; reversibility - irreversible; context: disturbedAurora LNG welcomes further discussions with Gitxaala Nation regarding impacts to eelgrass.
1757.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	Gitxaala is concerned with the loss of eelgrass as a result of infilling. Please see comments on dredging for similar concerns.	Aurora LNG acknowledges the ecological value of eelgrass and its importance as fish habitat, which is reflected in the fact that it is one of the focal habitats considered in the Conceptual Fish Habitat Offsetting Plan (Appendix V). The magnitude of the effect of eelgrass loss due to infilling was deemed to be "moderate" since, based on the availability of eelgrass nearby, the use and dependency on this habitat by marine CRA species, existing mitigations and Aurora LNG's commitment to offset any residual serious harm to fish, the long-term persistence of a marine fish population is not expected to be affected via the loss of this eelgrass. Importantly, this ranking reflects Aurora's commitment (and legal requirement) to develop effective offsetting.Further, the residual effect is not considered continuous, but rather, is considered a single event, since the physical removal of eelgrass will only occur once, and will be offset. The rest of the comment echoes the effect characterization for the loss of eelgras due to infilling: geographic extent - extends to LAA; duration: permanent; reversibility - irreversible; context: disturbedAurora LNG welcomes further discussions with Gitxaala Nation regarding impacts to eelgrass.
1758.1	round 1	Gitxaala Nation	4.10.2.1	Marine Wildlife - Marine Mammals	This section states that 5(1)(c) "…requires an assessment of potential effects on marine mammals due to their potential to affect Aboriginal peoples." This is not the case. 5(1)(c) requires effects be identified for: (i) health and socio-economic conditions, (ii) physical and cultural heritage, (iii) the current use of lands and resources for traditional purposes, or (iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance." We assume that the passage in the application refers to (iii), in which case, this asks for effects to the **use** of lands and resources, not the overall health, quality, etc. of the resource itself; which is what the assessment focuses on. Please advise where the assessment looks at the**use** of marine mammals by Gitxaala harvesters.	Aurora LNG acknowledges this error regarding the wording of CEAA 2012 Section 5(1)(c) and will include a correction in an errata document that will capture these corrections and be filed with the BC EAO. Effects on Gitxaala Nation use of marine mammals are assessed in the following sections of the Application: Assessment of CEAA 2012 5(1)(c) iii--Current Use of Lands and Resources for Traditional Purposes (Section 11.3.9.3, particularly on pages 11-174 to 11-180 and pages 11-193 and 11-194) Assessment of Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests (Section 12.5.6.6, particularly on page 12-163 and 12-164 and again on pages 12-173 to 12-176). Assessment of Effects on Gitxaala Nation Cultural Wellbeing (Section 12.5.6.7, page 12-177 to 12-178 and page 12-184 to 12-186).
1759.1	round 1	Gitxaala Nation	4.10.2.3	Marine Wildlife - Marine Mammals	This section is vague. It simply states that TEK was acquired from sources and reports and has been incorporated into the assessment. No details are provided on what information was incorporated, how it was incorporated, or what the outcomes of this incorporation were/or hoped to be. Additional detail must be provided.	As noted in Section 4.10.2.3, details related to the incorporation of Project specific TK/TU and other available information relevant to marine mammals are outlined in Section 4.10.3.1 (Existing Conditions for Marine Mammals - Traditional Knowledge and Traditional Use Studies). See also Section 2 of the Marine Mammals Technical Data Report (Appendix N of the Application), the Aboriginal Consultation TDR (Appendix S.2 of the Application) and Aboriginal Consultation (Part C, Section 12 of the Application).
1760.1	round 1	Gitxaala Nation	4.10.3.1	Marine Wildlife - Marine Mammals	This section states that "As a result of the past and present traditional importance of marine mammals, the Project's potential effects on this VC are of interest to Aboriginal Groups." While this is true, traditional importance of marine mammals should also be important to Nexen in so far that is contributes to the identification of potential effects.	Aurora LNG is appreciative of all the TK and TU information provided. The TK and TU contributed to the understanding of marine mammal presence, distribution, seasonality, and abundance in the RAA and therefore the assessment of the potential residual effects on marine mammals.
1761.1	round 1	Gitxaala Nation	4.10.3.1	Marine Wildlife - Marine Mammals	This section states that the Use information was "…used within this VC to support Project understanding of marine mammal presence, distribution, seasonality, and abundance in the RAA." As the RAA is generally used in quantifying cumulative effects, how will traditional information related to the LAA and PDA be used in the assessment? Was it included and considered?	There is no PDA for the assessment of marine mammals and the RAA includes within it the spatial boundaries of the LAA. As such, traditional knowledge and traditional use information related to the LAA is captured within the statement concerning the broader RAA.
1762.1	round 1	Gitxaala Nation	4.10.3.2	Marine Wildlife - Marine Mammals	Gitxaala was excluded from the following description: "Sea otters were historically hunted and trapped by Metlakatla First Nation, Kitselas First Nation and Kitsumkalum First Nation…" This is despite 3 identified sea lion hunting areas within the LAA. and an additional 16 sites in the RAA. (page 114 of the Gitxaala Use Study)	Reference to hunting or trapping of sea otters was not found in the Gitxaala Use Study. The description of use of sea lions in Section 4.10.3.2 aligns with the information contained in Gitxaala Nation's comment and is as follows (portions relevant to Gitxaala Nation's comment underlined): "Seals and sea lions were some of the main resources used by all five Aboriginal Groups who provided Project specific TLU studies. These species were used for trade, consumptive (food and material) purposes, and ceremonial purposes. Seal and sea lion meat was often smoked, although it was also eaten half dried and fresh, and this formed a staple food source that was very important to sustain long journeys on the water and while preparing eulachon during this traditional fishery. Gitxaala Nation also reported that seal grease was a good source of iron, and was often used to prepare various meals, such as bannock and herring eggs… " (page 4.10-26). "While many species of marine mammal are recognized as important to Aboriginal Groups, the cultural and social importance of both humpback whales and killer whales, as well as the strong hunting traditions connected to sea lion and seal, were explicitly referenced. Many traditional marine and terrestrial hunting areas exist throughout Chatham Sound, with the areas around Stephens, Melville, Porcher and Digby islands identified as important marine resource harvesting and fishing areas. Gitxaala Nation identified the regular occurrence of porpoise in the waters near Digby and Kinahan islands (amongst other locations). With respect to potential Project activity areas, the waters around Digby Island, the marine shipping route, and the pilot boarding station at Triple Island have been identified as marine mammal hunting areas." (page 4.10-26 and 4.10-27). This information was incorporated into the assessment.
1763.1	round 1	Gitxaala Nation	Table 4.10-8/Table 4.10-9/Table 4.10-10	Marine Wildlife - Marine Mammals	Despite identification that CRA fisheries must be prohibited, there is no mitigation measure which specifically relates to the Aboriginal use of marine mammals.	Aurora LNG welcomes further discussions with Gitxaala Nation, regarding marine mammals and related mitigation measures.
1764.1	round 1	Gitxaala Nation	4.11.2.3	Marine Wildlife - Marine Birds	This section is vague. It simply states that TEK was acquired from sources and reports and has been incorporated into the assessment. No details are provided on what information was incorporated, how it was incorporated, or what the outcomes of this incorporation were/or hoped to be. Additional detail must be provided.	Sections 4.11.2.2 and 4.11.2.3 list the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Table 4.11-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment of marine birds. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds and is described in more detail in Appendix Q. Species identified therein are discussed throughout Sections 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure.
1765.1	round 1	Gitxaala Nation	4.11.3.2	Marine Wildlife - Marine Birds	This section includes a circular reference to Appendix S.2 for additional information on bird TEK; the appendix referenced contains a similar reference back to Section 4.11 for additional detail.	Sections 4.11.2.2 and 4.11.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Table 4.11-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for marine birds. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds and is described in more detail in Appendix Q. Species identified therein are discussed throughout Section 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure. Additional details on the timing and location of marine bird harvesting practices are provided in Appendix S.2. Information on harvesting practices was used to support Section 4.11, Section 11, and Part C of the Application.
1766.1	round 1	Gitxaala Nation	4.11.2.5	Marine Wildlife - Marine Birds	This section identifies that the assessment technical boundaries were based on traditional ecological knowledge. However, the boundaries for the assessment were identified prior to Gitxaala providing their TEK information. Please disaggregate the reference to TEK and identify which specific groups influenced the technical boundaries.	The technical boundaries for wildlife resources were developed in consideration of information included in studies provided by all Aboriginal Groups (described in Section 4.7.2.3 of the Application), and as part of comments raised during consultation. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies, and scientific literature to determine the appropriate extent of spatial boundaries, characterize residual Project and cumulative effects, and to assign significance determinations.

1767.1	round 1	Gitxaala Nation	4.12	Summary of Potential Environmental Effects	As Gitxaala VCs were not considered in any of the listed effects assessments, the summary of the potential environmental effects is deficient. Merely stating that TK and TU information was used with little to no back-up of this assertion is not sufficient.	Gitxaala Nation submitted the Gitxaala VC Report in June 2016, after finalization of the AIR (including the selection of VCs in Part B). The Gitxaala VC Report was considered as part of Project specific information submitted by Gitxaala Nation and best efforts have been made by Aurora LNG to incorporate and use the information from this study in the assessment. Information from this report was used throughout Section 11.3.9.2 (Existing Conditions) and in the assessment of Section 5(1)(c) Effects for Gitxaala Nation. Several of the topics referred to by Gitxaala Nation as "Valued Components" in the Gitxaala VC Reportare assessed as Aboriginal Interests in Part C of the Application.
1768.1	round 1	Gitxaala Nation	4.12.5.2	Vegetation and Wetland Resources	This section states that the viability of traditional use plants will not be impaired as there are plants throughout the RAA. Gitxaala harvesters cannot be asked to go elsewhere to harvest. This is particularly true for Gitxaala Nation as there are specific location based harvesting protocols which should be adhered to. Case law and custom are clear that going elsewhere is not an appropriate effect reduction technique.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include an assessment of vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together, these sections address site-specific loss of vegetation resources for traditional use within the PDA. Also see the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species.
1769.1	round 1	Gitxaala Nation	Table 6.5-2	Marine Use and Navigable Waters	This table does not include ship wake as a concern that influenced the scope of the assessment. While Gitxaala acknowledges that onshore ship wake is of concern, ship wake experienced by Aboriginal harvesters while on the water is also of concern and must be considered when describing shipping traffic in terms of interference with Aboriginal fisheries or harvesters.	The potential for Project-related ship wake to interact with fishing vessels on the water is temporally limited. Please refer to the "Effects of Lost Fishing Time" technical memo for a description of expected conditions for a fisher-LNG carrier interaction to occur. This rationale also applies to wake effects. The technical memo will be filed with the BC EAO. Section 6.5.4.2 states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches a fishing vessel is expected to be lower than the wake height at the source vessel, and within the natural wave heigh range currently experienced by fishing vessels. Project-related shipping traffic will travel along the existing and established shipping route currently used by other large marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large, loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by fishing vessels, relating to natural weather patterns and existing shipping. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
1770.1	round 1	Gitxaala Nation	6.5.2.3	Marine Use and Navigable Waters	The description in this section is general and does not provide examples of where and how TK/TLU information was used in the assessment of this VC. These specifics are necessary for confidence that this was undertaken.	Section 6.5.2.3 - Traditional Knowledge and Traditional Use Incorporation, provides a detailed list of documents included in the assessment of Marine Use and Navigable Waters in Section 6.5 of the Application. When information from this list was used in the Application, it was referenced using in-text citations, with the full details of each reference provided in Section 6.5.11 - References. All of the TK/TU studies provided to Aurora LNG by Aboriginal Groups were considered in the assessment. The application of this information specific to marine use and navigation can be found with reference to the in-text citations. Comprehensive information is provided in Section 11.3.9 (Assessment of Section 5(1)(c) Effects - Gitxaala Nation) and Section 12.5.6 (Aboriginal Interests - Gitxaala Nation) of the Application. The information is also included in Section 6 of the Aboriginal Consultation TDR (Appendix S.2). All three of these parts of the Application, referred to above, include description of marine access and use by Gitxaala Nation.
1771.1	round 1	Gitxaala Nation	6.5.3.1	Marine Use and Navigable Waters	This section does not contain any detail on the Aboriginal use information gleaned from the listed TU reports. A summary of the information specifically used should have been provided in some capacity.	Section 6.5.2.3 - Traditional Knowledge and Traditional Use Incorporation, provides a detailed list of documents included in the assessment of Marine Use and Navigable Waters in Section 6.5 of the Application. When information from this list was used in the Application, it was referenced using in-text citations, with the full details of each reference provided in Section 6.5.11 - References. All of the TK/TU studies provided to Aurora LNG by Aboriginal Groups during development of the Application were considered in the assessment. The application of this information specific to marine use and navigation can be found with reference to the in-text citations. Comprehensive information is provided in Section 11.3.9 (Assessment of Section 5(1)(c) Effects - Gitxaala Nation) and Section 12.5.6 (Aboriginal Interests - Gitxaala Nation) of the Application. The information is also included in Section 6 of the Aboriginal Consultation TDR (Appendix S.2). All three of these parts of the Application, referred to above, include description of marine access and use by Gitxaala Nation.
1772.1	round 1	Gitxaala Nation	6.5.3.2	Marine Use and Navigable Waters	Gitxaala Nation also uses Aboriginal fisheries for the establishment and maintenance of a thriving trade network. This was discussed in the Gitxaala Use Report but was not indicated in the assessment.	Aurora LNG acknowledges the importance of Gitxaala Nation's trade economy. See Section 12.5.6.11 of the Application for an assessment of effects on Gitxaala Nation economic opportunities, including commercial fishing and trading harvested resources.
1773.1	round 1	Gitxaala Nation	6.5.3.2	Marine Use and Navigable Waters	Gitxaala makes use of specific landmarks as navigational aids, however only government approved navigational features are discussed in this section.	The 'Overview - Navigational Aids' section is clear in its aim to describe government-approved and -maintained (i.e., Coast Guard-installed and non-natural) aids to navigation. The wording on page 6.5-40 of the Application states that "Gitxaala First Nation boaters use [...] several navigation routes near the south end of Digby Island and throughout the rest of the LAA." Aurora LNG acknowledges that Gitxaala Nation boaters use specific landmarks as navigational aids. The potential Project effects on marine navigational sight lines are discussed in the "Navigational Sight Lines and Glare Effects" technical memo which will be filed with the BC EAO.
1774.1	round 1	Gitxaala Nation	6.5.3.2	Marine Use and Navigable Waters	This section quotes the Gitxaala use study in a misleading manner. It uses the quote "Rupert Harbour is already a busy Harbour" when the quote fully states "Rupert Harbour is already a busy Harbour and are concerned about increased congestion." The omission of the qualifying information of this quote is misleading.	Aurora LNG acknowledges the concerns of Gitxaala Nation with respect to the quotation used in Section 6.5.3 of the Application and the emphasis that they are concerned with additional marine traffic and congestion in the Port of Prince Rupert. Shipping traffic in Prince Rupert harbour is identified as a key concern in Table 6.5-2 and is discussed in Section 6.5.5.
1775.1	round 1	Gitxaala Nation	6.5.4.2	Marine Use and Navigable Waters	While the waves created by LNG carriers may well be within the natural variability of waves occurring in the area, there are a number of issues with this conclusion with respect to Aboriginal harvesting. First, the model used by LNG Canada looked at averages of waves. Gitxaala is concerned with waves overtaking harvesters during low to zero tides. This is a specific situation which requires more thought. Secondly, wake from the ships, without the benefit of attenuation to the shoreline can easily disrupt smaller fishing ships. These factors must be considered by Nexen.	The potential for Project-related ship wake to cause significant adverse effects on shoreline harvesters or small fishing vessels is unlikely because wake waves will be the same size or smaller compared to the average wake wave height in the region. Section 6.5.4.2 describes that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wake wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the natural range of wave height in the Project area. Because wake waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014), those waves potentially experienced by shoreline harvester will be smaller than the source wake. Consequently, shoreline harvester and small fishing vessels are not likely to incur significant adverse residual effects from Project-related traffic. Wake waves from LNG carriers is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which already use the Port of Prince Rupert, suggesting that shoreline harvesters and small vessels have experience navigating in similar conditions. Overall, Project-related wake effects are not expected to differ from the existing conditions, including natural and ship-generated wave heights. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
1776.1	round 1	Gitxaala Nation	Table 11.3-2	CEAA 2012	The Potential Project Effects listed in this table does not demonstrate an understanding of what 'Current Use' means. The Referenced Potential Project Effects only focus on the underlying biophysical components and not on the actual use. Aboriginal use has more facets than just the underlying biophysical component. While there still may be consumptive and non-consumptive resources available, access to those resources, quality, quantity and perception all play roles in continued use. Without consideration of these aspects, the assessment is lacking.	The assessment of CEAA Section 5(1)(c) Effects includes Aboriginal use considerations beyond the "underlying biophysical components". For example, the measurable parameters identified in Table 11.3-2, which are utilized for the assessment of Current Use, include:Quantity (area) and quality of current access routes where use will be affectedQualitative changes in the current experience of traditional harvestingQuality of affected sacred sites, cultural sites, spiritual sites, landforms and natural features associated with ritual or spiritual useQualitative changes in the experience of using sites and landscape features for ritual or spiritually important purposes (e.g., changes in acoustic environment and visual quality at identified sites). These measureable parameters (and others like them) were included as part of the assessment in recognition that potential effects on Current Use are not limited to changes to the availability of resources relied upon to exercise current use activities. These measurable parameters allow for potential effects on the experience of Aboriginal peoples' to be incorporated into the assessment of Current Use, rather than focusing the effects assessment only on changes in related biophysical components. In addition, Aurora LNG notes that Section 12.5.6 (Gitxaala Nation) includes a more nuanced assessment that incorporates many intangible elements of Aboriginal use considerations beyond the "underlying biophysical components", including in Sections 12.5.6.6 (Assessment of Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests) and 12.5.6.7 (Assessment of Effects on Gitxaala Nation Cultural Wellbeing). Aurora LNG is confident that the environmental assessment presented in the Application, including the assessment completed in Section 11.3, is fully compliant with all provincial and federal regulatory requirements.
1777.1	round 1	Gitxaala Nation	Table 11.3-2	CEAA 2012	There is no consideration in this table of perceptive effects of the Project. Often, Gitxaala perception of a Project can strongly influence the use and enjoyment of areas in proximity. This must be considered as part of the overall assessment.	The assessment of CEAA Section 5(1)(c) Effects includes considerations of perceptive effects. For example, the measurable parameters identified in Table 11.3-2, which are utilized for the assessment of Current Use, include:Qualitative changes in the current experience of traditional harvestingQuality of affected sacred sites, cultural sites, spiritual sites, landforms and natural features associated with ritual or spiritual useQualitative changes in the experience of using sites and landscape features for ritual or spiritually important purposes (e.g., changes in acoustic environment and visual quality at identified sites). These measurable parameters (and others like them) were included as part of the assessment in recognition of potential perceptive effects. In addition, Aurora LNG notes that Section 12.5.6 (Gitxaala Nation) includes a more nuanced assessment that incorporates many intangible elements of potential perceptive impacts, including in Sections 12.5.6.6 (Assessment of Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests). Aurora LNG is confident that the environmental assessment presented in the Application, including the assessment completed in Section 11.3, is fully compliant with all provincial and federal regulatory requirements.
1778.1	round 1	Gitxaala Nation	Table11.3-3	CEAA 2012	There are potential effects to Current Use from a change in wetland function which are not considered in this Table. A change in wetland function could result in changes to patterns of use and increased avoidance behavior. These effects must be considered for the application to be complete.	Changes in patterns of wildlife use of habitats on Digby Island, including wetland habitats, resulting from direct or indirect changes in habitat from Project activities and infrastructure are considered in the Wildlife Resources (Terrestrial) VC within Section 4.7.5.2 (Change in Habitat) and Section 4.7.5.4 (Change in Movement). Potential residual Project effects are already identified as a potential interaction within the Current Use assessment and have therefore been considered.
1779.1	round 1	Gitxaala Nation	Table 11.3-3	CEAA 2012	There are potential effects to Current Use from a change in resources-based primary industries and subsistence economies. Gitxaala has previously expressed the importance of subsistence harvesting and the underlying trade economy which this harvesting supports. Effects to a subsistence economy must be considered in Current Use as it has a direct effect on the exercise of Gitxaala's rights and interests.	Changes in resource-based primary and subsistence economies was added to the assessment of Economic Conditions as a result of feedback received from the Working Group, Aboriginal Groups, and the public; see Table 5.2-1 and Section 5.2.5.3 of the Application. The assessment of potential effects on Current Use is aligned with Section 11.3.1.3 of the AIR. The assessment is limited to changes to the environment which may affect Current Use (see Section 11.1 of the AIR). The identified effect is outside of the scope of the Current Use assessment. An assessment of potential effects on Gitxaala Nation Aboriginal Interests (including harvesting-related interests and economic opportunities) is provided in Section 12 of the Application.
1780.1	round 1	Gitxaala Nation	Table 11.3-3	CEAA 2012	This table indicates that effects from a change in vibration levels and water quality on Aboriginal Health were captured by another VC. This was not the case through further examination of Section 4.0. Please update this assessment to include an Aboriginal specific look at vibration levels and water quality.	Residual effects to the environment on Aboriginal Health were assessed according to the methods outlined in Section 11.3.5.1 and in Figure 11.3-5. These methods were based on guidance provided by the Canadian Environmental Assessment Agency and are consistent with those described in Figure 11-1 of the AIR. The potential effects from a change in vibration levels and water quality are captured through the conclusions of the Acoustic Environment VC and Human Health VC. The conclusions of the assessment of changes in vibration levels in the Acoustic Environment VC are equally applicable to both Aboriginal and non-Aboriginal persons - as a result this interaction is given an asterisk in Table 11.3-3 in the Application, indicating that the potential effect is captured through another VC's conclusions. Residual effects on human health (including the health of Aboriginal people) were not predicted to result from changes in surface water quality and no further analysis of how changes in surface water quality might affect Aboriginal health was required. Therefore, this potential interaction was excluded from further consideration.

1781.1	round 1	Gitxaala Nation	Table 11.3-3	CEAA 2012	There are potential effects to Aboriginal Socio-Economic Conditions from changes in community infrastructure and services, change in non-tenured land-use, a change in navigation, and a change in community health and wellness which are not considered in this table. These effects must be considered for the application to be considered complete.	The assessment provided in Section 11 is limited to changes to the environment which may affect Section (5)(1)(c) factors, see Section 11.1 of the AIR. The identified effects arenot "changes to the environment" and are outside of the scope of the Aboriginal Socio-Economic Conditions assessment. However, these potential effects are addressed in the following Part B VC assessments; Infrastructure and Services, Land and Resource Use, Marine Use and Navigable Waters, and Community Health.
1782.1	round 1	Gitxaala Nation	11.3.2.4	CEAA 2012	Gitxaala Nation was not consulted on the identified spatial boundary used for Potential Project Environmental Effects on Section 5(1)(c)	The spatial boundaries for the assessment of Section 5(1)(c) Effects were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. Such consultation included the pre-application workshops held with Gitxaala Nation on:June 23, 2016 to discuss the proposed assessment methods and characterization criteria for socio-economic VCs and traditional use sections of the Application; andOctober 20/21, 2016, to discuss and review drafts of the portions of Sections 11.3 (Requirements under CEAA 2012 Section 5(1)(c)) and 12.0 (Aboriginal Consultation) that related to Gitxaala Nation. As described in Section 11.3.2.4 (Boundaries), the spatial boundaries for the assessment of each Section 5(1)(c) Effect were developed by combining the spatial extent of the Local Assessment Areas (LAAs) or Regional Assessment Areas (RAAs) for relevant VCs, considering available Project specific TK and TU information on current land and resource use by Aboriginal Groups, and taking into account relevant ecological, social and cultural information in the public domain. Aurora LNG is confident that the spatial boundaries presented in the Application are fully compliant with all provincial and federal regulatory requirements.
1783.1	round 1	Gitxaala Nation	11.3.2.4	CEAA 2012	Map 11.3-1 displays Harvested Foods Local and Regional Assessment Areas. There is one of these boundaries located on the Kitkatla Reserve, Lach Klan. However, this is an inappropriate locale for a Harvesting Foods Assessment Area in relation to the Aurora LNG Project. This boundary must be placed closer or on Digby Island to represent harvesting undertaken by Gitxaala which may have the potential to be affected by the project.	The spatial boundaries for the assessment of Section 5(1)(c) Effects were established in accordance with the Application Information Requirements and informed by pre-Application consultation completed by Aurora LNG. The Current Use Local Assessment Area (LAA) and Regional Assessment Area (RAA) boundaries were selected to align with the LAA established for change in harvested foods, as assessed in the Community Health VC. The LAA for the assessment of change in harvested foods considers the use of areas overlapped by the LAA for Land and Resource Use, Marine Use and Navigable Waters by persons' within Kitkatla Reserve (Lach Klan) and other communities as outlined in Table 6.6-3 of the Application. The LAA reflects the spatial extent to which Project-related change in population and employment and income could attribute to a direct, predictable, and measurable adverse change in community health and wellness, or change in availability of harvested foods. Aurora LNG is confident that the spatial boundaries presented in the Application are fully compliant with all provincial and federal regulatory requirements.
1784.1	round 1	Gitxaala Nation	11.3.2.4	CEAA 2012	This section refers back to technical limitations in the Part B VCs Sections; however, this is problematic as many of the Part B VCs refer readers to Part C for additional information on Aboriginal related technical boundaries. However, the technical boundaries in Part C relate only to the VC's identified for Part C and do not specifically relate to CEAA 5(1)(c). This section should have all details laid out for the reader to allow for ease of understanding. By referencing the reader to multiple sections, the overall description of technical boundaries is lost.	Please see the Technical Memo titled, "Summary of Part B Technical Boundaries for Gitxaala Nation" which will be filed with the BC EAO.
1785.1	round 1	Gitxaala Nation	11.3.2.7	CEAA 2012	The significance threshold for Current Use and resources must be clarified to be location based. The current use activity may continue to be viable, just not at a particular locale and, for that locale, the effect would be significant. This must be explicit.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). In the context of the significance threshold for Current Use, "viability" is the consideration of whether it remains realistically possible and/or feasible to continue to participate in a specific traditional use activity at, or near, current levels (potentially with some level of modification). In accordance with the AIR and the Canadian Environmental Assessment Agency (CEA Agency) document entitled "Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects: A Framework" this evaluation considers the assessments of magnitude, geographic extent, duration, reversibility and context (i.e. resilience) for each of the measurable parameters identified for current use. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, further clarification is neither warranted nor required. Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments".
1786.1	round 1	Gitxaala Nation	11.3.5.2	CEAA 2012	The assumption that "Unless available information indicates otherwise, resources harvested on or around Digby Island and in surrounding waters are not considered unique and can be harvested elsewhere within the LAA depending on harvesting protocols and availability of other locations." Does not adhere to assessment methodology to allow for a conservative assessment as outlined above in that Section. Instead, harvesting locales should have been considered unique. This would also fit better with the harvesting protocols which Gitxaala Nation adheres to.	Please also see the memo titled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments".
1787.1	round 1	Gitxaala Nation	11.3.6.1	CEAA 2012	This section identifies relevant VCs which apply to Current Use. However, it is unclear what additional information was considered in addition to these VCs. As these VCs do not specifically relate to Current Use, reliance on them for the entirety of the assessment is problematic.	As per the six steps outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects), the identification of residual effects from relevant Part B VCs for consideration as part of the assessment of Section 5(1)(c) Effects is the second step utilized to assess residual effects in Section 11.3 (see Figure 11.3-5 on pg. 11-46). The results of this process step, which are common to all Aboriginal Groups, are presented in Section 11.3.6.1 (Current Use—Relevant VCs and Residual Effects). Following this step, an Aboriginal Group specific assessment is conducted based on information, including information from the identified Part B VCs and the existing condition section compiled for the particular Aboriginal Group. In the context of Gitxaala Nation, Current Use was assessed using the following two-part Application drafting framework (see pg. 11-173): "The first part summarizes information and findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects (i.e., based on steps #1 and #2 from Section 11.3.5.1) under headings that reflect the… measurable parameters…" "The second part… provides conclusions regarding the characterization of residual effects... based on the results of the first part of this section (i.e., the findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects), the understanding of current [use] (based on existing conditions) and the criteria and definitions outlined in Section 11.3.2.5." Using this process, the specific characterizations for each Current Use sub-component (e.g. hunting) that were presented in Section 11.3.9.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.9.2 (Existing Conditions for Gitxaala Nation) and Section 6 (Gitxaala Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria).
1788.1	round 1	Gitxaala Nation	Table 11.3-11	CEAA 2012	Prior to this table, there is no discussion of the potential effects to Current Use, therefore application of mitigation measures is premature. Additionally, there is no description of the effect which the mitigation measures apply to under Current Use, and no description of how the potential effect is reduced by its application.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR). As required by the AIR, the assessment of CEAA Section 5(1)(c) Effects in Section 11.3 is completed in accordance with the six steps outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects) and in a manner that was generally consistent with Section 3 (Assessment Methods). Following these requirements, the mechanism(s) through which potential Project effects on Current Use may take place are discussed in Section 11.3.6.1 (Current Use—Relevant VCs and Residual Effects). In this section, Tables 11.3-9 and 11.3-10 identify the potential Project effects for Consumptive and Non-consumptive Current Use, as well as the related valued components where these potential effects are assessed. Table 11.3-11 then identifies proposed mitigation measures to avoid or reduce predicted effects on Current Use.
1789.1	round 1	Gitxaala Nation	11.3.6.2	CEAA 2012	This section identifies relevant VCs which apply to Aboriginal Health. However, it is unclear what additional information was considered in addition to these VCs. As these VCs do not specifically relate to Aboriginal Health, reliance on them for the entirety of the assessment is problematic.	As per the six steps outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects), the identification of residual effects from relevant Part B VCs for consideration as part of the assessment of Section 5(1)(c) Effects is the second step utilized to assess residual effects in Section 11.3 (see Figure 11.3-5 on pg. 11-46). The results of this process step, which are common to all Aboriginal Groups, are presented in Section 11.3.6.2 (Aboriginal Health—Relevant VCs and Residual Effects). In applying the six step framework detailed in Section 11.3.5.1, it was determined that the interactions would be consistent for Aboriginal people as non-Aboriginal people, and therefore, the assessment focused on the conclusions originally described for the relevant VCs. In particular, the assessment focused on the following approaches taken in the relevant VC assessments:Human Health receptor sites used in the Human Health assessment included places where health-sensitive people are present (e.g., daycares, schools, hospitals, elderly care homes)The Community Health assessment considers effects on vulnerable populations, including: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes, individuals and households classified as low-income earners, marginally-housed individuals, and individuals classified as homeless. Additional information sources, not included in the VC assessments, were considered to determine if the predicted residual effects would be consistent for Aboriginal and non-Aboriginal peoples. See steps 3-6 outlined in Section 11.3.5.1 and illustrated in Figure 11.3-5.
1790.1	round 1	Gitxaala Nation	Table 11.3-12	CEAA 2012	Prior to this table, there is no discussion of the potential effects to Aboriginal Health, therefore application of mitigation measures is premature. Additionally, there is no description of the effect which the mitigation measures apply to under Aboriginal Health, and no description of how the potential effect is reduced by its application.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR). As required by the AIR, the assessment of CEAA Section 5(1)(c) Effects in Section 11.3 is completed in accordance with the six steps outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects) and in a manner that was consistent with Section 3 (Assessment Methods). Following these requirements, the mechanism(s) through which potential Project effects on Aboriginal Health may take place are discussed in Section 11.3.6.2 (Aboriginal Health—Relevant VCs and Residual Effects). In this section, the paragraphs that precede Table 11.3-12 (and the associated text) identify the potential Project effects for Aboriginal Heath, as well as the related valued components where these potential effects are assessed. Table 11.3-12 then identifies proposed mitigation measures to avoid or reduce predicted effects on Aboriginal Health.
1791.1	round 1	Gitxaala Nation	11.3.6.3	CEAA 2012	This section identifies relevant VCs which apply to Aboriginal Socio-Economic Conditions. However, it is unclear what additional information was considered in addition to these VCs. As these VCs do not specifically relate to Aboriginal Socio-Economic Conditions, reliance on them for the entirety of the assessment is problematic.	As per the six steps outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects), the identification of residual effects from relevant Part B VCs for consideration as part of the assessment of Section 5(1)(c) Effects is the second step utilized to assess residual effects in Section 11.3 (see Figure 11.3-5 on pg. 11-46). The results of this process step, which are common to all Aboriginal Groups, are presented in Section 11.3.6.3 (Aboriginal Socio-Economic Conditions—Relevant VCs and Residual Effects). In applying the six step framework detailed in Section 11.3.5.1, it was determined that the interactions related to Aboriginal Socio-Economic Conditions would be consistent for Aboriginal people as non-Aboriginal people, and therefore, the assessment focused on the conclusions originally described for the relevant VCs. In particular, the assessment focused on the following approaches taken in the relevant VC assessments:Visual Quality viewpoints were determined in consultation with Aboriginal Groups and are relevant to any land or marine user.The thresholds used in the Acoustic Environment assessment are guidelines set forth by regulators and do not differ for Aboriginal and non-Aboriginal people. The Community Health assessment considers effects on vulnerable populations, including: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes, individuals and households classified as low-income earners, marginally-housed individuals, and individuals classified as homeless. Additional information sources, not included in the VC assessments, were considered to determine if the predicted residual effects would be consistent for Aboriginal and non-Aboriginal peoples. See steps 3-6 outlined in Section 11.3.5.1 and illustrated in Figure 11.3-5.
1792.1	round 1	Gitxaala Nation	Table 11.3-13	CEAA 2012	Prior to this table, there is no discussion of the potential effects to Aboriginal Health, therefore application of mitigation measures is premature. Additionally, there is no description of the effect which the mitigation measures apply to under Aboriginal Health, and no description of how the potential effect is reduced by its application.	Based on the reference to Table 11.3-13, it is assumed that this comment relates to Aboriginal Socio-Economic Conditions (and not Aboriginal Health). The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR). As required by the AIR, the assessment of CEAA Section 5(1)(c) Effects in Section 11.3 is completed in accordance with the six steps outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects) and in a manner that was consistent with Section 3 (Assessment Methods). Following these requirements, the mechanism(s) through which potential Project effects on Aboriginal Socio-Economic Conditions may take place are discussed in Section 11.3.6.3 (Aboriginal Socio-Economic Conditions—Relevant VCs and Residual Effects). In this section, the paragraphs that precede Table 11.3-13 (and the associated text) identify the potential Project effects for Aboriginal Socio-Economic Conditions, as well as the related valued components where these potential effects are assessed. Table 11.3-13 then identifies proposed mitigation measures to avoid or reduce predicted effects on Aboriginal Socio-Economic Conditions.

1793.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	This section incorrectly characterizes the information provided in the Gitxaala Use Study. It states that "Project specific TK identified numerous hunting locations throughout Gitxaala Nation traditional territory. For example over 145 locations for deer hunting." The identified deer hunting locations in the Gitxaala Use Report were within the LAA and RAA for the Project, not throughout Gitxaala's entire traditional territory. There were 9 sites identified in the LSA and an additional 135 in the RSA. This description must be updated.	Best efforts have been made by Aurora LNG to incorporate and use the information from the study in this assessment. Gitxaala is correct in noticing a reference of hunting locations reported throughout Gitxaala's entire traditional territory, rather than within the LAA and RAA referenced in the Gitxaala's Use Report, (Calliou Group 2016a). An errata document has been created that captures these corrections and it will be filed with the BC EAO.
1794.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	This section lists the locations for hunting within the Current Use LAA but omits Gull Rocks and Alexandra Rocks. Please provide detail on why these locations were not categorized.	Gull Rocks and Alexandra Rocks are located within the Local Assessment Area established for the assessment of Current Use (see Figure 11.3-1). Potential effects on Gitxaala Nation harvesting activities (i.e. seagull egg harvesting, fishing) at, or near, those locations were included in the Current Use assessment. While Section 11.3.9.2 of the Application does not specifically mention Gull Rocks or Alexandra Rocks, the section explains that Gitxaala Nation reports that its members currently hunt along the shorelines and islands "in and around the Prince Rupert Harbour area including Digby Island and locations on either side of the Project shipping route" (this would include Gull Rocks and Alexandra Rocks). Furthermore, Gull Rocks and Alexandra Rocks have been included in relevant places in the lists of current use locations that have been included in the information compiled for Gitxaala Nation in Tables 5-8 to 5-16 (p 89 to 116) of Appendix S.2 (Aboriginal Consultation TDR).
1795.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	There is no discussion of species identified by Gitxaala that were not found, through field work, to be identified	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR). Aurora LNG notes that a "discussion of species identified by Gitxaala that were not found, through field work" was not a requirement of the AIR, and as such, is not explicitly addressed Section 11.3.9.2 (Existing Conditions for Gitxaala Nation). Nonetheless, this information could be obtained through a review of the Technical Data Reports listed under the relevant headings in Section 11.3.9.2 (see pg. 11-163-168). Furthermore, to aid Gitxaala Nation's review, Aurora LNG has compiled the referenced information for hunting. The TU and TK information provided by Gitxaala Nation for the Project identifies the following wildlife species hunted by Gitxaala Nation members (Calliou Group 2016a; Calliou Group 2016b):Terrestrial Wildlife Species: Deer, Bear, Moose, Mountain goat, Mink, Beaver, Marten, Weasel, River otter Marine Mammal Species: Sea lion, Seal, Sea otter Marine Bird Species: Swan, Geese, Duck, Seagull (eggs), Oystercatcher (eggs) Of the hunted species summarized in the Aboriginal Consultation TDR (Appendix S2) based on Gitxaala Nation's Project specific studies, the following species were not detected within the Wildlife Resources (Terrestrial), Marine Mammals and Marine Birds PDAs, LAAs or RAAs but have potential to occur within the region based on habitat requirements, known range, and traditional knowledge recordsMoose Mountain Goat Mink Weasel Swan As stated in Section 11.3.9.2 of the Application (on pg. 11-163): "Of the wildlife species identified in the Aboriginal Consultation TDR (Appendix S2) in Gitxaala Nation's Project specific information, the following species occur within the PDA and Wildlife Resources (Terrestrial), Marine Mammals and Marine Birds LAAs: Terrestrial Wildlife Species: Deer, Wolf, Bear, Beaver, Marten, River otterMarine Mammal Species: Sea lion, Harbour seal, Sea otter Marine Bird Species: Goose, Duck (common merganser), Seagull (eggs), Oystercatchers (eggs) Additional information, including a list of known wildlife, marine mammal and marine bird species occurring within the Wildlife Resources (Terrestrial), Marine Mammals and Marine Birds LAAs and RAAs and information related to terrestrial wildlife, marine mammals and marine birds habitat availability, is provided in the Wildlife Resources (Terrestrial) TDR (Appendix J), Marine Mammals TDR (Appendix N) and Marine Birds TDR (Appendix Q), respectively."
1796.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	This section states that "The consumption of harvested foods by Gitxaala Nation community members has been discussed above in the description of Existing Conditions for Consumptive Traditional Use." The consumption of harvested foods by Gitxaala was not discussed in detail in the previous section as referenced in the application. There was no discussion of consumption levels for any species, simply a listing of species typically consumed.	The levels of traditional food consumption by Gitxaala Nation was not a data set which was available for consideration. For the purpose of this assessment, Consumptive Traditional Use incorporated Hunting, Trapping, Fishing (including intertidal harvesting) and Vegetation Gathering (including marine vegetation), see Table 11.3-2. A discussion of Gitxaala Nation hunting, fishing trapping and vegetation gathering including harvested species, and harvesting areas is presented from pages 11-161 to 11-168. The quoted statement from page 11-170 is referring to the earlier content.
1797.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	This section states that "The consumption of harvested foods by Gitxaala Nation community members has been discussed above in the description of Existing Conditions for Consumptive Traditional Use." However, the consumption of harvested foods was not previously discussed in terms of socio-economic conditions.	For the purpose of this assessment, Consumptive Traditional Use incorporated Hunting, Trapping, Fishing (including intertidal harvesting) and Vegetation Gathering (including marine vegetation), see Table 11.3-2. A discussion of Gitxaala Nation hunting, fishing trapping and vegetation gathering including harvested species, and harvesting areas is presented from pages 11-161 to 11-168. The quoted statement from page 11-171 is referring to the earlier content.
1798.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	This section states that "Based on Statistics Canada's 2011 Business Registry, there were 189 business locations on BC's north coast that were involved in the fishing industry…" However, no detail is provided on businesses specifically owned or operated by Gitxaala members.	Information regarding Gitxaala Nation businesses is provided in Section 6.3.5 of the Aboriginal Consultation TDR (Appendix S.2).
1799.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	There is no mention in this section of the identified Gitxaala fish trap location.	The Gitxaala Nation fish trap is discussed in Section 11.3.9.2 of the Application. Please see page 11-164.
1800.1	round 1	Gitxaala Nation	11.3.9.2	CEAA 2012	The description of Gitxaala Physical and Cultural Heritage is incomplete. While physical sites and harvested food plays an important part in Gitxaala Physical and Cultural heritage, it is not the entirety - therefore, additional description from the Use Report and VC Report is required.	Section 11.3.9.2 (Existing Conditions—Physical and Cultural Heritage) was developed in accordance with the Application Information Requirements (AIR) and based on the on the best information available at the time. As noted in Section 11.3.9.2, this section draws upon the species and sites information in the Consumptive and Non-Consumptive Traditional Use Existing Conditions, as well as the information contained in Section 7.2.3 (Existing Conditions for Archaeological and Heritage Resources) and the associated Archaeological Impact Assessment (Appendix W). This section also considers the information compiled in Section 6 (Gitxaala Nation) of Appendix S.2 (Aboriginal Consultation). Aurora LNG is confident that Section 11.3.9.2 meets the requirements of the AIR and that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. Furthermore, Aurora LNG notes that a more detailed discussion of similar considerations is provided in Section 12.5.6.7 (Assessment of Effects on Gitxaala Nation Cultural Wellbeing).

1801.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	The effects to current use of land and resources should focus on the use of deer (the selected indicator species) rather than on the resiliency of deer itself. By focusing only on the resiliency of deer the assessment misses key aspects of the use of deer including the quality of the deer and the access to the remaining deer. Further, effects to current use of land and resources should use the residual effects criteria listed in the beginning of this Volume rather than explore it in terms of the Wildlife Resources (Terrestrial) VC residual effects criteria.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. Section 11.3.9.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) was developed in accordance with the Application Information Requirements (AIR) and informed by pre-Application consultation completed by Aurora LNG. The residual Project effects to current use of lands and resources for traditional purposes were assessed according to the methods outlined in Section 11.3.5.1 (Method for the Assessment of Residual Effects). These methods were based on available guidance, including that provided by the CEA Agency, and are consistent with those described in Section 11.3.4 (Assessment of Residual Effects) of the AIR. In the context of Gitxaala Nation, Current Use was assessed using the following two-part Application drafting framework (see pg. 11-173): "The first part summarizes information and findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects (i.e., based on steps #1 and #2 from Section 11.3.5.1) under headings that reflect the… measurable parameters…" "The second part… provides conclusions regarding the characterization of residual effects... based on the results of the first part of this section (i.e., the findings related to the residual effects and VCs that have been deemed relevant to the assessment of Section 5(1)(c) effects), the understanding of current [use] (based on existing conditions) and the criteria and definitions outlined in Section 11.3.2.5." Using this process, the specific characterizations for each Current Use sub-component (e.g. hunting) that were presented in Section 11.3.9.3 were assessed based on the information contained in Section 11.3.9.2 (Existing Conditions for Gitxaala Nation) and Section 6 (Gitxaala Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria).
1802.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	This section states that "…it is noted that marine mammals in the shipping channel and Prince Rupert Harbour area appear to be habituated to the current levels of activity and development, which includes marine traffic." This does not include the addition of the Aurora LNG Project and it is unclear from the assessment how the addition of traffic and construction and operation would additionally affect these species as this concept is not further explored.	Refer to Section 4.10 of the Application for the assessment of residual effects on marine mammals. Sections 4.10.5.2, 4.10.5.3 and 4.10.5.4 provide information regarding predicted effects of project-related vessel traffic during all phases of the Project.
1803.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	This section states that "…the residual effects of the Project on marine mammals was assessed … as being moderate in magnitude for marine mammals … meaning that the predicted change from existing conditions could exceed environmental and/or regulatory thresholds; however, it does not have the potential to affect the long-term persistence of local harvested populations." This does apply the residual effects criteria defined for the Assessment of Aboriginal criteria previously listed in this volume. Further, if the Aboriginal residual effects criteria were to be applied, it would alter the determination of effects. It would increase the potential of effect on the long-term persistence of Aboriginal harvest of local populations as changes to the species would persist beyond ~25 years.	The criteria outlined in Table 11.3-6 for the characterization of residual effects on Section 5(1)(c) effects was applied to the characterization of effects on Current Use presented in section 11.3.9.3 of the Application. Aurora LNG understands that residual effects that restrict Traditional Use and extend beyond 25 years, such as those anticipated for marine mammals, can effectively remove a practice from the community's TK. Residual effects on Gitxaala Nation's marine hunting was characterized as permanent in duration, see Table 11.3-22.
1804.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	We disagree with the Summary of Effects as listed as they are based on an impoverished assessment of effects. Current use will not be able to continue at current levels in the PDA and Gitxaala harvesters will be displaced. This is particularly important and Gitxaala harvesters have governance protocols they generally must adhere to and areas where their harvest is allowed. Digby Island is a historically shared area, where harvesting is undertaken by multiple houses.	Aurora LNG acknowledges that the Project will interact with and potentially affect the Gitxaala Nation's Current Use of lands and resources, but maintains that these activities will be able to continue with some modification. Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments` which will be filed with the BC EAO.
1805.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	It is concerning that effects in and around the PDA for air emissions, visual quality and noise will be noticeable to Gitxaala harvesters, however, these effects are minimized as they will no longer be present following decommissioning, or diminish the further from the Project the harvesters may be. These effects must be characterized using the residual effects criteria previously identified in this volume for Aboriginal issues and must be considered at their locale, not further away, as Gitxaala harvesters will be present at or near the PDA.	Aurora LNG acknowledges that Project-related qualitative changes in air quality, the acoustic environment, and visual quality may be experienced by Gitxaala harvesters. These effects are predicted to be most noticeable at locations adjacent to the Project Development Area and are expected to diminish further away from the Project. The predicted residual effects on Gitxaala Nation's Current Use have been characterized using the criteria outlined in section 11.3.2.5 of the Application and in compliance with section 11.3.1 of the AIR. Aurora LNG is confident that the environmental assessment presented in the Application, including the assessment completed in Section 11.3, is fully compliant with all provincial and federal regulatory requirements.
1806.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	It is unclear which residual effects criteria was used to identify the summary of characterization of Current Use - Hunting. Please clarify.	The criteria used to characterize predicted residual effects for Current Use - Hunting is provided in Tables 11.3-6 and 11.3-7 of the Application.
1807.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	Gitxaala Nation is concerned with the permanent alteration or destruction of up to 26.5 ha of marine fish habitat (including up to 6.1 ha of eelgrass). This is of particular concern as Gitxaala has not been involved in the development of a Fish Habitat Offsetting Plan to ensure the offsetting occurs in a manner consistent with Gitxaala use of the resources in the exercise of their rights and interests.	Gitxaala Nation's concern about the permanent alteration or destruction of marine fish habitat, including eelgrass, and interest in the development of a Fish Habitat Offsetting Plan have been noted. The fish habitat offsetting plan was included as part of the Application (see Appendix V) and includes proposed habitat restoration and enhancement measures to offset for the loss of eelgrass as a result of the Project. Offsetting measures presented in this plan are conceptual in nature and Aurora LNG expects that the plan will be refined following consultation with regulatory agencies (primarily DFO) and Aboriginal Groups which will contribute to the selection and design of offsetting measures. There is a typing error in the Application. Section 11.3.9.3 identified a permanent alteration or destruction of up to 6.1 ha of eelgrass. This should read the permanent alteration or destruction of up to 0.61 ha of eelgrass. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
1808.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	While the assessment finds that underwater noise generated by in-water construction activities and Project-related vessels, as well as artificial lighting from Project infrastructure and LNG carriers are not expected to threaten the long-term persistence of marine fish populations, how does this translate into no effects on Gitxaala's use of marine fish populations? Will the remaining fish populations support Gitxaala's use, in combination with other Nation's use? Will the remain populations be of sufficient quality and will Gitxaala continue to have access to these species in preferred areas around Digby Island?	The following sections of the Application have informed Aurora LNG's response to Gitxaala Nation's questions in this comment. Underwater Noise and Lighting: As described in Section 11.3.9.3 (page 11-182), underwater noise generated by in-water construction activities, Project-related vessels, and artificial lighting from Project infrastructure and LNG carriers are expected to result in localized changes in marine fish behaviour (e.g., temporary avoidance behaviour, altered swimming direction, or startle response). Therefore, Gitxaala Nation's ability to fish for specific species in preferred areas around the Project (especially during in-water construction activities) will be affected. For example, a Gitxaala Nation fisher fishing for salmon near Casey Cove during in-water blasting activities may not catch as many salmon as they would have at another time when in-water blasting activities are not occurring. Access to Fishing Locations: As described on page 11-183, Gitxaala Nation access to fishing locations at Casey Cove and Frederick Point will be lost. This effect is considered permanent in terms of effects on Current Use, as the effect has the potential to affect the intergenerational transfer of knowledge of fishing or intertidal gathering practices at those two locations. Quality of Fished Species: As described on page 11-182, Project-related activities, including dredging activities, are not anticipated to cause toxicity to aquatic life. Aurora LNG does not anticipate that the quality of fished species will be noticeably affected. Quantity of Fished Species: As described on pages 11-182 and 11-183, Project-related effects on marine fish and fish habitat are not anticipated to threaten the long-term persistence of marine fish populations in the Marine Fish and Fish Habitat LAA. Overall Effects on Gitxaala Nation Fishing: As described on page 11-186, the overall residual effect of the Project on Gitxaala Nation freshwater and marine fishing is expected to be moderate in magnitude. This conclusion is primarily because of the loss of access to Casey Cove and Frederick Point for fishing or intertidal gathering activities, and because of the change to Gitxaala Nation experience of using locations near the PDA.
1809.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	This section states that sessile or slow-moving benthic invertebrates and infauna "…are expected to be replaced within one or two generations of affected species…" This is problematic as Gitxaala harvesters use of the referenced species would be interrupted for a significant amount of time and could not return to pre-Project levels. For example, some species of sea urchin have a life span of 30 years or more and do not reach sexual maturity till four to five years. This could constitute an interruption that may result in the loss of cultural transmission of use areas and remove that area from Gitxaala's cultural inventory. This effect was not explored by the application and must be addressed.	Aurora LNG understands that residual effects that restrict Traditional Use and extend beyond a single generation can effectively remove a practice from the community's TK. As such, predicted residual Project effects on land and resources relied on for Traditional Use that are expected to last longer than a single generation will be considered permanent, see Table 11.3-6. Residual effects on Gitxaala Nation hunting (marine) and fishing have been characterized as having a permanent duration.
1810.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	Again, the assessment makes reference to the availability of vegetation species elsewhere in the LAA. This is problematic for Gitxaala due to governance harvesting protocols in place for the Nation. This issue was not explored in the application and must be considered.	Information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(c) and Part C Assessment Methods and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1811.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	Gitxaala is concerned with the loss of up to 6,180 m2 of eelgrass. This is problematic from a use perspective for Gitxaala as they rely on eelgrass as critical habitat for salmon. For the purposes of Gitxaala use, it doesn't matter whether Casey Cove is disturbed or not, Gitxaala still make use of this area and it is a critical locale for Gitxaala harvesters. As Gitxaala has not been engaged in Fish Habitat Offsetting to date, this loss of eelgrass constitutes an effect to Gitxaala's current use.	Gitxaala Nation's use of Casey Cove was incorporated in the assessment, and was considered in the characterization of residual effects on Gitxaala Nation Current Use. The fish habitat offsetting plan was included as part of the Application (see Appendix V) and includes proposed habitat restoration and enhancement measures to offset for the loss of eelgrass as a result of the Project. Offsetting measures presented in this plan are conceptual in nature and Aurora LNG expects that the plan will be refined following consultation with regulatory agencies (primarily DFO) and Aboriginal Groups which will contribute to the selection and design of offsetting measures.

1812.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	Gitxaala is concerned with the loss of up to 65,349 m2 of hard substrate. This is problematic from a use perspective for Gitxaala as they rely on hard substrate for the production of kelp. As Gitxaala has not been engaged in Fish Habitat Offsetting to date, this loss of hard substrate constitutes an effect to Gitxaala's current use.	Aurora LNG acknowledges that hard substrate within the LAA will be permanently altered or lost during dredging and marine construction activities (e.g., infilling). Infilling will introduce hard substrates into the marine environment that provide attachment surfaces for seaweeds, including kelps. However, such ecological benefits are not fully realized until communities become established on the substrate, which can require up to ten years. Consequently, offsetting is expected to be required to counterbalance the temporary loss of productivity. A Conceptual Fish Habitat Offsetting Plan was included as part of the Application (see Appendix V). Aboriginal consultation will occur throughout the development of the final Fish Habitat Offsetting Plan and will ultimately contribute towards Aurora LNG's selection and design of offsetting features.
1813.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	This section states that "Effects on terrestrial routes or trails used to access vegetation harvesting locations are not expected as the PDA is not anticipated to block access to other areas of Digby Island." This is an incorrect conclusion. The PDA will be fully excluded from use by Gitxaala harvesters as a means of access, for both marine and terrestrial access. Indeed, the PDA will act as a barrier to access from marine access points to other areas on Digby Island.	Aurora LNG acknowledges that the Project will restrict access to the lands within the Project Development Area (PDA). The measurable parameters identified in Table 11.3-2, which are utilized for the assessment of Current Use, include:Quantity (area) and quality of current access routes where use will be affected Gitxaala Nation has not identified any trails or put-in locations, to Aurora LNG, that are within the PDA that would be used to access other areas of Digby Island. In addition, Aurora LNG notes that Section 12.5.6 (Gitxaala Nation) includes a more nuanced assessment that incorporates many intangible elements of Aboriginal use considerations. Refer to Section 12.5.6.10 for the assessment of effects on Gitxaala Nation's Use of Marine Travelways which provides further context regarding this response. Aurora LNG is confident that the environmental assessment presented in the Application, including the assessment completed in Section 11.3, is fully compliant with all provincial and federal regulatory requirements.
1814.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	This section states that "Vegetation harvesting locations identified by Gitxaala Nation occur throughout their traditional territory…" This is not a valid reason to assume that no effects to vegetation harvesting will occur. First, there are Gitxaala specific harvesting protocols which Gitxaala Nation members must adhere to. Second, Gitxaala's traditional territory is vast and many members lack the ability to travel to other locales to harvest. Digby Island is close to Prince Rupert and affords Gitxaala members with a shared place to harvest and maintain their cultural connection. Finally, the 'go elsewhere' reasoning to lessen effect is inappropriate and has been noted in case law as insufficient.	Information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO .
1815.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	This section indicates that "…the PDA will include a vegetated riparian buffer that avoids most of the identified archaeological and heritage resources with highest significance located within the PDA…" However, non-consumptive traditional use locations are not fully encompassed by heritage resources and therefore the vegetated buffer will not be sufficient to mitigate effects. Secondly, Gitxaala has not been consulted on significance of those heritage resources referenced, therefore, there is no way for Nexen to know which are valued highest by Gitxaala. This must occur prior to any clearing activity.	As outlined in Section 11.3.9.3 Aurora LNG incorporated information from Gitxaala Nation regarding culturally important sites within the PDA, including including habitation structures and a fish trap (Calliou Group 2016a). Aurora LNG also indicates that these sites may be physically altered or no longer accessible to Gitxaala Nation as a result of the Project. Aurora LNG states that maintaining the vegetated riparian buffer will reduce impacts to archaeological sites, but does not conclude that this buffer will mitigate all impacts. Section 11.3.9.3 summarizes that "Given predicted changes to culturally and spiritually important locations, access to those locations and the experience of using them for cultural and spiritual purposes, the overall residual effect of the Project on cultural and spiritual use by Gitxaala Nation community members is anticipated to be low to moderate in magnitude, extend into the Current Use LAA, occur continuously, and be permanent and irreversible with respect to TU and knowledge transfer. Given Gitxaala Nation's demonstrated concern for the protection of remaining culturally and spiritually important locations and maintaining access and use of those sites, the context for the assessment of Project-related changes to Gitxaala Nation's use of identified cultural and spiritual sites and areas is characterized at a low level of resilience" (see page 11-196). It is important to note that an Archaeological and Heritage Management Plan will be developed to mitigate the loss of archaeological and heritage information. Aurora LNG will engage with the appropriate regulatory agencies and Gitxaala Nation during the preparation of this plan. In addition, archaeological resources will be manged in accordance with the Heritage Conservation Act (HCA), and any alteration to protected sites requires appropriate permits in place. Aurora LNG will comply with all requirements of the BC Heritage Branch and the HCA in relation to archaeological resources.
1816.1	round 1	Gitxaala Nation	11.3.9.3	CEAA 2012	We disagree with the determination that effects to Gitxaala Nation's Current Use is not significant. This is due to the above noted discrepancies in determining effect, including effects on use of species, locations of harvest, access or experience using the sites for harvesting purposes. It is anticipated by Gitxaala that many locales within the PDA and LAA will not be able to continue. Based on this and the applied residual effects criteria for Aboriginal issues, these effects are significant.	Aurora LNG acknowledges that the Project will interact with and potentially affect the Gitxaala Nation's Current Use of lands and resources, but maintains that these activities will be able to continue with some modification. The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). In the context of Section 11.3 of the Application, significance was evaluated against the thresholds established in Section 11.3.2.7 (pg. 11-42). For Current Use, the significance threshold is triggered "if a residual effect on Current Use results in a condition where participation by Aboriginal people in a current use activity is no longer considered viable within existing conditions". In accordance with the AIR, professional judgement is applied as part of this evaluation in a manner that is consistent with the guidance provided in CEA Agency's document entitled "Technical Guidance for assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012" (December 2015) (see pg. 11). Aurora LNG acknowledges that Gitxaala Nation may have differing views regarding the significance threshold as it relates to predicted residual effects on Current Use. Aurora LNG is confident that the significance thresholds presented in the Application are fully compliant with all provincial and federal regulatory requirements. As a result, revisions the Current Use significance thresholds are neither warranted nor required.
1817.1	round 1	Gitxaala Nation	11.3.9.4	CEAA 2012	This section is repetition of information previously presented in the Human Health, Acoustic Environment and Community Health VC. There is little consideration of data specifically related to Gitxaala and no evidence of effort to collect information specific to Gitxaala health beyond the Use study and VC Report, both of which were not expressly for this purpose.	The assessment of Aboriginal Health determined that the effects from the Project on the environment on health as assessed collectively in the Human Health, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Health. This conclusion is primarily based on the following approaches taken in the relevant VC assessments:Human Health receptor sites used in the Human Health assessment took into account Project specific information provided by Gitxaala Nation, as well as publicly available information on the location and composition of Aboriginal communities, the location of TU sites and areas, and harvesting and consumption of traditional foods. The Human Health receptor sites included places where health-sensitive people are present (e.g., daycares, schools, hospitals, elderly care homes).The Community Health assessment considers effects on vulnerable populations, including: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes, individuals and households classified as low-income earners, marginally-housed individuals, and individuals classified as homeless. As described in Section 11.3.2.7, if a residual effect that is relevant to Aboriginal Health would have a substantial effect on Aboriginal people's health beyond that considered in the VC analysis in Part B of the Application, it would be considered significant. Aurora LNG did not find this to be the case. The assessments of Community Health, Human Health, and Acoustic Environment are applicable for any Aboriginal (or non-Aboriginal) person living within the LAA for the three VCs listed. In addition, the assessment was conducted in accordance with the Application Information Requirements and informed by pre-application consultation completed by Aurora LNG. Aurora LNG met with Gitxaala Nation on June 23, 2016 to discuss the proposed assessment methods and characterization criteria for socio-economic VCs and traditional use sections of the Application. In addition, Gitxaala Nation had the opportunity to review the draft Part C and Section 11.3 prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3 , which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. In November 2016, Gitxaala Nation provided Aurora LNG with a study entitled Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation (Shandro et al., 2016) (the "Gitxaala Nation Report"). As Aurora LNG had completed the analysis and writing for its Application for Environmental Assessment Certificate (the "Application") at the time the Gitxaala Nation Report was received, information contained in the report had not been reviewed or directly incorporated into the Application which was submitted to the BC EAO in November, 2016. Aurora LNG responded to the Gitxaala Nation Report in its technical memo entitled "Aurora LNG's Response to the 'Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation'". A draft of this memo was shared with Gitxaala Nation on May 11, 2017 for their comment and will be filed with the BC EAO.
1818.1	round 1	Gitxaala Nation	11.3.9.5	CEAA 2012	This section is repitition of information previously presented in the Visual Quality, Acoustic Environmental and Community Health VC. There is little consideration of data specifically related to Gitxaala and no evidence of effort to collect information specific to Gitxaala socio-economic conditions beyond the Use study and VC Report, both of which were not expressly for this purpose.	For ease of reading section 11.3.9.5 repeats information previously presented under other VC assessments related to Aboriginal Socio-Economic Conditions. However, section 11.3.9.5 provides a discussion of Socio-Economic Conditions specific to Gitxaala Nation, and identifies additional potential Project effects related to changes to Socio-Economic Conditions that were not included in the other VC assessments including:barriers to increased participation in the fishing sector and, sensitivity of the fishing practices to change.
1819.1	round 1	Gitxaala Nation	11.3.9.6	CEAA 2012	As previously noted, Gitxaala physical and cultural heritage encompasses more than just physical objects designated as heritage resources. The omission of additional information from this assessment leaves is deficient.	The assessment of CEAA Section 5(1)(c) Effects includes Aboriginal use considerations beyond "physical objects designated as heritage resources". For example, the measurable parameters identified in Table 11.3-2, which are utilized for the assessment of Current Use, include:Quantity (area) and quality of current access routes where use will be affectedQualitative changes in the current experience of traditional harvestingQuality of affected sacred sites, cultural sites, spiritual sites, landforms and natural features associated with ritual or spiritual useQualitative changes in the experience of using sites and landscape features for ritual or spiritually important purposes (e.g., changes in acoustic environment and visual quality at identified sites). These measurable parameters allow for potential effects on the experience of Aboriginal peoples' to be incorporated into the assessment of Current Use, rather than focusing the effects assessment only on changes to physical objects designated as heritage resources. In addition, As outlined in Section 12.5.6.7, Aurora LNG acknowledges that archaeological and heritage resources do not represent the entirety of Gitxaala Nation's physical and cultural heritage. However, Aurora LNG does not have specific information from Gitxaala Nation regarding use, place names, or cultural or spiritual value locations within the PDA. Aurora LNG acknowledges that it is likely the Project will affect Gitxaala Nation's use of spiritual and cultural sites within the PDA, but maintains that Current Use of lands and resources by Gitxaala Nation members in other parts of their territory will be able to continue with some modification. Aurora LNG is confident that the environmental assessment presented in the Application, including the assessment completed in Section 11.3, is fully compliant with all provincial and federal regulatory requirements.
1820.1	round 1	Gitxaala Nation	11.4	CEAA 2012	As Gitxaala has previously objected to the characterization of the effects listed for the VCs studied for Gitxaala Nation, this objection is carried forward to the cumulative effects assessment. As no new information was incorporated in this assessment than previously identified, the cumulative effects assessment is deficient.	Aurora LNG acknowledges that Gitxaala Nation does not agree with the characterization of CEAA 5(1)(c) effects as related to Gitxaala Nation, and as such, does not agree with the findings of the cumulative effects assessment. Aurora LNG is confident that the cumulative effects assessment set out in the Application is fully compliant with all provincial and federal regulatory requirements. Aurora LNG is confident in the conclusions of the Application, which were developed in accordance with the AIR.
1821.1	round 1	Gitxaala Nation	12.1.1	Aboriginal Consultation	This section states that "All information received from Aboriginal Groups regarding the Project will be meaningfully considered by Aurora LNG." However there is no mention of the tiered approach undertaken by Aurora LNG whereby Metlakatla and Lax Kwaalams were given priority consultation over Gitxaala. This included participation in field studies, for example. Aurora LNG should be clear and transparent in regards to their tiered approach and this information should be included in the application.	Information that provides context related to Aurora LNG's consultation approach to consultation and field work participation, is provided in the technical memo entitled "Aurora LNG's approach to Consultation with Aboriginal Groups", which will be filed with the BC EAO. Details regarding Aurora LNG's consultation approach can also be found in the Aboriginal Consultation Reports posted on the EAO website and in the Section 11 order (as amended) issued by EAO.

1822.1	round 1	Gitxaala Nation	12.1.1	Aboriginal Consultation	This section states that "Aurora LNG will make best efforts to identify and discuss with Aboriginal Groups appropriate mitigation measures…" This has not occurred with Gitxaala Nation to date.	Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review, including mitigation measures proposed to reduce potential effects on Gitxaala Nation Aboriginal Interests, and to discuss any views or feedback at Technical Workshop #3, which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1823.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	First, Gitxaala would like additional information on why the Aboriginal Interests assessed differed for each Nation. If the Aboriginal Interests were flexible to be changed, why were Gitxaala's proposed VC's not addressed in a fulsome manner?	The assessment of potential adverse effects on each Aboriginal Group's Aboriginal Interests was guided by assertions of Aboriginal Interests by that Aboriginal Group in the Project vicinity. In identifying assertions of specific Aboriginal Interests, Aurora LNG reviewed Gitxaala Nation's Project-specific studies, publicly-available documents, and consultation records. The VCs presented in Gitxaala Nation's Valued Components Report were considered in Part C of the Application. In several cases, assertions of Aboriginal Interests in the VC report formed the justification for inclusion of an Aboriginal Interest in Section 12.5.6. This was the case for the following Aboriginal Interests:Harvesting-Related Aboriginal Interests (Section 12.5.6.6)Cultural Wellbeing (Section 12.5.6.7)Traditional Governance (Section 12.5.6.8)Right to Economic Opportunities (Section 12.5.6.11) Aurora LNG is of the opinion that the incorporation of the Gitxaala VC Report into Part C is reasonable, given the requirements of the AIR and the content of the VC Report.
1824.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	Gitxaala asserts Aboriginal title in the Project area and agrees that the Project will "…interfere with Gitxaala Nation's ability to use, make decisions over, or enjoy economic benefits associated with the PDA..."	Comment noted.
1825.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	Please provide further clarification on why stink currants, high-bush cranberries and horse clams were singled out in this table? Particularly as effects to kelp, eelgrass, etc. were identified in previous sections.	Potential Project-related effects on Gitxaala Nation's ability to harvest stink currents, high-bush cranberries, and horse clams were highlighted in the Key Findings table (Table 12.1-4) because these resources are harvested within the PDA, and, according to the Gitxaala Use Study and the conclusions of the relevant VC assessments, there may not be many other places for Gitxaala Nation harvesters to collect these three resources. The other resources harvested by Gitxaala Nation members within the PDA are harvested elsewhere by Gitxaala Nation (according to the Gitxaala Use Study).
1826.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	Please provide further clarification on why access to a historic Gitxaala Nation village at Casey Point was singled out in this table. Particularly as additional sites were identified in the PDA and LAA, including a fish trap location, etc.	Aurora LNG highlighted several Key Findings in Table 12.1-4, not just the potential for inference with access to the historic village at Casey Point, including:Archaeological sites within the PDA but outside the shoreline buffer will be permanently altered and inaccessible to Gitxaala Nation members. Gitxaala Nation members may experience some noise and visual quality effects while participating in cultural activities on the landscape. Employment associated with the Project may hinder people's ability to attend some cultural events. Project-related shipping traffic may interfere with (but not prevent) access to a historic Gitxaala Nation village at Casey Point. Project-related shipping may also interfere with Gitxaala Nation access to culturally or spiritually important sites within the channel between Digby Island and Kaien Island. Other than effects on access from higher marine traffic levels within that channel (adjacent to the historic Casey Point village site), Aurora LNG does not anticipate that access to important sites within the LAA will be affected by Project-related activities. As indicated in Table 12.1-4 and Section 12.5.6.7 (starting on page 12-178), the conclusions of the Application are based on the assumption that Gitxaala Nation members will not be able to access sites within the PDA until Project decommissioning is complete.
1827.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	This section of the table states that "Project-related vessels may interfere with (not prevent) travel through the passage between Digby Island and Kaien Island…" Gitxaala objects to the conclusion that Project related vessels will not prevent travel. This shows a lack of consideration of perceptive effects of the Project related vessel traffic on Gitxaala harvesters as the mere presence of the Project related vessel traffic may deter Gitxaala harvesters from travelling through the designated route.	Gitxaala Nation is encouraged to read the full assessment of effects on Use of Marine Travelways (Section 12.5.6.10). The Key Findings table (Table 12.1-4) is not meant to capture the full analysis and all conclusions in Section 12.5.6. Perceptive effects to Gitxaala Nation marine users were assessed in both Sections 12.5.6.6 (starting on page 12-170) and 12.5.6.7 (starting on page 12-180).
1828.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	Please explain the relevance of the notation that the Tuck Landscape was included as a Unit of the Great Bear Rainforest Land Use Objectives Order in terms of Importance to Gitxaala for the exercise of their Aboriginal rights?	In determining potential Project-related effects to Gitxaala Nation's right to self-government, Aurora LNG reviewed existing Gitxaala Nation self-governance documents, including available land and marine use planning documents. In the original draft of Part C, Aurora LNG had relied on the Draft Gitxaala Land Use Plan (2003). During its review of the draft Part C sections prior to submission of the Application for screening (and again in Workshop #3 in October 2016), Gitxaala Nation indicated to Aurora LNG that the 2003 Draft Gitxaala Land Use Plan should not be referenced in the Application. Instead, Gitxaala Nation requested that Aurora LNG reference the North Coast Land and Resources Management Plan (LRMP). The North Coast LRMP is a document prepared by several different organizations, including the government of British Columbia. The North Coast LRMP was replaced in 2016 with the Great Bear Rainforest Order. Given this evolution of land use planning efforts and the feedback received from Gitxaala Nation during consultation, Aurora LNG decided to present the most recent land use planning designation in its assessment of potential effects on Gitxaala Nation right to self-government.
1829.1	round 1	Gitxaala Nation	12.1-4	Aboriginal Consultation	This section states that "Aurora LNG was unable to identify any potential adverse economic effects not already assessed elsewhere in the Application." This was due to Nexen's unwillingness to collect Gitxaala specific economic data as part of the application execution. Had Nexen collected specific economic data from Gitxaala sources, Gitxaala is confident that they would have been able to identify potential adverse economic effects that were not already assessed elsewhere in the application.	Gitxaala Nation has had multiple opportunities to supply Gitxaala-specific economic data so that it could be incorporated into the Application. On December 31, 2015, Aurora LNG and Gitxaala Nation entered into an Environmental Assessment Agreement related to the Project. The purpose of the agreement was to provide capacity funding to support Gitxaala Nation's participation in the EA and related regulatory approval processes associated with the Project. The agreement also provided capacity funding to facilitate: the identification of Gitxaala Nation issues and concerns related to the Project, including socio-economic effects; the provision of input on the assessment of effects and proposed mitigation measures; and the completion of a traditional use study related to the Project. In March 2016, Gitxaala Nation supplied Aurora LNG with the Project-specific draft Gitxaala Use Study. Further conversations between Aurora LNG and Gitxaala Nation occurred on June 24, 2016, to discuss the incorporation of this information into the Application and the concerns outlined in their 'Proposed Valued Components' letter of January 2014 (see additional detail in ACR #1 Section 4.2). Gitxaala Nation provided Aurora LNG with the final version of the Gitxaala Use Study and the Gitxaala Valued Components Report in June of 2016. Both reports were incorporated into the Application. In addition, in November 2016, Gitxaala Nation provided Aurora LNG with a study entitled Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation (the "Gitxaala Nation Report"). As Aurora LNG had completed the analysis and writing for its Application for Environmental Assessment Certificate (the "Application") at the time that the Gitxaala Nation Report was received, information contained in the report had not been reviewed or directly incorporated into the Application which was submitted to the BC EAO in November, 2016. Aurora LNG responded to the above noted Gitxaala Nation Report in its technical memo entitled "Aurora LNG's Response to the 'Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation'". A draft of this memo was shared with Gitxaala Nation on May 11, 2017 for their comment and will be filed with the BC EAO.
1830.1	round 1	Gitxaala Nation	12.2.2	Aboriginal Consultation	Gitxaala objects to the categorization as a Southern Tsimshian group. This categorization was based on a, in Gitxaala's opinion, flawed ethnographic assumption and does not represent the classification of Gitxaala Nation. Indeed, the fact that these division are not recognized universally is noted in the application. So it is unclear why this is stated in the first place.	As indicated in the first paragraph of Section 12.2.2, the different Tsimshian sub-groups are presented to provide additional context to the assessment in Part C and Aurora LNG appropriately identified that there is no universal view.
1831.1	round 1	Gitxaala Nation	12.2.5	Aboriginal Consultation	Gitxaala Nation is not "...located in the village of Kitkatla (Lach Klan…" rather, throughout their traditional territory with membership living in Prince Rupert and other surrounding towns. Please amend this description.	A correction to the description of Gitxaala Nation on page 12-23 of the Application has been captured in an errata document that captures these corrections and will be filed with the BC EAO.
1832.1	round 1	Gitxaala Nation	12.3	Aboriginal Consultation	This section outlines how consultation activities influenced the environmental assessment. However, based on this listing there are a number of issues with the consultation program which still remain unresolved. First, using TK or TU information to identify potentially affected locations of special interests to Aboriginal groups is not the appropriate method for their identification. Instead, Gitxaala should have been specifically consulted on these locales to ensure the site selected best represented their interests. Secondly, adding viewpoints to the Visual Quality assessment without consultation with Gitxaala on those viewpoints is not sufficient; and finally, exploring ship wake on archaeological resources alone is not sufficient as wake has the potential to affect shore harvesting and boat traffic, as previously discussed.	Note: it is assumed that the first part of the Gitxaala Nation comment refers to Acoustic Environment: With regard to the Acoustic Environment VC assessment (see Section 4.4 of the Application), in response to concerns raised by Aboriginal Groups, Aurora LNG reviewed available TK/TU information [Project-specific and public domain] for candidate receptor sites. Based on that work, a number of potentially-affected locations of special interest to Aboriginal Groups (including residential communities, hunting and gathering, and other habitation and gathering sites) were identified and included in the assessment. Noise receptors for the assessment were established at identified Aboriginal traditional use areas along the islands (i.e., Casey Point, Barrett Rock, Lima Point, Fraser Point, Kinahan Islands, and Pike Island). Aurora LNG provided capacity funding to all Schedule B Aboriginal Groups to, among other things, provide TK/TU information that would be utilized in the Environmental Assessment of the Project. Table 4.4-4 in the Application lists noise sensitive receptors and Figure 4.4-1 shows the receptor locations (including receptors that represent traditional land use areas - ID# R4, R5, R6, R7, R8, R16, R17, R18, R19, and R21). Noise monitoring was conducted at five locations within the Acoustic Environment local assessment area . These locations represent the closest communities to the Project as well as other uninhabited locations along coastal areas of Digby Island, and provide representative information on the existing acoustic environment along different coastal area without any land-based residential and land-based commercial activities. The results from the monitoring were applied to other receptors in the assessment, (including receptors for traditional land use area - R4 to R8, R16 to R19, and R21) in the Acoustic Environment VC. Noise findings at locations of special importance to Aboriginal Groups were used as input for assessing adverse residual effects on Aboriginal resources in Part C of the Application (please refer to Section 12.0). Gitxaala Nation decided not to fully participate in Technical Workshop #4 held on January 25th and 26th in Prince Rupert. This workshop provided an opportunity to discuss concerns and issues associated with the assessment of VCs in Part B of the Application (including the Acoustics Environment), and to explore new mitigation ideas. Aurora LNG also notes that Gitxaala Nation chose not to participate at the EAO's Working Group session held on February 6th and 7th in Prince Rupert. A key purpose of both of these sessions was to facilitate a discussion of issues and concerns with the Application. Aurora LNG has made extensive efforts to date to consult with Gitxaala Nation during the course of the environmental assessment. These efforts and the issues raised during consultation will be incorporated into the Third Aboriginal Consultation Report. Gitxaala Nation will be provided an opportunity to review and comment on the draft Third Aboriginal Consultation Report before it is finalized and submitted to the EAO. Visual Quality Viewpoints: During Workshop #2 (March 16-17 2016), Aurora LNG consulted with Aboriginal Groups, including Gitxaala Nation, on the various viewpoints being considered for the Visual Quality analysis. Ship Wake: As a result of feedback from Gitxaala Nation during consultation, Aurora LNG added an assessment of ship wake on harvesting activities. That assessment is in Section12.5.6.6 start on page 12-171. In addition, please also refer to the "Effects of Lost Fishing Time" technical memo for a description of expected conditions for a fisher-LNG carrier interaction to occur. This rationale also applies to wake effects. The technical memo will be filed with the BC EAO.
1833.1	round 1	Gitxaala Nation	Table 12.3-3	Aboriginal Consultation	The key concerns listed for Gitxaala do not capture the depth and breadth of concerns raised by Gitxaala Nation during the pre-Application phase of the environmental assessment; rather, these concerns just encompass the Gitxaala VCs proposed in the Gitxaala VC Report. This table must be updated to reflect the entirety of Gitxaala concerns raised in the pre-Application phase of the environmental assessment as referenced in the application.	The full list of concerns raised by Gitxaala Nation at the time of filing the Application is found in Table 7-1 of ACR #2 (see Appendix S.1). Table 12.3-3 of the Application includes Aurora LNG's understanding of key issues raised by Gitxaala Nation during the pre-Application phase of the environmental assessment. This table was provided to Gitxaala Nation for review in advance of the pre-submission workshop in October 2016. In addition to those two tables, Table 12.9-1 includes Gitxaala Nation views specific to the assessment completed in Part C. Aurora LNG is of the opinion that, taken together, these tables provide a reasonable record of Gitxaala Nation's views and concerns raised in the pre-Application phase.

1834.1	round 1	Gitxaala Nation	Table 12.4-1	Aboriginal Consultation	This table outlines, in extremely general terms, the integration of TK and TU into the Part B assessment. There is no additional details provided here that was not included in the Part B assessments themselves and no further elaboration on the integration. This is insufficient and highlights the superficial way TK and TU was used by Aurora LNG.	Aurora LNG is of the view that TK and TU information provided by Aboriginal Groups was appropriately incorporated into the assessment of VCs in Part B of the Application, and met the requirements of the AIR.
1835.1	round 1	Gitxaala Nation	12.5.3.2	Aboriginal Consultation	This section states that "…Aurora LNG has been actively consulting with Aboriginal Groups set out in Schedule B of the Section 11 Order since November 2013 to understand how the Project and associated Crown approvals may adversely affect the exercise of their asserted or determined Aboriginal rights (including title)." This section does not describe the tiered systems of consultation which Aurora LNG has, to date, employed. Please update to provide additional detail on this tiered system, including the exclusion of Gitxaala Nation for field studies.	Information that provides context related to Aurora LNG's consultation approach to consultation and field work participation, is provided in the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups". This technical memo will be filed with the BC EAO. Details regarding Aurora LNG's consultation approach can also be found in the Aboriginal Consultation Reports posted on the EAO website and in the Section 11 order issued by EAO, as amended.
1836.1	round 1	Gitxaala Nation	12.5.3.2	Aboriginal Consultation	This section states that "…Aurora LNG will continue to discharge procedural aspects of the duty to consult that have been delegated to Aurora LNG from the Crown … This includes…" At no point in the listing does Aurora LNG identify that they will complete an effects assessment on Aboriginal rights and interests. Instead, it just says they will obtain and discuss "...information with Aboriginal Groups about specific Aboriginal interests that may be affected." Please clarify whether Aurora LNG is responsible for identifying potential adverse effects to Aboriginal rights and interests or whether this will be completed by the BC EAO.	The BC EAO has delegated the following specific consultation activities to Aurora LNG in the Section 11 Order (as amended) for the Project: - providing a response to comments received from Aboriginal Groups - preparing an Aboriginal Consultation Plan and supporting Aboriginal Consultation Reports with opportunities for review and comment by Aboriginal Groups - specifying Aboriginal Interests identified by Aboriginal Groups, and identifying measures to avoid or mitigate such potential adverse effects and/or to otherwise accommodate the concerns of Aboriginal Groups as appropriate; and - demonstrating fair consideration given to incorporating feedback from Aboriginal Groups Aurora LNG has prepared the Aboriginal Interests section of the Application in a manner consistent with the Section 11 Order (as amended) and with Section 12.5 of the approved Application Information Requirements.
1837.1	round 1	Gitxaala Nation	12.5.6.3	Aboriginal Consultation	The Past Use section indicates that "…Gitxaala Nation may have had … fish traps in the area." The fish trap identified by Gitxaala harvesters was identified as a historical fish trapthat was made by Gitxaala and still exisits today. It should be referenced as such.	Page 12-153 (Present Use) includes the following text that addresses Gitxaala Nation's request: "Several Gitxaala Nation members identified a past fish trap site just east of Frederick Point (Calliou Group 2016a). According to Gitxaala Nation, this fish trap site is still present today (Calliou Group 2016a)." Because this fish trap is an historic site, Aurora LNG also assumes that it was used in the past, and therefore included it in its summary of Gitxaala Nation past use of the Project Vicinity.
1838.1	round 1	Gitxaala Nation	12.5.6.3	Aboriginal Consultation	In the Future Use section it is noted that "During consultation, Gitxaala Nation indicated that it has a strong interests in the future management of resources." This statement is a weak substitute by Aurora LNG for a more fulsome consultation with Gitxaala on potential future use. Had Gitxaala been engaged by Aurora LNG on potential future use, more information could have and would have been provided.	The Future Use section on page 12-156 presents "Existing Conditions" to the extent that Aurora LNG was able to make reasonable predictions based on available information at the time the Application was prepared. As described in Section 12.5.6.5 (page 12-157), Aurora LNG will continue to consult with Aboriginal Groups, including Gitxaala Nation, throughout the life of the Project to address Project-related issues, includingissues related to potential future use of the Project area by Aboriginal Groups.
1839.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	There is little to no discussion on the potential effects mechanisms and the application, instead, jumps immediately to mitigation - of which Gitxaala had no input. This is deficient and problematic.	Section 12.5.3 of the Application provides detailed information on Aurora LNG's approach to assessing the effects of the Project on Aboriginal title, including the identification of potential effects. Section 12.5.6.5 specifically applies these methods to Gitxaala Nation. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.
1840.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	Ongoing consultation as a mitigation measure is not sufficient. Particularly, as Gitxaala has experienced a sub-par consultation effort from Aurora LNG to date.	Aurora LNG believes that it has undertaken meaningful consultation with Gitxaala Nation on the Projectsince early 2014, prior to the project description being filed. For more information on consultation activities, refer to the first and second Aboriginal Consultation Reports (available on EAO's website). Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.
1841.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	This section glosses over the loss of the PDA for enjoyment, experience and use of the land by Gitxaala and instead focuses on use outside of the PDA, which would also be affected to some undefined degree. While Gitxaala would not be prevented from using these areas, they may no longer prefer to use these areas and therefore use and enjoyment of these areas would indirectly be affected.	In Section 12.5.6.5, page 12 - 158, Aurora LNG specifically acknowledges that potential indirect effects on Gitxaala Nation users at locations outside of the PDA are also possible. In addition, Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3 , which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1842.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	The section on Importance, Special Characteristics or Unique Features of the Project Vicinity does not contain information related to that topic. Please update this text.	This information was inadvertently omitted. The following additional text has been captured in an errata document that has been created and filed with the BC EAO.: "Aurora LNG understands that the PDA is within an area traditionally shared between several Gitxaala Nation house groups and that two house groups have traditional stewardship areas nearby at Porpoise Harbour, Watson Island, Lelu Island, Ridley Island, and Tugwell Island. Gitxaala Nation community members currently live in and use the area around the Prince Rupert Harbour. In addition, the Project vicinity is approximately 60 km by boat from the village of Kitkatla—a distance that could be covered in a few hours by a Gitxaala Nation member. Gitxaala Nation members have historically used the Prince Rupert Harbour area "as an important camping and resource harvesting area" while traveling to the Nass River eulachon harvest, and there is some evidence that Gitxaala Nation may have had winter villages in the area (Gitxaala Nation 2014; Calliou Group 2016a)."
1843.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	The calculation of the PDA relative to the entire Gitxaala Nation traditional territory is inappropriate. It should, instead, be calculated from the shared territory which Digby Island is a part of for an accurate representation of land lost to those harvesters that use that area.	Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1844.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Aboriginal Title Section loosely applies characterization of residual effects assessment criteria when discussing the persistence of the effect. However, this is the only mention of these characterizations despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.

1845.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Gitxaala access to the harvestable species and preference for harvesting in specific locales and perception of those same harvesting locales must also be considered for harvesting-related Aboriginal interests.	Gitxaala Nation access to harvestable species is assessed in Section 12.5.6.6 starting on page 12-168. This was also informed from information contained in Section 6 of Appendix S.2 (Aboriginal Consultation). Aurora LNG does not have adequate data indicating the preferred harvest locales of different Gitxaala Nation people and why they prefer those sites. This lack of data prevents Aurora LNG from undertaking further assessments of potential Project-effects on harvest locale preferences and perceptions. As such, Aurora LNG presented the relevant constraints generally and theoretically in the assessment of effects to Gitxaala Nation harvesting (see pages 12-174 to 12-176).Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1846.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Reliance fully on the Wildlife Resources Section 4.7 assessment means that there was no consideration of Gitxaala's use of the species in this assessment. That is problematic and must be amended.	Gitxaala Nation's statement in this comment is inaccurate. The assessment in Section 12.5.6.6 considered Gitxaala Nation use of various species. See pages 12-160 to 12-162 for the extensive list of known Gitxaala Nation use species and the locations of use of the various species within the Project vicinity. The summary of conclusions from the relevant VC assessments was developed based on which species Gitxaala Nation indicated it uses and values in publicly available documents and Project-specific studies.
1847.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Reliance fully on the Freshwater Fish and Fish Habitat Section 4.8 assessment means that there was no consideration of Gitxaala's use of the species in this assessment. That is problematic and must be amended.	Gitxaala Nation's statement in this comment is inaccurate. The assessment in Section 12.5.6.6 considered Gitxaala Nation use of various species. See pages 12-160 to 12-162 for the extensive list of known Gitxaala Nation use species and the locations of use of the various species within the Project vicinity. The summary of conclusions from the relevant VC assessments was developed based on which species Gitxaala Nation indicated it uses and values in publicly available documents and Project-specific studies.
1848.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Reliance fully on Marine Fish and Fish Habitat (Section 4.9), Marine Mammals (Section 4.10) and Marine Birds (Section 4.11) assessments means that there was no consideration of Gitxaala's use of the species in this assessment. That is problematic and must be amended.	Gitxaala Nation's statement in this comment is inaccurate. The assessment in Section 12.5.6.6 considered Gitxaala Nation use of various species. See pages 12-160 to 12-162 for the extensive list of known Gitxaala Nation use species and the locations of use of the various species within the Project vicinity. The summary of conclusions from the relevant VC assessments was developed based on which species Gitxaala Nation indicated it uses and values in publicly available documents and Project-specific studies.
1849.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Reliance fully on the Vegetation and Wetland Resources Section 4.6 assessment means that there was no consideration of Gitxaala's use of the species in this assessment. That is problematic and must be amended.	Gitxaala Nation's statement in this comment is inaccurate. The assessment in Section 12.5.6.6 considered Gitxaala Nation use of various species. See pages 12-160 to 12-162 for the extensive list of known Gitxaala Nation use species and the locations of use of the various species within the Project vicinity. The summary of conclusions from the relevant VC assessments was developed based on which species Gitxaala Nation indicated it uses and values in publicly available documents and Project-specific studies.
1850.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Travel routes were not assessed in terms of Gitxaala harvester preference and avoidance behavior related to this preference was not explored.	Potential effects on Gitxaala Nation use of marine travelways are assessed in Section 12.5.6.10. Potential effects on the experience of harvesting, including air quality, noise, and visual quality effects, are assessed in Section 12.5.6.6 (pages 12-170 to 12-176).Gitxaala Nation did not provide Aurora LNG with adequate data indicating the preferred marine travelways used by Gitxaala Nation members, and why those routes are preferred. This lack of data prevented Aurora LNG from being able to predict specific avoidance behaviours by Gitxaala Nation members.As such, Aurora LNG presented the relevant constraints generally and theoretically in the assessment of effects to Gitxaala Nation harvesting (see pages 12-174 to 12-176).
1851.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	The section on Harvesting Grounds within the Shipping Route does not take into account Gitxaala harvesters preferences in terms of Project-related shipping, while the shipping may not increase to levels where Gitxaala harvesters are fully excluded from the area, they may still prefer not to harvest in the area where the ships are due to perceived risk.	Aurora LNG acknowledged that the physical presence of shipping vessels may interfere with (but not prevent) Gitxaala Nation use of the Project vicinity. This conclusion aligns with Gitxaala Nation's comment.
1852.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	In the section on Access Routes within the Shipping Route it states that "Because shipping has occurred along the shipping route for decades, Aurora LNG anticipates that mariners will be accustomed to navigating around large vessel traffic." However, while Gitxaala harvesters are accustomed to the current level of marine traffic, the addition of the Project will increase that level of traffic. This level must be assessed in terms of Gitxaala's perceptions and preferences.	Aurora LNG considered the cumulative effects of shipping activity in the region on Gitxaala Nation harvesting activities in Section 12.5.6.6 (on page 12-170). Gitxaala Nation did not provide Aurora LNG with adequate data indicating the preferred marine travelways used by Gitxaala Nation members, and why those routes are preferred. This lack of data prevented Aurora LNG from being able to predict specific avoidance behaviours by Gitxaala Nation members.As such, Aurora LNG presented the relevant constraints generally and theoretically in the assessment of effects to Gitxaala Nation harvesting (see pages 12-174 to 12-176).
1853.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	How were the identified exceedances for Air Quality and Human Health cross referenced with Gitxaala harvested species and harvesting calendars to identify times of risk for Gitxaala harvesters? Further, how will Gitxaala harvesters be notified of times of air quality risk?	The assessment of human health related to air quality considered areas on land that are populated (e.g., residential and commercial areas). In these areas, the air quality would be less (i.e., better air quality) than the BC ambient air quality objectives, and there is no significant human health risk predicted related to air quality. The areas identified where criteria air contaminants were greater (i.e., poorer air quality) than the BC ambient air quality objectives were associated with existing industrial sites (e.g. Fairview Terminal) and are not sites that are expected to offer harvesting opportunities for Gitxaala Nation members.
1854.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	As previously noted, the effects of wake must be calculated differently. While the wake may occur within the natural variability of waves, Gitxaala is concerned with wake specifically at times of low or zero tide and how that will affect Gitxaala harvesters. This specifically has not been addressed.	Aurora LNG believes that this concern has been adequately addressed in the assessment of the potential effects of wake on the experience of harvesting (starting on page 12-171). The assessment specifically considers Gitxaala Nation harvesting activities at zero or low tides, right at the water's edge, on a particularly calm day, in a location that is directly exposed to shipping traffic. In those circumstances, it is possible that Gitxaala Nation harvesters would notice wake waves, however waves are not anticipated to pose any safety risk to Gitxaala Nation harvesters, nor interfere with harvesting activities.
1855.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	In the Section related to Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests the conclusion is repeated that Gitxaala harvesters can go elsewhere. This conclusion that Gitxaala harvesters may harvest elsewhere is problematic for numerous reasons which have been outlined previously. In this section it is bolstered by the following statement: "...the degree to which the Project interferes with harvesting could be reduced given that resources are anticipated to be available elsewhere nearby, often in locations closer to the community of Kitkatla." This is problematic for Gitxaala as there are many Gitxaala harvesters who do not reside in Kitkatla and locations closer to the reserve are not preferred or easily accessible. Please remove this conclusion.	Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1856.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests it states that "The Project would not prevent Gitxaala Nation members from harvesting resources within or adjacent to the shipping routes…" However, this does not take into account the preferences or perceptions of Gitxaala harvesters. This is problematic as it may increase avoidance behaviors in the Project and Project traffic vicinity.	Gitxaala Nation did not provide Aurora LNG with adequate data indicating the preferred marine travelways and marine harvest sites used by Gitxaala Nation members, and why those routes and sites are preferred. This lack of data prevented Aurora LNG from being able to predict specific avoidance behaviours by Gitxaala Nation members. As such, Aurora LNG presented the relevant constraints generally and theoretically in the assessment of effects to Gitxaala Nation harvesting (see pages 12-174 to 12-176).
1857.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests, it states that "Given the results of previous studies, it is not anticipated that there will be any risk to the safety of harvesters from shipping-related wake. As previously noted, the effects of wake must be calculated differently. While the wake may occur within the natural variability of waves, Gitxaala is concerned with wake specifically at times of low or zero tide and how that will affect Gitxaala harvesters. This specifically has not been addressed.	Aurora LNG believes that this concern has been adequately addressed in the assessment of the potential effects of wake on the experience of harvesting (starting on page 12-171). The assessment specifically considers Gitxaala Nation harvesting activities at zero or low tides, right at the water's edge, on a particularly calm day, in a location that is directly exposed to shipping traffic. In those circumstances, it is possible that Gitxaala Nation harvesters would notice wake waves, however waves are not anticipated to pose any safety risk to Gitxaala Nation harvesters, nor interfere with harvesting activities.

1858.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Harvesting-Related Aboriginal Interests Section does not apply characterizations of residual effects despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.
1859.1	round 1	Gitxaala Nation	12.5.6.7	Aboriginal Consultation	In the Access to Specific Locations Section, it is noted that the Project avoids the majority of the most complex archaeological and heritage sites, however, this does not account for Sacred sites or named sites of importance to Gitxaala which may not have archaeological significance within the LAA. This is problematic as access to these other sites must be considered.	Gitxaala Nation is correct that sites protected under the Heritage and Conservation Act are considered in the Access to Specific Locations section of the assessment in Section 12.5.6.7 (starting on page 12-178). However, Aurora LNG also considers Project effects to locations, landforms, natural features, and access routes associated with cultural and spiritual use that are not HCA-protected sites (on pages 12-178 and 12-180).
1860.1	round 1	Gitxaala Nation	12.5.6.7	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Cultural Wellbeing Section does not apply characterizations of residual effects despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.
1861.1	round 1	Gitxaala Nation	12.5.6.7	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Cultural Wellbeing Section it does not discuss Sacred sites within the LAA and the potential Project interference with these sites. This is problematic as Gitxaala perception and preference could result in potential impacts to the use of these areas. Further, it is noted that Project shipping will not interfere with use of cultural, historic or spiritual sites but that the presence may affect Gitxaala experience, however, this concept should be further explored.	The spatial boundary of the assessment of effects on Aboriginal Interests is not a LAA. Rather, Part C considers activities and effects within the Project vicinity. "Project vicinity" means the spatial and temporal area where interactions between predicted Project-related effects and an Aboriginal Interest are anticipated to occur. Effects on Gitxaala Nation's use of culturally and spiritually important sites within the Project vicinity are described in detail on page 12-184 (Degree of Predicted Residual Effects). In that assessment, Aurora LNG considered effects on the sacred site between Kaien Island and Venn Passage. The assessment concluded that construction activities could interfere with Gitxaala Nation's access to that site. The assessment (on page 12-184) also considers aesthetic effects to Gitxaala Nation use of cultural, historic, and spiritual sites from shipping activities. Gitxaala Nation members' experience of exercising cultural Aboriginal Interests may be affected at the following known sites: camping areas on the Tree Nob group of islands and around Stephens Island, and a past camp on Barrett Rock. The assessment also concluded that the Project would be visible to Gitxaala Nation members participating in activities related to cultural well-being in Dodge Cove, on Barrett Rock, or on Lima Point and may be able to hear noise from the Project.
1862.1	round 1	Gitxaala Nation	12.5.6.8	Aboriginal Consultation	The section on Erosion of House-Based Jurisdiction and Management of the Project Vicinity states that "Aurora LNG has not received information from Gitxaala Nation indicating how house groups currently manage their stewardship areas." However, Section 3.5 of the Gitxaala Use Report outlines the Gitxaala Resource Management Principles. Please refer to this section for details to bolster the assessment. Additionally, further consultation with Gitxaala on areas where more information is required is recommended rather than simply stating that this information is not available.	Aurora LNG appreciated the information provided by Gitxaala Nation in the Project-specific studies, including both the Gitxaala Use Study and the Gitxaala VC Report. Both of these studies contained information that was relevant and useful for the assessment of effects of Gitxaala Nation traditional governance. The information provided by Gitxaala Nation regarding traditional governance systems, responsibilities, and principles formed the basis of the assessment in Section 12.5.6.8. The quote highlighted by Gitxaala Nation contains an error and should read: "Aurora LNG has not received information from Gitxaala Nation indicating how these two house groups currently manage their stewardship areas. As a result, Aurora LNG cannot predict how traditional jurisdiction and management of the Project vicinity would be affected by the Project." An errata document has been created that captures these corrections and it will be filed with the BC EAO.
1863.1	round 1	Gitxaala Nation	12.5.6.8	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Traditional Governance Section does not apply characterizations of residual effects despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.
1864.1	round 1	Gitxaala Nation	12.5.6.9	Aboriginal Consultation	Gitxaala does not agree that continued consultation will negate effects to Gitxaala self-governance as Aurora LNG has little to no control over management of lands outside of the PDA and the PDA will be completely lost to Gitxaala Nation.	Aurora LNG respectfully disagrees with Gitxaala Nation. A commitment to continued consultation can serve to reduce potential adverse effects on Gitxaala Nation's right to self-government by helping to fully understand the right, and working together to develop additional mitigation measures.
1865.1	round 1	Gitxaala Nation	12.5.6.9	Aboriginal Consultation	The comparison of the Project vicinity to Gitxaala's entire traditional territory is inappropriate as Gitxaala Nation is divided into house and shared territories. Additonally, neither the LAA and RAA encompasses Gitxaala territory and project effects are assesed at the LAA and RAA scale - this should be no different for this potential effect.	The spatial boundary of the assessment of effects on Aboriginal Interests is not a LAA or RAA. Rather, Part C considers activities and effects within the Project vicinity. "Project vicinity" means the spatial and temporal area where interactions between predicted Project-related effects and an Aboriginal Interest are anticipated to occur. Gitxaala Nation raised the concern about the comparison of the Project vicinity to the Gitxaala territory during its review of a draft version of this part of the Application prior to submission of the Application for screening. As a result of that conversation, Aurora LNG added the following caveat to the description of the Relative Availability of Other Areas (which is a requirement of the AIR): "Aurora LNG understands, through consultation with Gitxaala Nation, that the locations that are available for Gitxaala Nation community members for land and marine use planning may be restricted by various factors including habitat differences, commercial or residential development, or private and restricted lands." Aurora LNG assumes that traditional Gitxaala governance practices would not prevent land and marine use planning efforts. Please also see the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1866.1	round 1	Gitxaala Nation	12.5.6.9	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Right to Self-Government Section does not apply characterizations of residual effects despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.
1867.1	round 1	Gitxaala Nation	12.5.6.10	Aboriginal Consultation	This section indicated that "...Gitxaala Nation has asserted a right to use water within its traditional territory. Aurora LNG understands "use of water" to mean marine navigation." This is an impoverish view of "use of water" which can mean many things; including, but not limited to, spiritual uses, harvesting uses and cultural learnings.	Potential effects to use of waterways for harvesting purposes are assessed in Section 12.5.6.6. Potential effects to spiritual and cultural use of sites on or near water are assessed in Section 12.5.6.7.
1868.1	round 1	Gitxaala Nation	12.5.6.10	Aboriginal Consultation	Similar to previous comments on marine travel routes, Aurora LNG did not consider the perception or preference of Gitxaala harvesters when evaluating route and Project-related marine traffic. This is an omission which must be rectified prior to application approval.	Potential effects on Gitxaala Nation use of marine travelways are assessed in Section 12.5.6.10. Potential effects on the experience of harvesting, including air quality, noise, and visual quality effects, are assessed in Section 12.5.6.6 (pages 12-170 to 12-176).Gitxaala Nation did not provide Aurora LNG with adequate data indicating the preferred marine travelways used by Gitxaala Nation members, and why those routes are preferred. This lack of data prevented Aurora LNG from being able to predict specific avoidance behaviours by Gitxaala Nation members.As such, Aurora LNG presented the relevant constraints generally and theoretically in the assessment of effects to Gitxaala Nation harvesting (see pages 12-174 to 12-176).
1869.1	round 1	Gitxaala Nation	12.5.6.10	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Use of Marine Travelways Section does not apply characterizations of residual effects despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.

1870.1	round 1	Gitxaala Nation	12.5.6.11	Aboriginal Consultation	There is no information contained in this section that is specific to Gitxaala economic conditions and simply regurgitates information from previous sections. This is problematic and ensures that Gitxaala economic conditions are never fully assessed.	Aurora LNG believes that Gitxaala Nation's ability to access economic opportunities is adequately assessed in other parts of the Application (see Sections 5.0, 11.3, 12.5.6.6, and 12.5.6.10). Economic benefits arising from Aboriginal title-related rights are discussed in Section 12.5.6.5. Aurora LNG is also of the view that there will be no additional adverse effects on Gitxaala Nation economic opportunities other than what has already been assessed in those sections. As such, no additional interference is anticipated beyond the anticipated effects predicted for Aboriginal harvesting and the characterizations in Section 5 and Section 11.3. Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3 , which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
1871.1	round 1	Gitxaala Nation	12.5.6.11	Aboriginal Consultation	This section is even more abbreviated than previous sections and does not contain a listing of potential mitigation measures. This highlights the cursory nature which economic conditions were approached.	Aurora LNG chose to present this section in an abbreviated format because potential effects to Gitxaala Nation's economic opportunities are extensively addressed elsewhere in the Application (as described in Section 12.5.6.11).
1872.1	round 1	Gitxaala Nation	12.5.6.11	Aboriginal Consultation	In the Conclusions Regarding Residual Adverse Effects on Gitxaala Nation Economic Opportunities Section does not apply characterizations of residual effects despite this being part of the methodology in Section 3. In fact, this entire volume (Volume 12) does not have any mention of characterization of residual effects and does not list any criteria. Further, there is no determination of the likelihood of the residual effects, no discussion of the significance and no discussion of the confidence or risk. This is contrary to section 12.5.1 which states that the degree to which the Project may result in adverse residual effects would be based upon "...the methodology described in Section 3.0 of the Application..."	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups.
1873.1	round 1	Gitxaala Nation	12.5.6.12	Aboriginal Consultation	This section states that "Aurora LNG is unaware of any outstanding Aboriginal Interests issues identified by Gitxaala Nation that have not already been addressed in Part B or Part C of the application." Please take the comments contained within this table as outstanding Aboriginal interests issues and update this section of the report to reflect these concerns. Additionally, Gitxaala has provided numerous sources of comment to Aurora LNG to date. None of these comments were reflected in this section, despite Aurora LNG and Gitxaala not coming to agreement on a variety of issues. This mischaracterizes the consultation that has taken place to date and mischaracterizes the process with Gitxaala overall.	The following records included in the Application present Gitxaala Nation's concerns, issues, and views with the Application: Table 7-1 of Appendix S1 (ACR#2): Gitxaala Nation Interests, Concerns, and Status Table 11.7-3: Views of Gitxaala Nation on the Assessment of Section 5(1)(c) Effects Table 12.3-3: Key Concerns for Gitxaala Nation Table 12.9-1: Pre-Application Views of Aboriginal Groups on Part C (starting on page 12-325). Aurora LNG is of the opinion that the pre-Application views of Gitxaala Nation have been appropriately and accurately presented in the tables listed above. Gitxaala Nation views and topics of concern raised since the filing of the Second Aboriginal Consultation Report, including the Application review phase of the environmental assessment, will be included in the Third Aboriginal Consultation Report. Gitxaala Nationwill have an opportunity to review and comment on a draft version of the report before it is finalized and filed with the EAO.
1874.1	round 1	Gitxaala Nation	12.7	Aboriginal Consultation	This section identifies that Aurora LNG "…believes it has adequately assessed matters of concern to Aboriginal Groups. Therefore no other matters of concern have been assessed here." As evidenced by the this table - this is not the case. Please review this table and update Section 12.7 accordingly.	While Aurora LNG acknowledges that the items described in Gitxaala Nation's comments represent Gitxaala Nation concerns with the assessment, "Other Matters of Concern" as described in Section 12.7 of the AIR are "matters of concern raised by Schedule B Aboriginal Groups related to potential adverse environmental, economic, social, heritage and health effects of the proposed Project that are not addressed in Part B of the Application." Aurora LNG is of the opinion that the concerns raised in Gitxaala Nation's IR comments do not necessarily fall under the description of "Other Matters of Concern" in the AIR, but are rather Gitxaala Nation's issues and concerns with assessments of effects contained in the Application.
1875.1	round 1	Gitxaala Nation	Table 12.8-1	Aboriginal Consultation	This table does not relate to the many specific consultation issues Gitxaala has with Aurora LNG and this Project. For example, there is no mention of the lack of inclusion of Gitxaala in the ongoing field programs and Gitxaala's significant issues with that exclusion. In fact, it seems Aurora LNG has only characterized issues which it has immediate mitigation measures available, rather than summarizing all Gitxaala related issues.	Consistent with Section 12.8 of the AIR, Table 12.8-1 identifies the Aboriginal Interests that may be impacted by the proposed Project and "Other Matters of Concern" (defined in Section 12.7 of the AIR as "potential adverse environmental, economic, social, heritage and health effects of the proposed Project that are not addressed in Part B of the Application") and measures to avoid, mitigate or otherwise manage the effects. Table 12.8-1 also provides Aurora LNG's perspective on the status of each topic. During consultation with Aboriginal Groups, Aurora LNG sought to address concerns raised by Aboriginal Groups related to potential adverse environmental, economic, social, heritage and health effects of the proposed Project in one of the following sections: (a) the assessment of a specific VC in Part B of the Application (b) as a component of the assessment of the requirements under CEAA 2012 5(1)(c) (see Section 11.3) (c) as an Aboriginal Interest discussed in Part C. For this reason, Table 12.8-1 does not include any "Other Matters of Concern". Table 12.3-3 of the Application provides a brief summary of key issues raised by Aboriginal Groups during the pre-Application phase of the environmental assessment, and Aurora LNG's responses to these concerns. Detailed tables of Gitxaala Nation interests, concerns and status are provided in Table 7-1 of the ACR #2 (see Appendix S.1). Further information that provides context related Aurora LNG's approach to consultation and fieldwork participation is provided in the technical memo entitled "Aurora LNG's approach to Consultation with Aboriginal Groups".
1876.1	round 1	Gitxaala Nation	Table 12.9-1	Aboriginal Consultation	In almost all cases, all instances of an issue with the pre-Application have remained without resolution. Simply including Gitxaala's wording in the application does not alleviate the underlying issue. This is an extremely problematic approach as it reduces Gitxaala's thoughtful commentary on the pre-application to ancillary information which does not inform the assessment at all. This is particularly apparent in the comments listed below, but it should be noted that in almost every instance of a previous comment, it went unaddressed.	Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). For further information please refer to the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the BC EAO.
1877.1	round 1	Gitxaala Nation	Table 12.9-1	Aboriginal Consultation	Gitxaala identified in this table that there is a lack of understanding of some components by Aurora LNG which could have been remedied with further consultation with Gitxaala Nation, specifically related to cultural wellbeing being equated to archaeological and heritage sites as well as the development of mitigation measures. Aurora LNG's response to this item is not sufficient and has not addressed the original concern, which, as evidenced by this table - has yet to be remedied.	Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3 , which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order). Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.

1878.1	round 1	Gitxaala Nation	Table 12.9-1	Aboriginal Consultation	Gitxaala identified in this table that Gitxaala required ongoing consultation on mitigation measures. This was not completed by Aurora LNG to date, as evidenced by Gitxaala's lack of input into mitigation measures outlined in the Application.	Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review, including mitigation measures proposed to reduce potential effects on Gitxaala Nation Aboriginal Interests, and to discuss any views or feedback at Technical Workshop #3 , which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. In January 2017, Aurora LNG held Technical Workshop #4 to discuss the assessment of VCs set out in Part B of the Application. Gitxaala Nation representatives attended the initial sessions of the first day of the workshop. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1879.1	round 1	Gitxaala Nation	Table 12.9-1	Aboriginal Consultation	This table also outlines Gitxaala's pre-Application concern that the characterization of residual effects was not completed in accordance with methodology outline in Section 3.0. This is a remaining issue in the Application and has been noted by Gitxaala numerous times.	The assessment of effects on Aboriginal Interests in Section 12 of the Application relies on several methods described in Section 3, including the identification of existing conditions, effects mechanisms, and mitigation measures. Due to the qualitative and intangible nature of some of the Aboriginal Interests considered in Section 12.5.6, and in light of the CEAA 2012 Section 5(1)(c) assessment completed in Sections 11.3 - 11.6 of the Application, the characterization of effects as described in Section 3 (i.e., magnitude, duration, frequency, geographic extent, reversibility, likelihood, significance) was not utilized for Section 12.5.6. To avoid redundancy and address the qualitative nature of Aboriginal Interests, the "Degree of Effects" sections describe the Project's potential interference with the exercise of an Aboriginal Interest (similar to a magnitude characterization) taking into account the relative importance of the Project vicinity, as well as the availability of other areas within the traditional territory of an Aboriginal Group (similar to a context characterization). This is consistent with the Application Information Requirements. Section 11.3 of the Application incorporates a more quantitative assessment of CEAA 2012 section 5(1)(c) effects. Many of these effects are closely related to the exercise of Aboriginal Interests (e.g., current use of lands and resources for traditional purposes). As a result, readers are encouraged to read both Section 11.3 (Requirements Under CEAA 2012 Section 5(1)(c)) and Section 12.5 (Aboriginal Interests) to obtain a comprehensive understanding of how the Project has the potential to affect Aboriginal Groups. Gitxaala Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3 which was held on October 20-21, 2016. Aurora LNG, as part of that workshop, recorded the views provided by Gitxaala Nation with respect to the assessment of CEAA Section 5(1)(c) effects and Aboriginal Interests in Part C. The information recorded as part of the workshop was incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR. As noted in Table 12.9-1, in many cases feedback received from Gitxaala Nation resulted in revisions to the final version of Part C submitted to the BC EAO.
1880.1	round 1	Gitxaala Nation	Table 12.9-1	Aboriginal Consultation	Similar to the above comments on percentage calculation, Gitxaala commented, pre-application, on the inappropriate subtraction of the PDA from Gitxaala's full traditional territory. This comment was not resolved.	Gitxaala Nation raised the concern about the comparison of the Project vicinity to the Gitxaala territory during its review of a draft version of this part of the Application prior to submission of the Application for screening. As a result of that conversation, Aurora LNG added caveats to the incorporation of percentages of the Relative Availability of Other Areas (which is a requirement of the AIR) for several Aboriginal Interests: Section 12.5.6.5 (page 12-159), Section 12.5.6.6 (page 12-175), Section 12.5.6.7 (pages 12-185 and 12-186), and Section 12.5.6.9 (page 12-191). Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments". This technical memo will be filed with the BC EAO.
1881.1	round 1	Gitxaala Nation	3.6	Assessment Methods	Concerning proposed management plans as mitigation measures, any proposed plan should have components and enforcement frameworks detailed in the appendices, or a commitment to minimum standards such as IFC PS, WB EHS Guidelines, etc. See Memo "0217_AGIforGitxaala_Social Impacts" for comments on management plans.	Details of the Environmental Management Plans will be developed prior to commencement of the Project phase to which they apply, consistent with any requirements outlined in Environmental Assessment Certification Conditions. The Project will comply with all applicable federal and provincial legislation, regulations, and permitting requirements. Mitigation measures will be developed in accordance with industry best management practices (BMPs) and applicable regulations as summarized in the technical memo "Mitigation Measures Categorization Table".
1882.1	round 1	Gitxaala Nation	3.7	Assessment Methods	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on cumulative effects. These comments apply to all cumulative effects sections in the Application.	The memo "0217_AGIforGidaala_Social Impacts" provides background context about the use of zoning and policy tools for strategic management of cumulative impacts from development, and recommends that the EAO "elevate the importance of coordination of efforts in the form of zoning, regional management bodies, or government managed strategic planning to facilitate better assessment and mitigation of potential adverse impacts on communities." The cumulative effects sections in the Application were completed in accordance with the Application Information Requirements (AIR) for the Aurora LNG Project. The draft AIR was circulated to the members of the working group (including regulatory agencies and Aboriginal Groups) for comment, and finalized once comments had been addressed to the satisfaction of the EAO. The assessments of residual and cumulative effects in the Application consider the zoning, regulatory context, and land and marine use planning applicable to each Valued Component.
1883.1	round 1	Gitxaala Nation	3.10	Assessment Methods	Proponent should describe a management system for monitoring predicted impacts and effectiveness of mitigation measures. A management system should include roles and responsibilities, budgeting, reporting linkages, and enforcement at the very least. Some of these are present in section 14 Proposed Operational and Management Plans, and we provide recommendations for the inclusion of others. We recommend benchmarking management plans against IFC Performance Standards for Environmental and Social Responsibility (in particular, Performance Standard 1 - Environemental and Social Management Systems) and consulting with Aboriginal groups when finalizing key management plans and monitoring systems. See Memo "0217_AGIforGitxaala_Social Impacts" for comments on management plans.	Section 3.10 of the Application outlines the methods used in the Application for follow-up and monitoring, consistent with section 3.8.5 of the Application Information Requirements. See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1884.1	round 1	Gitxaala Nation	3.1	Assessment Methods	The Community Health VC does not specifically integrate accepted Aboriginal determinants of health that reflect sensitivity to environmental change and impacts to cultural continuity.	Aurora LNG acknowledges that not all social determinants of health (SDOH) that apply to Aboriginal Groups have been included in the assessment of change in community health and wellness provided in Section 6.6; however, with respect to Gitxaala, numerous indicators, overarching themes and pathways (effect mechanisms) associated with additional SDOH and contributors to wellness presented in the Shandro Report are captured under SDOH assessed in Section 6.6. This is accomplished either through reference to other sections of the Application or through direct mention in the assessment. While not all of the contributors to wellness provided by Gitxaala Nation are included, consistent messaging that Aboriginal Groups are more susceptible to changes in baseline conditions is established and characterized where applicable (as vulnerable populations). See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo for additional consideration of SDOH and contributors of wellness presented by Gitxaala Nation. The technical memo will be filed with the BC EAO.
1885.1	round 1	Gitxaala Nation	3.2.2	Assessment Methods	The report "Potential Risks, Impacts, and Opportunities of the Aurora LNG Project for Gitxaala Nation" (referred to as "Shandro et al., 2016") is not cited as reference material.	In November 2016, Gitxaala Nation provided Aurora LNG with a study entitled Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation (the "Shandro Report"). As Aurora LNG had completed the analysis and writing for its Application for Environmental Assessment Certificate (the "Application") at the time that the Shandro Report was received, information contained in the report had not been reviewed or directly incorporated into the Application which was submitted to the BC EAO in November, 2016. Aurora LNG has prepared a memo titled "Response to the Potential Risks, Impacts, and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" toprovide a summary of its review and analysis of the information presented in the Shandro Report. New information contained within the Shandro Report that was not previously considered in the Application has been analyzed, and subsequent implications to the conclusions provided in the Application, including any required changes, are described in the memo. This technical memo will be filed with the BC EAO.
1886.1	round 1	Gitxaala Nation	3.2.3	Assessment Methods	The report "Potential Risks, Impacts, and Opportunities of the Aurora LNG Project for Gitxaala Nation" (referred to as "Shandro et al., 2016") is not cited as reference material.	In November 2016, Gitxaala Nation provided Aurora LNG with a study entitled Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation (the "Shandro Report"). As Aurora LNG had completed the analysis and writing for its Application for Environmental Assessment Certificate (the "Application") at the time that the Shandro Report was received, information contained in the report had not been reviewed or directly incorporated into the Application which was submitted to the BC EAO in November, 2016. Aurora LNG has prepared a memo titled "Response to the Potential Risks, Impacts, and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" to provide a summary of its review and analysis of the information presented in the Shandro Report. New information contained within the Shandro Report that was not previously considered in the Application has been analyzed, and subsequent implications to the conclusions provided in the Application, including any required changes, are described in the memo. This technical memo will be filed with the BC EAO.
1887.1	round 1	Gitxaala Nation	3.4	Assessment Methods	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The description of primary data collected and utilized in sections 5 and 6 is included in those sections, as appropriate. This includes information on primary data collected during key informant interviews, emails and telephone correspondence.
1888.1	round 1	Gitxaala Nation	4.2.3.3	Air Quality	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.2.3.3 is the summary of existing conditions section for Air Quality. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1889.1	round 1	Gitxaala Nation	4.3	Greenhouse Gases	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.3 is the effects assessment for Greenhouse Gases. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1890.1	round 1	Gitxaala Nation	4.4.3.3	Acoustic Environment	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.4.3.3 is the summary of existing conditions section for Acoustic Environment. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1891.1	round 1	Gitxaala Nation	4.5.3.3	Water Quality	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.5.3.3 is the summary of existing conditions section for Freshwater Quality. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1892.1	round 1	Gitxaala Nation	4.5.13.4	Water Quality	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.5.13.4 is the summary of existing conditions section for Marine Water Quality. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1893.1	round 1	Gitxaala Nation	4.6.3.2	Vegetation and Wetland Resources	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.6.3.2 is the overview of existing conditions section for Vegetation and Wetland Resources. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1894.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.7 is the effects assessment for Wildlife Resources. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1895.1	round 1	Gitxaala Nation	4.8.3.3	Freshwater Fish and Fish Habitat	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.8.3.3 is the summary of existing conditions section for Freshwater Fish and Fish Habitat. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.

1896.1	round 1	Gitxaala Nation	4.9.3.2	Marine Fish and Fish Habitat	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation)
1897.1	round 1	Gitxaala Nation	4.10.3.2	Marine Wildlife - Marine Mammals	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.10.3.2 is the overview of existing conditions section for Marine Mammals. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1898.1	round 1	Gitxaala Nation	4.11.3.2	Marine Wildlife - Marine Birds	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 4.11.3.2 is the overview of existing conditions section for Marine Birds. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1899.1	round 1	Gitxaala Nation	5.2.3.3	Economic Conditions	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation)
1900.1	round 1	Gitxaala Nation	6.2.3.2	Visual Quality	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation)

1901.1	round 1	Gitxaala Nation	6.3.3.3	Infrastructure and Services	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation)
1902.1	round 1	Gitxaala Nation	6.4.3.5	Land and Resource Use	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation).
1903.1	round 1	Gitxaala Nation	6.5.3.3	Marine Use and Navigable Waters	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation)

1904.1	round 1	Gitxaala Nation	6.6.3.3	Community Health	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	The following primary data used in sections 5 and 6 of the Application includes information collected directly by the Aurora LNG research team, information from government agencies and data warehouses, as well as information collected by various Aboriginal Communities during socio-economic research related to the Project, supported by Aurora LNG. Section 5.2 - Economic Conditions Statistical data from 2006, 2011 Metlakatla First Nation 2015 membership census Kitsumkalum First Nation membership survey Kitsumkalum Traditional Use Study Lax Kw'aalams Socio-economic Impact Study - addressed in post-Application memo Gitxaala Socio-economic data - addressed in post-Application memo Section 6.2 - Visual Quality Photo-documentation of viewpoints for visual quality analysis Spatial data and meta data from Visual Landscape Inventory from Data BC Section 6.3 - Infrastructure and services Information interviews with service providers and government officials (see Section 6.3.11.2) informed baseline conditions, effect mechanisms, the characterization of residual and cumulative effects and proposed mitigation measures. Aviation studies completed for the Project and referenced throughout Section 6.3 also involved primary research and data gathering. Section 6.4 - Land use Incidental observations of land use within the PDA and nearby areas by crews completing bio-physical and visual quality assessments in support of the Project informed baseline conditions (see Section 6.4.3). Spatial data and meta data for land tenure, land use, and visual from government databases (e.g., BC's data warehouse, DataBC, the Integrated Land Management Bureau's data warehouse, and the Agricultural Land Commission [ALC]) were also used to inform baseline conditions. Section 6.5 - Marine use an Navigable Waters Pacific Pilotage Authority data on shipping movements to and from the Port of Prince Rupert Quantitative data (e.g. landings, value, and licencing information) on CRA fisheries from DFO Spatial data on marine fisheries and marine recreation and tourism activities obtained from BCMCA Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups prior to Application submission: Metlakatla First Nation, Gitxaala Nation, Kitsumkalum First Nation, and Gitga'at First Nation. Marine species harvested identified in Project-specific traditional use studies provided by the following Aboriginal Groups after Application submission: Lax Kw'alaams Band. Section 6.6 - Community Health Information interviews conducted with service providers and government officials, primarily in support of the Infrastructure and Services VC, helped inform the scope of issues to be included in Section 6.6 (see Section 6.3.11.2). Qualitative information related to crime and drug and alcohol use, which could not be cited at the request of the key informant, was also gathered. Primary data included in Section 6.6 also includes the results of surveys and studies provided to Aurora LNG in project-specific socio-economic studies provided by Aboriginal Groups (see Section 6.6.2.3). In addition to primary data referenced within the above sections, the Aurora LNG socio-economic research team considered relevant first-hand information collected during Aboriginal and public engagement activities (see Section 12 Aboriginal Consultation and Section 13 Public Consultation)
1905.1	round 1	Gitxaala Nation	7.2.3.2	Heritage	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 7.2.3.2 is the overview of existing conditions section for Heritage and Archaeological Resources. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1906.1	round 1	Gitxaala Nation	8.2.3.2	Human Health	This section outlines an approach for discussing and describing existing conditions, including collecting primary data where possible. However there is very little reference to any primary data collected or utilized in the socioeconomic chapters (sections 5 and 6).	Section 8.2.3.2 is the overview of existing conditions section for Human Health. Aurora LNG is requesting clarification on the comment from Gitxaala Nation as we are not sure how this applies to the section.
1907.1	round 1	Gitxaala Nation	3.10	Assessment Methods	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 3.10 of the Application outlines the methods used in the Application for follow-up and monitoring, consistent with section 3.8.5 of the Application Information Requirements. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts '.
1908.1	round 1	Gitxaala Nation	4.2.9	Air Quality	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.2.9 of the Application outlines proposed follow-up and monitoring for air quality, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Air Quality Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1909.1	round 1	Gitxaala Nation	4.3.9	Greenhouse Gases	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.3.9 of the Application outlines the proposed follow-up and monitoring for greenhouse gases, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Greenhouse Gases Valued Component. See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts '. The technical memo will be filed with the BC EAO.
1910.1	round 1	Gitxaala Nation	4.4.9	Acoustic Environment	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.4.9 of the Application outlines proposed follow-up and monitoring for acoustic environment, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Acoustic Environment Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts '.
1911.1	round 1	Gitxaala Nation	4.5.9	Water Quality	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.5.9 of the Application outlines proposed follow-up and monitoring for water quality (freshwater), as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to Freshwater Quality . See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1912.1	round 1	Gitxaala Nation	4.5.9	Water Quality	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Sections 4.5.9 and 4.5.19 of the Application outline proposed follow-up and monitoring for water quality (freshwater and marine, respectively), as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Water Quality Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1913.1	round 1	Gitxaala Nation	4.6.9	Vegetation and Wetland Resources	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.6.9 of the Application outlines proposed follow-up and monitoring for vegetation and wetland resources, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Vegetation and Wetland Resources Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1914.1	round 1	Gitxaala Nation	4.7.9	Wildlife Resources (Terrestrial)	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.7.9 of the Application outlines proposed follow-up and monitoring for wildlife resources (terrestrial), as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Wildlife Resources (Terrestrial) Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1915.1	round 1	Gitxaala Nation	4.8.9	Freshwater Fish and Fish Habitat	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.8.9 of the Application outlines proposed follow-up and monitoring for freshwater fish and fish habitat, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Freshwater Fish and Fish Habitat Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1916.1	round 1	Gitxaala Nation	4.9.9	Marine Fish and Fish Habitat	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.9.9 of the Application outlines proposed follow-up and monitoring for marine fish and fish habitat, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Marine Fish and Fish Habitat Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1917.1	round 1	Gitxaala Nation	4.10.9	Marine Wildlife - Marine Mammals	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.10.9 of the Application outlines proposed follow-up and monitoring for marine mammals, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Marine Mammals Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1918.1	round 1	Gitxaala Nation	4.11.9	Marine Wildlife - Marine Birds	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 4.11.9 of the Application outlines proposed follow-up and monitoring for marine birds, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Marine Birds Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1919.1	round 1	Gitxaala Nation	5.2.9	Economic Conditions	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1920.1	round 1	Gitxaala Nation	6.2.9	Visual Quality	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1921.1	round 1	Gitxaala Nation	6.3.9	Infrastructure and Services	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo which will be filed with the BC EAO.
1922.1	round 1	Gitxaala Nation	6.4.9	Land and Resource Use	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo which will be filed with the BC EAO.
1923.1	round 1	Gitxaala Nation	6.5.9	Marine Use and Navigable Waters	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1924.1	round 1	Gitxaala Nation	6.6.9	Community Health	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo which will be filed with the BC EAO.
1925.1	round 1	Gitxaala Nation	7.2.9	Heritage	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	Section 7.2.9 of the Application outlines proposed follow-up and monitoring for archaeological and heritage resources, as applicable. Aurora LNG has reviewed the memo "0217_AGIforGitxaala_Social Impacts" and has identified no further recommendations regarding monitoring and follow-up programs specific to the Archaeological and Heritage Resources Valued Component. See the technical memorandum "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'.
1926.1	round 1	Gitxaala Nation	8.2.9	Human Health	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on monitoring and follow-up programs.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo which will be filed with the BC EAO.
1927.1	round 1	Gitxaala Nation	5.2.3.2	Economic Conditions	Data was disaggregated for Gitxaala.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo which will be filed with the BC EAO.
1928.1	round 1	Gitxaala Nation	5.2.5.1	Economic Conditions	**Assessment of Subsistence Economies:** The analytical assesment techniques for change in subsistence economies do not consider the cultural importance of these activities. The presence of subsistence economies (including harvesting, selling, trading, and sharing) are discussed in detail, and disaggregated by community, only in Section 5, but the element of cultural importance is discussed only briefly in this section. The significance of sharing is acknowledged to be important to Gitxaala, but the analytical assessment takes into account only residual effects on tenured land uses and their economic value (referencing Section 6.4 Land and Resource Use). We question whether this approach can accurately capture the cultural significance of impacts on subsistence economies for Gitxaala members. See Memo "0217_AGIforGitxaala_Social Impacts" for further comments.	The assessment of potential Project effects on resource based primary and subsistence economic activities focuses on potential change in resource quality and quantity, change in access to a resource, and the value of affected resources (see Table 5.2.2 for effects and measurable parameters). The cultural aspects related to economic activities of Aboriginal Groups (i.e. the traditional economy) is addressed in Section 12 Aboriginal Consultation, and specifically in regards to Gitxaala Nation in Section 12.5.6.11.

1929.1	round 1	Gitxaala Nation	5.2.5.2	Economic Conditions	**Assessment of Subsistence Economies:** The analytical assesment techniques for change in subsistence economies do not consider the cultural importance of these activities. The presence of subsistence economies (including harvesting, selling, trading, and sharing) are discussed in detail, and disaggregated by community, only in Section 5, but the element of cultural importance is discussed only briefly in this section. The significance of sharing is acknowledged to be important to Gitxaala, but the analytical assessment takes into account only residual effects on tenured land uses and their economic value (referencing Section 6.4 Land and Resource Use). We question whether this approach can accurately capture the cultural significance of impacts on subsistence economies for Gitxaala members. See Memo "0217_AGIforGitxaala_Social Impacts" for further comments.	The assessment of potential Project effects on resource based primary and subsistence economic activities focuses on potential change in resource quality and quantity, change in access to a resource, and the value of affected resources (see Table 5.2.2 for effects and measurable parameters). The cultural aspects related to economic activities of Aboriginal Groups (i.e. the traditional economy) is addressed in Section 12 Aboriginal Consultation, and specifically in regards to Gitxaala Nation in Section 12.5.6.11.
1930.1	round 1	Gitxaala Nation	5.2.5.3	Economic Conditions	**Assessment of Subsistence Economies:** The analytical assesment techniques for change in subsistence economies do not consider the cultural importance of these activities. The presence of subsistence economies (including harvesting, selling, trading, and sharing) are discussed in detail, and disaggregated by community, only in Section 5, but the element of cultural importance is discussed only briefly in this section. The significance of sharing is acknowledged to be important to Gitxaala, but the analytical assessment takes into account only residual effects on tenured land uses and their economic value (referencing Section 6.4 Land and Resource Use). We question whether this approach can accurately capture the cultural significance of impacts on subsistence economies for Gitxaala members. See Memo "0217_AGIforGitxaala_Social Impacts" for further comments.	The assessment of potential Project effects on resource based primary and subsistence economic activities focuses on potential change in resource quality and quantity, change in access to a resource, and the value of affected resources (see Table 5.2.2 for effects and measurable parameters). The cultural aspects related to economic activities of Aboriginal Groups (i.e. the traditional economy) is addressed in Section 12 Aboriginal Consultation, and specifically in regards to Gitxaala Nation in Section 12.5.6.11.
1931.1	round 1	Gitxaala Nation	5.2.5.1 – Assessment of Change in Labour Supply and Demand	Economic Conditions		No comment noted
1932.1	round 1	Gitxaala Nation	5.2.5.1	Economic Conditions	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1933.1	round 1	Gitxaala Nation	5.2.5.2	Economic Conditions	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo which will be filed with the BC EAO.
1934.1	round 1	Gitxaala Nation	5.2.5.3	Economic Conditions	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1935.1	round 1	Gitxaala Nation	5.2.5.1	Economic Conditions	**Assessment of Labour Supply and Demand**: Effects of economic shock at the end of project construction are "expected to occur in a resilient context." However, this is not consistent with findings in Section 6.6 Community Health, which identifies that health and social services in the area are at a critical shortage in meeting even baseline demands. These services are instrumental in helping communities cope with temporary economic shocks. Given this, it is not accurate to assume that communities have the resilience to absorb an economic shock without adverse impacts. **Assessment of Subsistence Economies:** "*The Project is predicted to have a low economic effect on subsistence economic activities because of the small degree of overlap of the area within which land or marine based subsistence economic activities will occur, and through the application of mitigation measures designed to avoid interference between Project activities and subsistence harvesting, Project effects will be low magnitude, occur on an LAA scale, either continuous (land based effects) or multiple regular (marine based effects), be permanent, but reversible upon Project decommissioning.*" This statement is problematic with regards to comments submitted by Gitxaala in Section 11.7.3; and AGI's comments in Section 6.4 Land and Resource Use. Gitxaala members may have particular reasons for harvesting certain species from specific areas (family history, house territory, sacred site, distance to home, etc.) in the PDA and LAA. The proponent may want to conduct further field work to gain more insight into such areas and why modifications to harvesting in them may be more significant to Gitxaala members than anticipated.	Section 6.6 does not find that there is a "critical shortage" in meeting baseline health and social services, as indicated by the commenter. The baseline conditions for health and social services are described in Section 6.3.3 (Existing Conditions for Infrastructure and Services). While Aurora LNG has concluded in Section 6.3.5.5 that health care infrastructure within the LAA has "low" resilience, this conclusion relates to the ability of such services to respond to increased demand. Such additional demand could come from the change in economic conditions, as described in Section 5.2, but is addressed directly as an effect on infrastructure and services, rather than an effect on economic conditions. It is stated in Section 5.2.5.1 of the Application that the economic context is "moderately resilient." In accordance with the criteria presented in Table 5.2-1, this means the "Economy in assessment area has moderate diversity, is slowly increasing or decreasing in size, and can accommodate a moderate economic shock." The communities within the LAA have a moderately sized labour force, which is diversified across a number of sectors (see table 5.2-19 and 5.2-20). This diversity provides resilience to the economy because it is not dependent only one or two industries. However, the relative decline in basic economic sectors, such as manufacturing and resource industries, from 2006 to 2011 likely reduces the economic resiliency of the area because basic sectors are generally the core economic engines of a region, upon which other sectors depend. It is for this reason that the LAA is considered only moderately resilient. From an economic perspective, the Project will bring basic sector employment to the region, both during construction, and operation, and will diversify the economic base with the creation of an LNG sector. The assessment of effects on resource based primary industries and subsistence economies is conducted on an LAA basis, with the LAA defined in Table 5.2-3. Aurora LNG respects that Gitxaala and other Aboriginal Groups may limit their harvest areas to particular sites, which could be disproportionately affected by the proposed Project activities. Project effects on Aboriginal interests are addressed in Section 12 Aboriginal Consultation.
1936.1	round 1	Gitxaala Nation	5.2.5.2	Economic Conditions	**Assessment of Labour Supply and Demand**: Effects of economic shock at the end of project construction are "expected to occur in a resilient context." However, this is not consistent with findings in Section 6.6 Community Health, which identifies that health and social services in the area are at a critical shortage in meeting even baseline demands. These services are instrumental in helping communities cope with temporary economic shocks. Given this, it is not accurate to assume that communities have the resilience to absorb an economic shock without adverse impacts. **Assessment of Subsistence Economies:** "*The Project is predicted to have a low economic effect on subsistence economic activities because of the small degree of overlap of the area within which land or marine based subsistence economic activities will occur, and through the application of mitigation measures designed to avoid interference between Project activities and subsistence harvesting, Project effects will be low magnitude, occur on an LAA scale, either continuous (land based effects) or multiple regular (marine based effects), be permanent, but reversible upon Project decommissioning.*" This statement is problematic with regards to comments submitted by Gitxaala in Section 11.7.3; and AGI's comments in Section 6.4 Land and Resource Use. Gitxaala members may have particular reasons for harvesting certain species from specific areas (family history, house territory, sacred site, distance to home, etc.) in the PDA and LAA. The proponent may want to conduct further field work to gain more insight into such areas and why modifications to harvesting in them may be more significant to Gitxaala members than anticipated.	Section 6.6 does not find that there is a "critical shortage" in meeting baseline health and social services, as indicated in the comment. The baseline conditions for health and social services are described in Section 6.3.3 (Existing Conditions for Infrastructure and Services). While Aurora LNG has concluded in Section 6.3.5.5 that health care infrastructure within the LAA has "low" resilience, this conclusion relates to the ability of such services to respond to increased demand. Such additional demand could come from the change in economic conditions, as described in Section 5.2, but this would be addressed directly as an effect on infrastructure and services, rather than an effect on economic conditions. It is stated in Section 5.2.5.1 of the Application that the economic context is "moderately resilient." In accordance with the criteria presented in Table 5.2-1, this means the "Economy in assessment area has moderate diversity, is slowly increasing or decreasing in size, and can accommodate a moderate economic shock." The communities within the LAA have a moderately sized labour force, which is diversified across a number of sectors (see table 5.2-19 and 5.2-20). This diversity provides resilience to the economy because it is not dependent only one or two industries. However, the relative decline in basic economic sectors, such as manufacturing and resource industries, from 2006 to 2011 likely reduces the economic resiliency of the area because basic sectors are generally the core economic engines of a region, upon which other sectors depend. It is for this reason that the LAA is considered only moderately resilient. From an economic perspective, the Project will bring basic sector employment to the region, both during construction, and operation, and will diversify the economic base with the creation of an LNG sector. The assessment of effects on resource based primary industries and subsistence economies is conducted on an LAA basis, with the LAA defined in Table 5.2-3. Aurora LNG respects that Gitxaala and other Aboriginal Groups may limit their harvest areas to particular sites, which could be disproportionately affected by the proposed Project activities. Project effects on Aboriginal interests are addressed in Section 12 Aboriginal Consultation.
1937.1	round 1	Gitxaala Nation	5.2.5.3	Economic Conditions	**Assessment of Labour Supply and Demand**: Effects of economic shock at the end of project construction are "expected to occur in a resilient context." However, this is not consistent with findings in Section 6.6 Community Health, which identifies that health and social services in the area are at a critical shortage in meeting even baseline demands. These services are instrumental in helping communities cope with temporary economic shocks. Given this, it is not accurate to assume that communities have the resilience to absorb an economic shock without adverse impacts. **Assessment of Subsistence Economies:** "*The Project is predicted to have a low economic effect on subsistence economic activities because of the small degree of overlap of the area within which land or marine based subsistence economic activities will occur, and through the application of mitigation measures designed to avoid interference between Project activities and subsistence harvesting, Project effects will be low magnitude, occur on an LAA scale, either continuous (land based effects) or multiple regular (marine based effects), be permanent, but reversible upon Project decommissioning.*" This statement is problematic with regards to comments submitted by Gitxaala in Section 11.7.3; and AGI's comments in Section 6.4 Land and Resource Use. Gitxaala members may have particular reasons for harvesting certain species from specific areas (family history, house territory, sacred site, distance to home, etc.) in the PDA and LAA. The proponent may want to conduct further field work to gain more insight into such areas and why modifications to harvesting in them may be more significant to Gitxaala members than anticipated.	Section 6.6 does not find that there is a "critical shortage" in meeting baseline health and social services, as indicated in the comment. The baseline conditions for health and social services are described in Section 6.3.3 (Existing Conditions for Infrastructure and Services). While Aurora LNG has concluded in Section 6.3.5.5 that health care infrastructure within the LAA has "low" resilience, this conclusion relates to the ability of such services to respond to increased demand. Such additional demand could come from the change in economic conditions, as described in Section 5.2, but then this would be regarded as an effect on infrastructure and services, rather than an effect on economic conditions. It is stated in Section 5.2.5.1 of the Application that the economic context is "moderately resilient." In accordance with the criteria presented in Table 5.2-1, this means the "Economy in assessment area has moderate diversity, is slowly increasing or decreasing in size, and can accommodate a moderate economic shock." The communities within the LAA have a moderately sized labour force, which is diversified across a number of sectors (see table 5.2-19 and 5.2-20). This diversity provides resilience to the economy because it is not dependent only one or two industries. However, the relative decline in basic economic sectors, such as manufacturing and resource industries, from 2006 to 2011 likely reduces the economic resiliency of the area because basic sectors are generally the core economic engines of a region, upon which other sectors depend. It is for this reason that the LAA is considered only moderately resilient. From an economic perspective, the Project will bring basic sector employment to the region, both during construction, and operation, and will diversify the economic base with the creation of an LNG sector. The assessment of effects on resource based primary industries and subsistence economies is conducted on an LAA basis, with the LAA defined in Table 5.2-3. Aurora LNG respects that Gitxaala and other Aboriginal Groups may limit their harvest areas to particular sites, which could be disproportionately affected by the proposed Project activities. Project effects on Aboriginal interests are addressed in Section 12 Aboriginal Consultation.
1938.1	round 1	Gitxaala Nation	5.2.5.4	Economic Conditions	**Assessment of Labour Supply and Demand**: Effects of economic shock at the end of project construction are "expected to occur in a resilient context." However, this is not consistent with findings in Section 6.6 Community Health, which identifies that health and social services in the area are at a critical shortage in meeting even baseline demands. These services are instrumental in helping communities cope with temporary economic shocks. Given this, it is not accurate to assume that communities have the resilience to absorb an economic shock without adverse impacts. **Assessment of Subsistence Economies:** "*The Project is predicted to have a low economic effect on subsistence economic activities because of the small degree of overlap of the area within which land or marine based subsistence economic activities will occur, and through the application of mitigation measures designed to avoid interference between Project activities and subsistence harvesting, Project effects will be low magnitude, occur on an LAA scale, either continuous (land based effects) or multiple regular (marine based effects), be permanent, but reversible upon Project decommissioning.*" This statement is problematic with regards to comments submitted by Gitxaala in Section 11.7.3; and AGI's comments in Section 6.4 Land and Resource Use. Gitxaala members may have particular reasons for harvesting certain species from specific areas (family history, house territory, sacred site, distance to home, etc.) in the PDA and LAA. The proponent may want to conduct further field work to gain more insight into such areas and why modifications to harvesting in them may be more significant to Gitxaala members than anticipated.	Section 6.6 does not find that there is a "critical shortage" in meeting baseline health and social services, as indicated in the comment. The baseline conditions for health and social services are described in Section 6.3.3 (Existing Conditions for Infrastructure and Services). While Aurora LNG has concluded in Section 6.3.5.5 that health care infrastructure within the LAA has "low" resilience, this conclusion relates to the ability of such services to respond to increased demand. Such additional demand could come from the change in economic conditions, as described in Section 5.2, but then this would be regarded as an effect on infrastructure and services, rather than an effect on economic conditions. It is stated in Section 5.2.5.1 of the Application that the economic context is "moderately resilient." In accordance with the criteria presented in Table 5.2-1, this means the "Economy in assessment area has moderate diversity, is slowly increasing or decreasing in size, and can accommodate a moderate economic shock." The communities within the LAA have a moderately sized labour force, which is diversified across a number of sectors (see table 5.2-19 and 5.2-20). This diversity provides resilience to the economy because it is not dependent only one or two industries. However, the relative decline in basic economic sectors, such as manufacturing and resource industries, from 2006 to 2011 likely reduces the economic resiliency of the area because basic sectors are generally the core economic engines of a region, upon which other sectors depend. It is for this reason that the LAA is considered only moderately resilient. From an economic perspective, the Project will bring basic sector employment to the region, both during construction, and operation, and will diversify the economic base with the creation of an LNG sector. The assessment of effects on resource based primary industries and subsistence economies is conducted on an LAA basis, with the LAA defined in Table 5.2-3. Aurora LNG respects that Gitxaala and other Aboriginal Groups may limit their harvest areas to particular sites, which could be disproportionately affected by the proposed Project activities. Project effects on Aboriginal interests are addressed in Section 12 Aboriginal Consultation.
1939.1	round 1	Gitxaala Nation	5.2.6	Economic Conditions	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1940.1	round 1	Gitxaala Nation	6.2.2.2	Visual Quality	There is no reference to Shandro et al., 2016 in these sections.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo which will be filed with the BC EAO.
1941.1	round 1	Gitxaala Nation	6.2.3.1	Visual Quality	There is no reference to Shandro et al., 2016 in these sections.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo which will be filed with the BC EAO.
1942.1	round 1	Gitxaala Nation	6.2.3.2	Visual Quality	There is no reference to Shandro et al., 2016 in these sections.	See the "Aurora LNG Response to Gitxaala Report: Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo which will be filed with the BC EAO.

1943.1	round 1	Gitxaala Nation	6.3.2.2	Infrastructure and Services	It is not clear what information specific to Gitxaala was referenced for this chapter.	The description of existing conditions within the LAA and RAA includes disaggregated data from Statistics Canada on population demographics and housing and accommodations and information from Gitxaala Nation on the Kitkatla Health Station. Aggregated data on LAA populations and Aboriginal populations also include Gitxaala Nation members (population, core housing need, shelter-cost-to-income ratio [STIR]). The description of existing levels of service and capacity related to community, health care and transportation infrastructure and services within Prince Rupert, as accessed by Gitxaala Members, is also relevant to Gitxaala Nation. For additional consideration of Gitxaala-specific information, see the "Review of the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo and the "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment" technical memo. These technical memos will be filed with the BC EAO.
1944.1	round 1	Gitxaala Nation	6.3.2.3	Infrastructure and Services	It is not clear what information specific to Gitxaala was referenced for this chapter.	The description of existing conditions within the LAA and RAA includes disaggregated data from Statistics Canada on population demographics and housing and accommodations and information from Gitxaala Nation on the Kitkatla Health Station. Aggregated data on LAA populations and Aboriginal populations also include Gitxaala Nation members (population, core housing need, shelter-cost-to-income ratio [STIR]). The description of existing levels of service and capacity related to community, health care and transportation infrastructure and services within Prince Rupert, as accessed by Gitxaala Members, is also relevant to Gitxaala Nation. For additional consideration of Gitxaala-specific information, see the "Review of the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo and the "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment" technical memo. These technical memos will be filed with the BC EAO.
1945.1	round 1	Gitxaala Nation	6.3.2.5	Infrastructure and Services	**Technical Boundaries** regarding the shortage of public data on infrastructure and services at levels consistent with LAAs are well documented in many EAs. These gaps could be supplemented by referencing community-level socioeconomic studies or collecting primary data in communities themselves.	The technical boundaries identified in Section 6.6.2.5 of the Application, such as the availability, quality, relevancy and timeliness of baseline data, are documented limitations of the assessment and acknowledged by Aurora LNG. Section 6.6.8 (Prediction Confidence) further recognizes that technical limitations associated with the description of existing conditions affects overall prediction confidence (which is moderate for change in community health and wellness and moderate to high for change in harvested foods).
1946.1	round 1	Gitxaala Nation	6.3.3	Infrastructure and Services	Housing security is a key health determinant for Aboriginal Groups in BC. There is little to no baseline data on housing conditions and security for Gitxaala.	Housing security was not included in the assessment of change in community health and wellness. Housing security was not identified in the AIR as an included topic (see Table 3-2) or measurable parameter (see Table 6-9). See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo for consideration of additional baseline information provided in Shandro et al. (2016). The technical memorandum also includes a discussion of whether the additional baseline information affects conclusions presented in the assessment. The technical memo will be filed with the BC EAO.
1947.1	round 1	Gitxaala Nation	6.3.3.2	Infrastructure and Services	Housing security is a key health determinant for Aboriginal Groups in BC. There is little to no baseline data on housing conditions and security for Gitxaala.	Housing security was not included in the assessment of change in community health and wellness. Housing security was not identified in the AIR as an included topic (see Table 3-2) or measurable parameter (see Table 6-9). See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo for consideration of additional baseline information provided in Shandro et al. (2016). The technical memo also includes a discussion of whether the additional baseline information affects conclusions presented in the assessment. The technical memo will be filed with the BC EAO.
1948.1	round 1	Gitxaala Nation	6.3.3.2	Infrastructure and Services	**Demand for Health and Social Services**: There is little characterization of the availability of culturally appropriate health and social services for Aboriginal people in the LAA. **Housing:** No data or discussion on housing specific to Gitxaala was included in the baseline section. Some additional qualitative data that could be included in this section can be found in Shandro et al., 2016.	Health and Social Services Baseline information, in sufficient detail to support the assessment of Project residual and cumulative residual effects on health care infrastructure and services within the LAA and RAA, is provided in Section 6.3.3.2 subsection Health Care Infrastructure and Services. Additional information on health care infrastructure and services, including Gitxaala-specific information, is provided in the "Supplemental Baseline Information for Infrastructure and Services" technical memo. The memo also includes a discussion as to whether the supplemental information affects the conclusions of the VC. Housing See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo for consideration of additional baseline information provided in Shandro et al. (2016). The technical memorandum also includes a discussion of whether baseline the supplemental information affects conclusions presented in the VC. The technical memos will be filed with the BC EAO.
1949.1	round 1	Gitxaala Nation	6.3.5	Infrastructure and Services	It is difficult to assess the impacts of the project on housing without specific baseline data on housing conditions for rural Aboriginal communities like Gitxaala.	Baseline information on housing and accommodations is provided in Section 6.3.3.2 (subsection 'Housing and Accommodations'). Additional baseline information on housing provided by Gitxaala in the report "Potential Risks, Impacts and Opportunities for the Aurora LNG Project for Gitxaala Nation" is provided in the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo. The technical memo includes a discussion as to whether the additional information affects the conclusions of the Application. The technical memo will be filed with the BC EAO.
1950.1	round 1	Gitxaala Nation	6.3.5.2	Infrastructure and Services	Housing: There is no discussion of steps taken to minimize the adverse effects of increased housing demand on vulnerable individuals and groups, given that the baseline identifies an increasing trend of households with core housing need (estimated 15% of households according to 2011 figures). Health and Social Services: The proponent proposes reasonable mitigation measures to mitigate adverse effects on health and social services. However, residual effects are identified to be moderate to high. A community health surveillance system is necessary to monitor these effects over the project lifecycle. In addition, engagement and collaboration with local health service providers and health authorities is required to address any issues that emerge in relation to the identified residual impacts. See Memo "0217_AGIforGitxaala_Social Impacts" for more details. Mitigation Measures: See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	Summarized through baseline information presented in Section 6.3.3.2 (subsection 'Housing and Accommodations'; and further qualified in the "Supplemental Information for Infrastructure and Services"" technical memo and characterized in Sections 6.3.5 and 6.3.6, adverse effects on accommodations are anticipated to occur within a socio-economic context that has moderate resiliency (the LAA) and low resiliency (the RAA) to change. As such, the predicted residual and cumulative effects on accommodations would occur within a baseline setting that is sensitive to change. This understanding is applied across the population of the LAA and RAA. Disaggregated characterizations are not provided for vulnerable populations. Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with concerned stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Also see the "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memos will be filed with the BC EAO.
1951.1	round 1	Gitxaala Nation	6.3.5.3	Infrastructure and Services	Housing: There is no discussion of steps taken to minimize the adverse effects of increased housing demand on vulnerable individuals and groups, given that the baseline identifies an increasing trend of households with core housing need (estimated 15% of households according to 2011 figures). Health and Social Services: The proponent proposes reasonable mitigation measures to mitigate adverse effects on health and social services. However, residual effects are identified to be moderate to high. A community health surveillance system is necessary to monitor these effects over the project lifecycle. In addition, engagement and collaboration with local health service providers and health authorities is required to address any issues that emerge in relation to the identified residual impacts. See Memo "0217_AGIforGitxaala_Social Impacts" for more details. Mitigation Measures: See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	Summarized through baseline information presented in Section 6.3.3.2 (subsection 'Housing and Accommodations'; and further qualified in the "Supplemental Baseline Information for Infrastructure and Services"" technical memo and characterized in Sections 6.3.5 and 6.3.6, adverse effects on accommodations are anticipated to occur within a socio-economic context that has moderate resiliency (the LAA) and low resiliency (the RAA) to change. As such, the predicted residual and cumulative effects on accommodations would occur within a baseline setting that is sensitive to change. This understanding is applied across the population of the LAA and RAA. Disaggregated characterizations are not provided for vulnerable populations. Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with concerned stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Also see the "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memos will be filed with the BC EAO.
1952.1	round 1	Gitxaala Nation	6.3.5.4	Infrastructure and Services	Housing: There is no discussion of steps taken to minimize the adverse effects of increased housing demand on vulnerable individuals and groups, given that the baseline identifies an increasing trend of households with core housing need (estimated 15% of households according to 2011 figures). Health and Social Services: The proponent proposes reasonable mitigation measures to mitigate adverse effects on health and social services. However, residual effects are identified to be moderate to high. A community health surveillance system is necessary to monitor these effects over the project lifecycle. In addition, engagement and collaboration with local health service providers and health authorities is required to address any issues that emerge in relation to the identified residual impacts. See Memo "0217_AGIforGitxaala_Social Impacts" for more details. Mitigation Measures: See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	Summarized through baseline information presented in Section 6.3.3.2 (subsection 'Housing and Accommodations'; and further qualified in the "Supplemental Baseline Information for Infrastructure and Services"" technical memo and characterized in Sections 6.3.5 and 6.3.6, adverse effects on accommodations are anticipated to occur within a socio-economic context that has moderate resiliency (the LAA) and low resiliency (the RAA) to change. As such, the predicted residual and cumulative effects on accommodations would occur within a baseline setting that is sensitive to change. This understanding is applied across the population of the LAA and RAA. Disaggregated characterizations are not provided for vulnerable populations. Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with concerned stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memos will be filed with the BC EAO.
1953.1	round 1	Gitxaala Nation	6.3.5.5	Infrastructure and Services	Housing: There is no discussion of steps taken to minimize the adverse effects of increased housing demand on vulnerable individuals and groups, given that the baseline identifies an increasing trend of households with core housing need (estimated 15% of households according to 2011 figures). Health and Social Services: The proponent proposes reasonable mitigation measures to mitigate adverse effects on health and social services. However, residual effects are identified to be moderate to high. A community health surveillance system is necessary to monitor these effects over the project lifecycle. In addition, engagement and collaboration with local health service providers and health authorities is required to address any issues that emerge in relation to the identified residual impacts. See Memo "0217_AGIforGitxaala_Social Impacts" for more details. Mitigation Measures: See Memo "0217_AGIforGitxaala_Social Impacts" for comments on mitigation measures.	Summarized through baseline information presented in Section 6.3.3.2 (subsection 'Housing and Accommodations'; and further qualified in the "Supplemental Baseline Information for Infrastructure and Services"" technical memo and characterized in Sections 6.3.5 and 6.3.6, adverse effects on accommodations are anticipated to occur within a socio-economic context that has moderate resiliency (the LAA) and low resiliency (the RAA) to change. As such, the predicted residual and cumulative effects on accommodations would occur within a baseline setting that is sensitive to change. This understanding is applied across the population of the LAA and RAA. Disaggregated characterizations are not provided for vulnerable populations. Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with concerned stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memos will be filed with the BC EAO.
1954.1	round 1	Gitxaala Nation	6.3.9	Infrastructure and Services	See Memo "0217_AGIforGitxaala_Social Impacts."	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1955.1	round 1	Gitxaala Nation	6.3.10	Infrastructure and Services	See Memo "0217_AGIforGitxaala_Social Impacts."	See the "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1956.1	round 1	Gitxaala Nation	6.4.2.2	Land and Resource Use	Shandro et al., 2016 is not referenced here.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo which will be filed with the BC EAO.
1957.1	round 1	Gitxaala Nation	6.4.2.3	Land and Resource Use	Shandro et al., 2016 is not referenced here.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo which will be filed with the BC EAO.
1958.1	round 1	Gitxaala Nation	6.4.5.3	Land and Resource Use	Existing Land Use Planning: "Effects related to existing land use planning will be managed through the implementation of mitigation measures identified in the relevant plans through the permitting process required by the BC OGC" (6.4-59). It is unclear where and how the proponent is addressing any potential conflicts of the project with the objectives of the North Coast LRMP, in which Gitxaala and other First Nations may have defined interests. Mitigation Measures: See Memo "0217_AGIforGitxaala_Social Impacts" for further details.	See Section 6.4.3.3 subsection 'North Coast LRMP' for a detailed description of the North Coast LRMP (as replaced by the Great Bear Rainforest Land Use Order) as it relates to the Project's spatial boundaries. Also see Section 6.4.5.2 subsection 'Land Use Planning Areas' for a description of Project interactions with land and resource use management plans. From Section 6.4.5.2, The PDA and LAA are located within identified planning areas, including those established under the North Coast Land and Resource Management Plan; however, these planning areas do not preclude development when defined mitigation measures are applied and appropriate permits are obtained. Effects related to existing land use planning will be managed through the implementation of mitigation measures identified in the relevant plans through the permitting process required by the BC OGC. Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1959.1	round 1	Gitxaala Nation	6.4.5.4	Land and Resource Use	Existing Land Use Planning: "Effects related to existing land use planning will be managed through the implementation of mitigation measures identified in the relevant plans through the permitting process required by the BC OGC" (6.4-59). It is unclear where and how the proponent is addressing any potential conflicts of the project with the objectives of the North Coast LRMP, in which Gitxaala and other First Nations may have defined interests. Mitigation Measures: See Memo "0217_AGIforGitxaala_Social Impacts" for further details.	See Section 6.4.3.3 subsection 'North Coast LRMP' for a detailed description of the North Coast LRMP (as replaced by the Great Bear Rainforest Land Use Order) as it relates to the Project's spatial boundaries. Also see Section 6.4.5.2 subsection 'Land Use Planning Areas' for a description of Project interactions with land and resource use management plans. From Section 6.4.5.2, The PDA and LAA are located within identified planning areas, including those established under the North Coast Land and Resource Management Plan; however, these planning areas do not preclude development when defined mitigation measures are applied and appropriate permits are obtained. Effects related to existing land use planning will be managed through the implementation of mitigation measures identified in the relevant plans through the permitting process required by the BC OGC. Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.

1960.1	round 1	Gitxaala Nation	6.4.10	Land and Resource Use	See Memo: "0217_AGIforGitxaala_Social Impacts."	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1961.1	round 1	Gitxaala Nation	6.4.9	Land and Resource Use	See Memo: "0217_AGIforGitxaala_Social Impacts."	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1962.1	round 1	Gitxaala Nation	6.5.2.2	Marine Use and Navigable Waters	Shandro et al., 2016 is not referenced here.	See the "Aurora LNG Response to Gitxaala Report: Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation" technical memo which will be filed with the BC EAO.
1963.1	round 1	Gitxaala Nation	6.5.2.3	Marine Use and Navigable Waters	Shandro et al., 2016 is not referenced here.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo which will be filed with the BC EAO.
1964.1	round 1	Gitxaala Nation	6.5.5.2	Marine Use and Navigable Waters	The proponent should outline the communications strategy for relevant information reaching marine users and also implement a monitoring system. The monitoring system should ensure that unmitigated worse-case adverse impacts (loss of up to one hour of fishing per day) are as expected and do not exceed these projections regularly. If the disturbance is greater than expected, mitigation measures will need to be evaluated and adjusted. This can be done only through a system for monitoring.	The Marine Activities Plan will provide a framework for adaptive management measures to be implemented. Aurora LNG's framework for adaptive management is as follows: The Marine Activities Plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). At present, Aurora LNG does not propose any formal follow-up monitoring plans for effects on fishers, but remains open to working with regulators and Aboriginal Groups to develop the Marine Activities Plan (further details of the Marine Activities Plan is provided below). As described in Section 6.5.3.3 and 14.11 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. The safe-shipping workshops and the TERMPOL study are expected to lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention. More information on the nature of the Marine Activities Plan will be shared as it becomes available.
1965.1	round 1	Gitxaala Nation	6.5.5.3	Marine Use and Navigable Waters	The proponent should outline the communications strategy for relevant information reaching marine users and also implement a monitoring system. The monitoring system should ensure that unmitigated worse-case adverse impacts (loss of up to one hour of fishing per day) are as expected and do not exceed these projections regularly. If the disturbance is greater than expected, mitigation measures will need to be evaluated and adjusted. This can be done only through a system for monitoring.	The Marine Activities Plan will provide a framework for adaptive management measures to be implemented. Aurora LNG's framework for adaptive management is as follows: The Marine Activities Plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). At present, Aurora LNG does not propose any formal follow-up monitoring plans for effects on fishers, but remains open to working with regulators and Aboriginal Groups to develop the Marine Activities Plan (further details of the Marine Activities Plan is provided below). As described in Section 6.5.3.3 and 14.11 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. The safe-shipping workshops and the TERMPOL study are expected to lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention. More information on the nature of the Marine Activities Plan will be shared as it becomes available.
1966.1	round 1	Gitxaala Nation	6.6.2.2	Community Health	Shandro et al., 2016 is not referenced here.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo which will be filed with the BC EAO.
1967.1	round 1	Gitxaala Nation	6.6.2.3	Community Health	Shandro et al., 2016 is not referenced here.	See the "Response to the Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo which will be filed with the BC EAO.
1968.1	round 1	Gitxaala Nation	6.6.2.5	Community Health	**Spatial Boundaries** for the LAA are too broad. It is difficult to discuss community health figures and statistics of this diverse area as a single geographical unit, as it contains urban, rural, Aboriginal and non-Aboriginal communities. **Technical Boundaries** regarding the shortage of public data on psychological well-being and socioeconomic factors at levels consistent with LAAs are well documented in many EAs. These gaps could be supplemented by referencing community-level studies on health and well-being or collecting primary data in communities themselves.	The spatial boundaries used in the assessment of change in community health and wellness and change in harvested foods (as provided in Table 6.6-2) align with those established in the AIR (specifically, Tables 3-3 and 6-9). The technical boundaries identified in Section 6.6.2.5, such as the availability, quality, relevancy and timeliness of baseline data, are documented limitations of the assessment and acknowledged by Aurora LNG. Section 6.6.8 (Prediction Confidence) further recognizes that technical limitations associated with the description of existing conditions affects overall prediction confidence (which is moderate for change in community health and wellness and moderate to high for change in harvested foods).
1969.1	round 1	Gitxaala Nation	6.6.2.8	Community Health	The threshold on community health and wellness does not consider the need to evaluate the effectiveness of mitigation measures regarding community health and wellness before considering whether or not effects can be managed by adjustments to programs, policies, plans, or other mitigation. This threshold depends substantially on the implementation of a detailed community health monitoring system.	The assessment of change in community health and wellness considers both the expected success of the proposed mitigation measures as well as the risk and uncertainty regarding the successful implementation of the proposed mitigation measures (see Table 6.6-18 under the column 'Expected Success/Risk and Uncertainty'). This information is then used to inform the characterization of Project residual effects and cumulative residual effects from which the significance determinations are made (see Section 6.6.7). Regarding community health monitoring, while not specifically identified as a proposed mitigation measure, mitigation measures identified in Table 6.6-18 are included in higher-level plans (e.g., the Health and Medical Services Plan, and Social Management Plan [SMP]) which include varying levels of monitoring. These higher-level plans are identified in Table 6.6-18 under the column 'Management and/or Compensation Plans' with additional information provided in Section 14. In particular, mitigation Measures 6.3.1 (SMP) requires Aurora LNG to engage with concerned stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status.
1970.1	round 1	Gitxaala Nation	6.6.3	Community Health	There is virtually no baseline data cited that relates specifically to Gitxaala. While it is understood that data at this geographic level is difficult to obtain from public databases, the LAA is quite diverse, including urban and rural areas and Aboriginal and non-Aboriginal communities. The baseline data discussed here does not necessarily reflect conditions in Gitxaala. Baseline data on key issues such as health status, family and household dynamics, sense of community belonging, crime, vulnerable populations, and food security are not specified for Gitxaala or any other Aboriginal communities. There is no reference to Shandro et al., 2016 in this section. Determinants of health included for assessment are limited and do not reflect the breadth of potential impacts specific to Gitxaala Nation as identified in Shandro et al., 2016. Refer to Memo "0217_AGIforGitxaala_Social Impacts" or Shandro et al., 2016 for further comments.	As noted in the comment, baseline information specific to Gitxaala Nation is limited and not readily available; however, baseline data presented at the Local Health Area (LHA) and Northwest Regional Health Service Delivery Area (NW HSDA) includes consideration of Aboriginal and non-Aboriginal populations, including Gitxaala members, within the LAA and RAA (see Section 6.6.2.5). The baseline overview provided in Section 6.6.3 therefore provides an accurate characterization of conditions at the aggregate LAA and RAA level from which effects on community health and wellness are assessed. While adverse effects are assessed at the LAA and RAA level, where appropriate, differing characterizations are provided for vulnerable populations, such as Aboriginal Groups, in recognition of the potential for these populations to be disproportionately affected. Aurora LNG acknowledges that not all social determinants of health are assessed. See the "Response to Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation Report" technical memo for consideration of the referenced Shandro et al. 2016 report. This technical memo includes a discussion of Gitxaala provided baseline information and social determinants of health and whether this information affects the conclusions presented in Section 6.6 of the Application. Also see the "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impact'. The technical memos will be filed with the BC EAO.
1971.1	round 1	Gitxaala Nation	6.6.4	Community Health	Several project activities, specifically natural gas pre-treatment, LNG production, and waste management are not considered to have interactions with harvested foods. Adherence to federal and provincial guidelines are expected to mitigate any interaction. However the proponent should have a very clear plan on emergency response and communications in case of unexpected events in order to keep Gitxaala and local emergency response authorities informed on any potential impacts from these activities. Refer to comments on Accidents and Malfunctions.	Through mitigation 6.3.8, an Emergency Response Plan will be developed and implemented. The Emergency Response Plan (ERP) will describe the procedures to be implemented to respond to all incidents and emergencies, which will be submitted to the BC OGC under s.8 of the Liquefied Natural Gas Facilities Regulation. (see Section 14.16). The ERP will be developed in consultation with regulators, Aboriginal Groups, and interested stakeholders. The ERP will be prepared according to the guidance found in Emergency Preparedness and Response for Petroleum and Natural Gas Industry Systems (CAN/CSA-Z246.2-14). Protection of the environment will be one of several priorities of the plan.
1972.1	round 1	Gitxaala Nation	6.6.5.1	Community Health	Vulnerable Groups: The application identifies the following vulnerable groups: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes; low income earners; marginally housed, homeless, or at-risk individuals, and households; temporarily housed individuals and households;and other groups with lack of secure housing tenure. While the chapter concludes that vulnerable groups and individuals may experience disproportionate adverse effects, we question whether mitigation measures proposed are strong enough to minimize these. See Memo "0217_AGIforGitxaala_Social Impacts" for comments on vulnerable groups and mitigation measures. Gender is not discussed in detail in the residual effects on social support networks section. While the proponent proposes an employee assistance program to mitigate impacts to social support networks, there is no means to verify whether this program will mitigate potential adverse outcomes related to domestic violence and alcohol and drug abuse without a monitoring system in place. Emotional Stress and Mental Health; Communicable Disease; Crime and Substance Abuse; Housing: These issues are discussed in Section 6.6.5.3 and are important health outcomes (as well as determinants) for First Nations in BC. Some appropriate mitigation measures are proposed, including employee support programs; onsite camp lodgings and basic first aid services; worker codes of conduct; project orientation; and a number of measures to minimize changes in environmental quality that may adversely affect levels of stress and anxiety. However it is impossible to monitor the presence of potential adverse impacts or the effectiveness of these measures in addressing them without a community health monitoring system in place. Mitigation Measures: Refer to Memo "0217_AGIforGitxaala_Social Impacts."	As part of Aurora LNG's conservative assessment approach, vulnerable populations include multiple measurable parameters, including women. As noted is Section 6.6.5.2 of the Application, where disproportionate effects could be realized by vulnerable populations (e.g., women) disaggregated characterizations have been provided. The disaggregated characterizations are provided for 'communicable diseases and STIs', 'Income and Social Status', 'Personal Health Practices and Coping Skills'. Noted in Table 6.6-6, Aurora LNG is an equal opportunity employer; therefore, for assessment of the determinant of health (DOH) gender is not included. However, the assessment of change in community health and wellness considers changes in the demographic composition of LAA communities (which informs other DOH assessed in Section 6.6). Stated in Section 6.6.5.3 (subsection 'Presence of Workers') mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationship. Therefore, during the construction phase, a substantial increase in the proportion of non-Aboriginal males in the LAA will occur; most of these individuals will be FIFO workers. Mitigation measures proposed by Aurora LNG in Table 6.6-18, such as the employee assistance program (mitigation 6.6.1), worker code of conduct and orientation (mitigation 6.3.3) will be further refined and, where applicable, captured as part of the Social Management Plan (SMP; mitigation 6.3.1). Noted in Section 14.12, the SMP will include metrics from which to measure changes in baseline conditions due to Project-related effects on infrastructure and services. While metrics used in the SMP will not directly align with determinants of health (DOH) assessed in Section 6.6 (i.e., Income and Social Status, Social Support Networks, Social Environments, Personal Health Practices and Coping Skills), indicators associated with these DOH could be included in the SMP. For example, indicators associated with 'social environments' such as crime rates and indicators associated with 'personal health practices and coping skills' such as hospital registrations related to drug and alcohol (if made available by Northern Health) could be included in the SMP. Noted in Section 14.12 development of the SMP, including selection of metrics, will be informed through engagement with regulators, Aboriginal Groups, and interested stakeholders. In consideration of the conservative approach taken in the assessment of change in community health and wellness, the mitigation measures proposed in Table 6.6-18 and commitments to ongoing engagement and monitoring through the SMP, Aurora LNG is confident that the proposed mitigation measures will reduce the magnitude of predicted adverse Project effects on community health and wellness within the LAA (including vulnerable populations). Also, see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.

1973.1	round 1	Gitxaala Nation	6.6.5.2	Community Health	Vulnerable Groups: The application identifies the following vulnerable groups: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes; low income earners; marginally housed, homeless, or at-risk individuals, and households; temporarily housed individuals and households;and other groups with lack of secure housing tenure. While the chapter concludes that vulnerable groups and individuals may experience disproportionate adverse effects, we question whether mitigation measures proposed are strong enough to minimize these. See Memo "0217_AGIforGitxaala_Social Impacts" for comments on vulnerable groups and mitigation measures. Gender is not discussed in detail in the residual effects on social support networks section. While the proponent proposes an employee assistance program to mitigate impacts to social support networks, there is no means to verify whether this program will mitigate potential adverse outcomes related to domestic violence and alcohol and drug abuse without a monitoring system in place. Emotional Stress and Mental Health; Communicable Disease; Crime and Substance Abuse; Housing: These issues are discussed in Section 6.6.5.3 and are important health outcomes (as well as determinants) for First Nations in BC. Some appropriate mitigation measures are proposed, including employee support programs; onsite camp lodgings and basic first aid services; worker codes of conduct; project orientation; and a number of measures to minimize changes in environmental quality that may adversely affect levels of stress and anxiety. However it is impossible to monitor the presence of potential adverse impacts or the effectiveness of these measures in addressing them without a community health monitoring system in place. Mitigation Measures: Refer to Memo "0217_AGIforGitxaala_Social Impacts."	As part of Aurora LNG's conservative assessment approach, vulnerable populations include multiple measurable parameters, including women. As noted is Section 6.6.5.2 of the Application, where disproportionate effects could be realized by vulnerable populations (e.g., women) disaggregated characterizations have been provided. The disaggregated characterizations are provided for 'communicable diseases and STIs', 'Income and Social Status', 'Personal Health Practices and Coping Skills'. Noted in Table 6.6-6, Aurora LNG is an equal opportunity employer; therefore, for assessment of the determinant of health (DOH) gender is not included. However, the assessment of change in community health and wellness considers changes in the demographic composition of LAA communities (which informs other DOH assessed in Section 6.6). Stated in Section 6.6.5.3 (subsection 'Presence of Workers') mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationship. Therefore, during the construction phase, a substantial increase in the proportion of non-Aboriginal males in the LAA will occur; most of these individuals will be FIFO workers. Mitigation measures proposed by Aurora LNG in Table 6.6-18, such as the employee assistance program (mitigation 6.6.1), worker code of conduct and orientation (mitigation 6.3.3) will be further refined and, where applicable, captured as part of the Social Management Plan (SMP; mitigation 6.3.1). Noted in Section 14.12, the SMP will include metrics from which to measure changes in baseline conditions due to Project-related effects on infrastructure and services. While metrics used in the SMP will not directly align with determinants of health (DOH) assessed in Section 6.6 (i.e., Income and Social Status, Social Support Networks, Social Environments, Personal Health Practices and Coping Skills), indicators associated with these DOH could be included in the SMP. For example, indicators associated with 'social environments' such as crime rates and indicators associated with 'personal health practices and coping skills' such as hospital registrations related to drug and alcohol (if made available by Northern Health) could be included in the SMP. Noted in Section 14.12 development of the SMP, including selection of metrics, will be informed through engagement with regulators, Aboriginal Groups, and interested stakeholders. In consideration of the conservative approach taken in the assessment of change in community health and wellness, the mitigation measures proposed in Table 6.6-18 and commitments to ongoing engagement and monitoring through the SMP, Aurora LNG is confident that the proposed mitigation measures will reduce the magnitude of predicted adverse Project effects on community health and wellness within the LAA (including vulnerable populations). Also, see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1974.1	round 1	Gitxaala Nation	6.6.5.3	Community Health		No comment provided.
1975.1	round 1	Gitxaala Nation	6.6.5.4	Community Health	Vulnerable Groups: The application identifies the following vulnerable groups: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes; low income earners; marginally housed, homeless, or at-risk individuals, and households; temporarily housed individuals and households;and other groups with lack of secure housing tenure. While the chapter concludes that vulnerable groups and individuals may experience disproportionate adverse effects, we question whether mitigation measures proposed are strong enough to minimize these. See Memo "0217_AGIforGitxaala_Social Impacts" for comments on vulnerable groups and mitigation measures. Gender is not discussed in detail in the residual effects on social support networks section. While the proponent proposes an employee assistance program to mitigate impacts to social support networks, thee is no means to verify whether this program will mitigate potential adverse outcomes related to domestic violence and alcohol and drug abuse without a monitoring system in place. Emotional Stress and Mental Health; Communicable Disease; Crime and Substance Abuse; Housing: These issues are discussed in Section 6.6.5.3 and are important health outcomes (as well as determinants) for First Nations in BC. Some appropriate mitigation measures are proposed, including employee support programs; onsite camp lodgings and basic first aid services; worker codes of conduct; project orientation; and a number of measures to minimize changes in environmental quality that may adversely affect levels of stress and anxiety. However it is impossible to monitor the presence of potential adverse impacts or the effectiveness of these measures in addressing them without a community health monitoring system in place. Mitigation Measures: Refer to Memo "0217_AGIforGitxaala_Social Impacts."	As part of Aurora LNG's conservative assessment approach, vulnerable populations include multiple measurable parameters, including women. As noted is Section 6.6.5.2 of the Application, where disproportionate effects could be realized by vulnerable populations (e.g., women) disaggregated characterizations have been provided. The disaggregated characterizations are provided for 'communicable diseases and STIs', 'Income and Social Status', 'Personal Health Practices and Coping Skills'. Noted in Table 6.6-6, Aurora LNG is an equal opportunity employer; therefore, for assessment of the determinant of health (DOH) gender is not included. However, the assessment of change in community health and wellness considers changes in the demographic composition of LAA communities (which informs other DOH assessed in Section 6.6). Stated in Section 6.6.5.3 (subsection 'Presence of Workers') mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationship. Therefore, during the construction phase, a substantial increase in the proportion of non-Aboriginal males in the LAA will occur; most of these individuals will be FIFO workers. Mitigation measures proposed by Aurora LNG in Table 6.6-18, such as the employee assistance program (mitigation 6.6.1), worker code of conduct and orientation (mitigation 6.3.3) will be further refined and, where applicable, captured as part of the Social Management Plan (SMP; mitigation 6.3.1). Noted in Section 14.12, the SMP will include metrics from which to measure changes in baseline conditions due to Project-related effects on infrastructure and services. While metrics used in the SMP will not directly align with determinants of health (DOH) assessed in Section 6.6 (i.e., Income and Social Status, Social Support Networks, Social Environments, Personal Health Practices and Coping Skills), indicators associated with these DOH could be included in the SMP. For example, indicators associated with 'social environments' such as crime rates and indicators associated with 'personal health practices and coping skills' such as hospital registrations related to drug and alcohol (if made available by Northern Health) could be included in the SMP. Noted in Section 14.12 development of the SMP, including selection of metrics, will be informed through engagement with regulators, Aboriginal Groups, and interested stakeholders. In consideration of the conservative approach taken in the assessment of change in community health and wellness, the mitigation measures proposed in Table 6.6-18 and commitments to ongoing engagement and monitoring through the SMP, Aurora LNG is confident that the proposed mitigation measures will reduce the magnitude of predicted adverse Project effects on community health and wellness within the LAA (including vulnerable populations). Also, see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1976.1	round 1	Gitxaala Nation	6.6.5.5	Community Health	Vulnerable Groups: The application identifies the following vulnerable groups: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes; low income earners; marginally housed, homeless, or at-risk individuals, and households; temporarily housed individuals and households;and other groups with lack of secure housing tenure. While the chapter concludes that vulnerable groups and individuals may experience disproportionate adverse effects, we question whether mitigation measures proposed are strong enough to minimize these. See Memo "0217_AGIforGitxaala_Social Impacts" for comments on vulnerable groups and mitigation measures. Gender is not discussed in detail in the residual effects on social support networks section. While the proponent proposes an employee assistance program to mitigate impacts to social support networks, there is no means to verify whether this program will mitigate potential adverse outcomes related to domestic violence and alcohol and drug abuse without a monitoring system in place. Emotional Stress and Mental Health; Communicable Disease; Crime and Substance Abuse; Housing: These issues are discussed in Section 6.6.5.3 and are important health outcomes (as well as determinants) for First Nations in BC. Some appropriate mitigation measures are proposed, including employee support programs; onsite camp lodgings and basic first aid services; worker codes of conduct; project orientation; and a number of measures to minimize changes in environmental quality that may adversely affect levels of stress and anxiety. However it is impossible to monitor the presence of potential adverse impacts or the effectiveness of these measures in addressing them without a community health monitoring system in place. Mitigation Measures: Refer to Memo "0217_AGIforGitxaala_Social Impacts."	As part of Aurora LNG's conservative assessment approach, vulnerable populations include multiple measurable parameters, including women. As noted is Section 6.6.5.2 of the Application, where disproportionate effects could be realized by vulnerable populations (e.g., women) disaggregated characterizations have been provided. The disaggregated characterizations are provided for 'communicable diseases and STIs', 'Income and Social Status', 'Personal Health Practices and Coping Skills'. Noted in Table 6.6-6, Aurora LNG is an equal opportunity employer; therefore, for assessment of the determinant of health (DOH) gender is not included. However, the assessment of change in community health and wellness considers changes in the demographic composition of LAA communities (which informs other DOH assessed in Section 6.6). Stated in Section 6.6.5.3 (subsection 'Presence of Workers') mobile oil and gas workers tend to be primarily non-Aboriginal males, over the age of 35, half of whom are married or in a common-law relationship. Therefore, during the construction phase, a substantial increase in the proportion of non-Aboriginal males in the LAA will occur; most of these individuals will be FIFO workers. Mitigation measures proposed by Aurora LNG in Table 6.6-18, such as the employee assistance program (mitigation 6.6.1), worker code of conduct and orientation (mitigation 6.3.3) will be further refined and, where applicable, captured as part of the Social Management Plan (SMP; mitigation 6.3.1). Noted in Section 14.12, the SMP will include metrics from which to measure changes in baseline conditions due to Project-related effects on infrastructure and services. While metrics used in the SMP will not directly align with determinants of health (DOH) assessed in Section 6.6 (i.e., Income and Social Status, Social Support Networks, Social Environments, Personal Health Practices and Coping Skills), indicators associated with these DOH could be included in the SMP. For example, indicators associated with 'social environments' such as crime rates and indicators associated with 'personal health practices and coping skills' such as hospital registrations related to drug and alcohol (if made available by Northern Health) could be included in the SMP. Noted in Section 14.12 development of the SMP, including selection of metrics, will be informed through engagement with regulators, Aboriginal Groups, and interested stakeholders. In consideration of the conservative approach taken in the assessment of change in community health and wellness, the mitigation measures proposed in Table 6.6-18 and commitments to ongoing engagement and monitoring through the SMP, Aurora LNG is confident that the proposed mitigation measures will reduce the magnitude of predicted adverse Project effects on community health and wellness within the LAA (including vulnerable populations). Also, see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
1977.1	round 1	Gitxaala Nation	6.6.9	Community Health	No follow-up programs are proposed for community health. While the proponent states that the social management plan will include performance metrics, it is not clear what data and metrics will be used. Without continuous monitoring of key community health outcomes, it is impossible to assess the effectiveness of any measures proposed to avoid or reduce adverse impacts on community health. See Memo "0217_AGIforGitxaala_Social Impacts".	The Social Management Plan (SMP; see mitigation 6.3.1) will focus on managing direct Project-related effects on community level infrastructure and services. While metrics used in the SMP will not directly align with social determinants of health (SDOH) assessed in Section 6.6 (i.e., Income and Social Status, Social Support Networks, Social Environments, Personal Health Practices and Coping Skills) indicators associated with these SDOH could be included. For example, indicators associated with income and social status such as Project-related employment, and indicators associated with 'social environments' such as crime rates could be included in the SMP. Noted in Section 14.12 development of the SMP, including selection of metrics, will include engagement with regulators, Aboriginal Groups, and interested stakeholders.
1978.1	round 1	Gitxaala Nation	6.6.10	Community Health	No follow-up programs are proposed for community health. While the proponent states that the social management plan will include performance metrics, it is not clear what data and metrics will be used. Without continuous monitoring of key community health outcomes, it is impossible to assess the effectiveness of any measures proposed to avoid or reduce adverse impacts on community health. See Memo "0217_AGIforGitxaala_Social Impacts".	The Social Management Plan (SMP; see mitigation 6.3.1) will focus on managing direct Project-related effects on community level infrastructure and services. While metrics used in the SMP will not directly align with social determinants of health (SDOH) assessed in Section 6.6 (i.e., Income and Social Status, Social Support Networks, Social Environments, Personal Health Practices and Coping Skills) indicators associated with these SDOH could be included. For example, indicators associated with income and social status such as Project-related employment, and indicators associated with 'social environments' such as crime rates could be included in the SMP. Noted in Section 14.12 development of the SMP, including selection of metrics, will include engagement with regulators, Aboriginal Groups, and interested stakeholders.
1979.1	round 1	Gitxaala Nation	8	Human Health	We stress the importance of implementing a community health monitoring system and a mechanism for sharing routine environmental monitoring data in a transparent, timely, and culturally appropriate manner. While a community health monitoring system does not necessarily need to include sampling of human tissues to check for the presence of adverse impacts due to change in air, water, or marine food quality, the timely disclosure of other monitoring data may help mitigate human health impacts perceived by community members. See Memo "0217_AGIforGitxaala_Social Impacts" for details on proposed monitoring programs.	Aurora LNG does not propose follow up or monitoring programs that involve sampling of human tissues. Mitigation Measures 6.3.1 (Social Management Plan commits Aurora LNG to engaging with concerned stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is already completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. The results of monitoring programs will be reported to the required agencies or organizations consistent with any requirements outlined in the conditions of an Environmental Assessment Certificate approval. Also, see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment' technical memo with respect to the referenced memo '0217_AGIforGitxaala_Social Impacts. The technical memo will be filed with the BC EAO.
1980.1	round 1	Gitxaala Nation	9	Accidents or Malfunctions	This section fails to assess risks from accidents and malfunctions to Aboriginal Groups, including Gitxaala. It does not reference Shandro et al., 2016. In addition, the mitigation measures outlined in the "Preventative and Response Measures" sections are insufficient. These sections state that Aboriginal Groups will be notified of an incident, but limited additional detail is provided. Finally, the Proponent does not commit to compensating affected communities for adverse impacts related to accidents or malfunctions. While Section 12.4 does identify risk from accidents and malfunctions that are specific to Aboriginal Interests, it similarly does not outline appropriate mitigation or compensation measures.	Potential effects of accidents and malfunctions to Aboriginal Groups are summarized in Sections 11.6 and 12.6 of the Application. Aurora LNG is preparing a memo to provide a summary of its review and analysis of the information presented in the Shandro et al. report. New information contained within the Shandro et al. report that was not previously considered in the Application will be analyzed, and subsequent implications to the conclusions provided in the Application, including any required changes, will be described by Aurora LNG in the memo. The memo will be filed with the BC EAO. In addition, please see the "Accidents or Malfunctions - Effects on Aboriginal Interests or CEAA 2012 Section 5(1)(c) Factors" technical memo which will be filed with the BC EAO which provides more information on methods used by Aurora LNG to summarize interactions between potential accident or malfunction events and Aboriginal Interests or CEAA 2012 section 5(1)(c) factors.
1981.1	round 1	Gitxaala Nation	9.9	Accidents or Malfunctions	Shandro et al. (2016) identfied that Gitxaala people are very concerned about marine vessels grounding. The Application concludes that the likelihood and consequence of residual effects from a grounding incident are very low and, consequently, that the residual effects are not significant. This assessment of risk does not take into consideration baseline information specific to Gitxaala, and therefore inappropriately characterizes the risks for this community. As discussed above, response measures listed are insufficient and do not include the commitment to compensate affected communities.	As described in Section 9.9.4 of the Application, Aurora LNG concluded that an accident scenario involving a vessel grounding or collision may have significant residual effects on marine mammals (for events involving a spill of bunker oil) and on marine birds. Other potential residual effects to assessed VCs from interactions from a vessel grounding or collision event are predicted to not be significant (see Section 9.9.3). In addition, Aurora LNG also includes consideration in Section 12.6 of potential interactions between a vessel grounding or a vessel collision incident and the exercising of Aboriginal Interests. Section 12.6 says the following: "A vessel grounding or collision could interfere with Aboriginal Groups' ability to harvest marine species, including species of cultural or economic importance. In this case, Aboriginal Groups could experience interference with their cultural wellbeing (culturally important species) and their ability to access economic opportunities (commercial fishing). Depending on the scale of a marine emergency response, a vessel collision or grounding could also interfere temporarily with Aboriginal Groups' use of the marine travelways in the vicinity of the event." (page 12-312) Section 11.6 of the Application Aurora LNG also states the following with regard to vessel grounding and collisions: "if such an event were to occur, this may result in significant residual effects to marine mammals and community health (if the event results in a serious injury or loss of human life), and significant residual effects to Aboriginal Current Use or Aboriginal Physical and Cultural Heritage through the loss or change in quality of harvested resources or culturally or spiritually important species." Aurora LNG is preparing a memo to provide a summary of its review and analysis of the Gitxaala-related baseline information presented in the Shandro Report. New information contained within the Shandro Report that was not previously considered in the Application will be analyzed, and subsequent implications to the conclusions provided in the Application, including any required changes, will be described by Aurora LNG in the memo. Please see technical memo titled "Response to Gitxaala Nation's Review of the Aurora LNG Environmental Assessment". This memo will be filed with the BC EAO.

1982.1	round 1	Gitxaala Nation	9.2	Accidents or Malfunctions	**Methods for Assessing the Potential Risk:** As previously stated, the methods used in the Application for risk assessment are problematic, as they do not take into account the vulnerability of Aboriginal Groups and specific sub-populations, such as women and children. The impacts of an accident or malfunction would disproportionately affect vulnerable groups. For example, for a Gitxaala person who relies on traditional food and harvesting for subsistence, the consequences of even one year's worth of reduced fishing would be high or very high. A precautionary approach to risk assessment should be utilized so that appropriate mitigation measures and monitoring systems may be developed. The Application should also provide more detailed justification for the assignment of likelihood and consequence ratings, which incorporates baseline information for Aboriginal Groups and other potentially affected communities. **Emergency Response Measures:** In Section 14, the Application identifies that Aurora LNG will be the primary responder when emergencies or incidents occur and that response protocols will be detailed in the Emergency Response Plan. This plan should characterize existing emergency services in the area, including those available to Aboriginal Groups living on reserve, and outline protocols for collaborating with these emergency service providers, in the event that this is required. We also suggest that the Proponent support and fund industry-specific training to relevant emergency service providers, including first responders in remote communities such as Gitxaala. We recommend that the Emergency Response Plan identify the Proponent's intended sources of funding for emergency response, as well as a commitment to uphold the Polluter Pays Principle (i.e. the party responsible for producing pollution must pay for the damage caused by it) with Full Cost Accounting (i.e. accounting that recognizes the direct and indirect economic, environmental, health and social costs of a project or action). Finally, we recommend that the Emergency Response Plan identify opportunities to involve Aboriginal Groups, including Gitxaala, in emergency planning and response, in recognition of their intimate understanding of the environment, ongoing role in environmental management and stewardship, and to provide economic opportunity to Aboriginal People.	The Application (Section 12.6) describes interactions considered between accidents and malfunctions and Aboriginal Interests. In that section, Aurora LNG concluded that several accidents or malfunctions could interfere with the exercise of Aboriginal Interests. For health risk related to exposure to chemicals in the environment, the risks are assessed based on exposure to humans and vulnerable sub-populations when applicable. Sub-populations are considered when there is a clear line of evidence showing that those populations are more sensitive (e.g., health risk from changes in air quality are based on guidelines to protect health sensitive people with existing respiratory issues and sensitive people such as children and elderly). Health risk from consuming marine foods were based on chemical exposure to both adults and toddlers. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Emergency Response Plan. Aurora LNG has requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90. Please also see the "Accidents or Malfunctions - Effects on Aboriginal Interests or CEAA 2012 Section 5(1)(c) Factors" technical memo which will be filed with the BC EAO.
1983.1	round 1	Gitxaala Nation	9.11	Accidents or Malfunctions	See Memo "0217_AGIforGitxaala_Social Impacts" for comments on cumulative effects.	See the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo which will be filed with the BC EAO.
1984.1	round 1	Gitxaala Nation	11.3.2.7	CEAA 2012	The criteria for significance thresholds for Aboriginal Health, Aboriginal Socio-Economic Conditions, and Aboriginal Cultural and Physical Heritage should consider that Aboriginal people may be more vulnerable to adverse impacts to certain VCs outlined in Part B. Qualified professionals involved in determining significance should have familiarity and background with concepts of health and wellness of Aboriginal people.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). As outlined in Section 11.3.2.7, the significance determination for Aboriginal Health, Aboriginal Socio-Economic Conditions, and Aboriginal Cultural and Physical Heritage took into account the residual effects characterizations for relevant associated VCs, information provided by Aboriginal groups, as well as whether the residual effect takes place in a context that has low resilience as defined in Table 11.3-6. The effect was considered significant if a key component (Table 11.3-2) that is relevant to Aboriginal Health, Aboriginal Socio-Economic Conditions and Aboriginal Cultural and Physical Heritage would have a substantial effect on Aboriginal people's health, socio-economics or cultural and physical heritage beyond that considered in the VC analysis in Part B of the Application. In applying the six step framework detailed in Section 11.3.5.1 (Method for the Assessment of Residual Effects), where it was determined that the interactions would be consistent for Aboriginal people as non-Aboriginal people, the assessment focused on the conclusions originally described for the relevant VCs. In particular, the assessment focused on the following approaches taken in the relevant VC assessments: Human Health receptor sites used in the Human Health assessment included places where health-sensitive people are present (e.g., daycares, schools, hospitals, elderly care homes) The Community Health assessment considers effects on vulnerable populations, including: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes, individuals and households classified as low-income earners, marginally-housed individuals, and individuals classified as homeless. Visual Quality viewpoints were determined in consultation with Aboriginal Groups and are relevant to any land or marine user. The thresholds used in the Acoustic Environment assessment are guidelines set forth by regulators and do not differ for Aboriginal and non-Aboriginal people. Additional information sources, not included in the VC assessments, were considered to determine if the predicted residual effects would be consistent for Aboriginal and non-Aboriginal peoples. See steps 3-6 outlined in Section 11.3.5.1 and illustrated in Figure 11.3-5. Aurora LNG is confident that the assessment methodology for Section 5(1)(c) Effects presented in the Application is fully compliant with all provincial and federal regulatory requirements.
1985.1	round 1	Gitxaala Nation	11.3.5.1	CEAA 2012	As stated in Section 11.7.3, Gitxaala members may have particular reasons for harvesting certain species from specific areas (family history, house territory, sacred site, distance to home, etc.) in the PDA and LAA. The proponent should gain further insight into these areas and why modifications to harvesting in them may be more significant to Gitxaala members than anticipated, for instance through additional field work.	Aurora LNG acknowledges that the Project vicinity may have importance and features related to harvesting not found elsewhere. However,Aurora LNG was not provided with information that identified the Project area or the surrounding waters as a unique harvesting area. Aurora LNG maintains that, based on information available at the time of Application development and submission, its assumptions regarding the uniqueness of the Project vicinity for Current Use activities and the continued availability of other areas outside the Project vicinity was reasonable. Please refer to the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1986.1	round 1	Gitxaala Nation	11.3.5.2	CEAA 2012	As stated in Section 11.7.3, Gitxaala members may have particular reasons for harvesting certain species from specific areas (family history, house territory, sacred site, distance to home, etc.) in the PDA and LAA. The proponent should gain further insight into these areas and why modifications to harvesting in them may be more significant to Gitxaala members than anticipated, for instance through additional field work.	Aurora LNG acknowledges that the Project vicinity may have importance and features related to harvesting not found elsewhere. However,Aurora LNG was not provided with information that identified the Project area or the surrounding waters as a unique harvesting area. Aurora LNG maintains that, based on information available at the time of Application development and submission, its assumptions regarding the uniqueness of the Project vicinity for Current Use activities and the continued availability of other areas outside the Project vicinity was reasonable. Please refer to the technical memo titled, "Additional Information Regarding the CEAA 5(1)(C) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in these Assessments" which will be filed with the BC EAO.
1987.1	round 1	Gitxaala Nation	11.3.6.1	CEAA 2012	The listed mitigation measures focus only on heavily mitigating impacts to visual effects and the acoustic environment. There is no reference to any additional measures to accommodate unique determinants of Aboriginal Health, including anxiety due to resource and environmental uncertainty. The same can be said for unique components of socio-economic conditions for Aboriginal people, such as the importance of being able to maintain traditional livelihoods that enable sharing harvested resources between community members.	As per CEAA 2012 5(1)(c), the focus of the assessment is on effects to the environment on the various CEAA 5(1)(c) factors. The assessment of Aboriginal Health determined that the effects from the Project to the environment on health as assessed collectively in the Human Health, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Health. Similarly, the assessment of Aboriginal Socio-Economic Conditions determined that the effects to the environment on socio-economic conditions as assessed collectively in the Visual Quality, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Socio-Economic Conditions. The assessments of Human Health, Community Health, Acoustic Environment and Visual Quality, including associated mitigation measures, are applicable for any Aboriginal (or non-Aboriginal) person living within the LAA for the four VCs listed. Aurora LNG maintains that the scope of the assessment is in alignment with the requirements of the AIR and provincial and federal regulatory requirements. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshop #5 was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshop #5, Aurora LNG documented Gitxaala Nation's opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1988.1	round 1	Gitxaala Nation	11.3.6.2	CEAA 2012	The listed mitigation measures focus only on heavily mitigating impacts to visual effects and the acoustic environment. There is no reference to any additional measures to accommodate unique determinants of Aboriginal Health, including anxiety due to resource and environmental uncertainty. The same can be said for unique components of socio-economic conditions for Aboriginal people, such as the importance of being able to maintain traditional livelihoods that enable sharing harvested resources between community members.	As per CEAA 2012 5(1)(c), the focus of the assessment is on effects to the environment on the various CEAA 5(1)(c) factors. The assessment of Aboriginal Health determined that the effects from the Project to the environment on health as assessed collectively in the Human Health, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Health. Similarly, the assessment of Aboriginal Socio-Economic Conditions determined that the effects to the environment on socio-economic conditions as assessed collectively in the Visual Quality, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Socio-Economic Conditions. The assessments of Human Health, Community Health, Acoustic Environment and Visual Quality, including associated mitigation measures, are applicable for any Aboriginal (or non-Aboriginal) person living within the LAA for the four VCs listed. Aurora LNG maintains that the scope of the assessment is in alignment with the requirements of the AIR and provincial and federal regulatory requirements. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshop #5 was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshop #5, Aurora LNG documented Gitxaala Nation's opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1989.1	round 1	Gitxaala Nation	11.3.6.3	CEAA 2012	The listed mitigation measures focus only on heavily mitigating impacts to visual effects and the acoustic environment. There is no reference to any additional measures to accommodate unique determinants of Aboriginal Health, including anxiety due to resource and environmental uncertainty. The same can be said for unique components of socio-economic conditions for Aboriginal people, such as the importance of being able to maintain traditional livelihoods that enable sharing harvested resources between community members.	As per CEAA 2012 5(1)(c), the focus of the assessment is on effects to the environment on the various CEAA 5(1)(c) factors. The assessment of Aboriginal Health determined that the effects from the Project to the environment on health as assessed collectively in the Human Health, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Health. Similarly, the assessment of Aboriginal Socio-Economic Conditions determined that the effects to the environment on socio-economic conditions as assessed collectively in the Visual Quality, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Socio-Economic Conditions. The assessments of Human Health, Community Health, Acoustic Environment and Visual Quality, including associated mitigation measures, are applicable for any Aboriginal (or non-Aboriginal) person living within the LAA for the four VCs listed. Aurora LNG maintains that the scope of the assessment is in alignment with the requirements of the AIR and provincial and federal regulatory requirements. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshop #5 was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshop #5, Aurora LNG documented Gitxaala Nation's opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1990.1	round 1	Gitxaala Nation	11.3.6.4	CEAA 2012	The listed mitigation measures focus only on heavily mitigating impacts to visual effects and the acoustic environment. There is no reference to any additional measures to accommodate unique determinants of Aboriginal Health, including anxiety due to resource and environmental uncertainty. The same can be said for unique components of socio-economic conditions for Aboriginal people, such as the importance of being able to maintain traditional livelihoods that enable sharing harvested resources between community members.	As per CEAA 2012 5(1)(c), the focus of the assessment is on effects to the environment on the various CEAA 5(1)(c) factors. The assessment of Aboriginal Health determined that the effects from the Project to the environment on health as assessed collectively in the Human Health, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Health. Similarly, the assessment of Aboriginal Socio-Economic Conditions determined that the effects to the environment on socio-economic conditions as assessed collectively in the Visual Quality, Acoustic Environment, and Community Health VCs accurately capture the potential effects on Aboriginal Socio-Economic Conditions. The assessments of Human Health, Community Health, Acoustic Environment and Visual Quality, including associated mitigation measures, are applicable for any Aboriginal (or non-Aboriginal) person living within the LAA for the four VCs listed. Aurora LNG maintains that the scope of the assessment is in alignment with the requirements of the AIR and provincial and federal regulatory requirements. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshop #5 was also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshop #5, Aurora LNG documented Gitxaala Nation's opinions, concerns and feedback. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]). Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.

1991.1	round 1	Gitxaala Nation	11.3.9	CEAA 2012	**Existing Conditions:** The Shandro et al., 2016 report is not referenced. In addition, information on the degree to which Gitxaala members are dependent on traditional or subsistence livelihoods is not discussed. **Current Use:** Adverse impacts on current use are considered to be insignificant, despite acknowledgement that some modification of harvesting activities in the PDA or LAA is expected. The proponent should consider proposing ways in which users might be compensated for modifications made to current use. **Aboriginal Health:** Effects on Aboriginal Health are considered only relative to changes in air quality, quality and quantity of marine foods, and acoustic environment. Key health risks and impacts for Gitxaala as identified by Shandro et al., 2016 (discussed in detail in comments on Section 6.6 Community Health), are not considered here. The proponent should consider implementing an Aboriginal health monitoring system (as part of a broader community health monitoring system) as well as sharing routine environmental monitoring data with Gitxaala members in a timely and culturally appropriate manner to reduce perceived uncertainty. **Socioeconomic Conditions:** Similar to our comments on Current Use. Effects on socioeconomic conditions are assessed as insignificant, but may not be perceived or experienced as such by some Gitxaala members. The proponent should propose ways in which users might be compensated for modifications made to current use. See Memo "0217_AGIforGitxaala_Social Impacts" for further details.	In November 2016, Gitxaala Nation provided Aurora LNG with a study entitled Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation (Shandro et al., 2016) (the "Gitxaala Nation Report"). As Aurora LNG had completed the analysis and writing for its Application for Environmental Assessment Certificate (the "Application") at the time the Gitxaala Nation Report was received, information contained in the report had not been reviewed or directly incorporated into the Application which was submitted to the BC EAO in November, 2016. Aurora LNG responded to the Gitxaala Nation Report in its technical memo entitled "Aurora LNG's Response to the 'Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation'". A draft of this memo was shared with Gitxaala Nation on May 11, 2017 for their comment and will be filed with the BC EAO. Aurora LNG acknowledges the mitigation recommendations suggested by Gitxaala Nation. In addition, Aurora LNG is currently reviewing specific feedback on proposed mitigation measures received from Aboriginal Groups during Technical Workshops #4 and #5 and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
1992.1	round 1	Gitxaala Nation	12.5.6.5	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1993.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1994.1	round 1	Gitxaala Nation	12.5.6.7	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1995.1	round 1	Gitxaala Nation	12.5.6.8	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1996.1	round 1	Gitxaala Nation	12.5.6.9	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1997.1	round 1	Gitxaala Nation	12.5.6.10	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1998.1	round 1	Gitxaala Nation	12.5.6.11	Aboriginal Consultation	**Assessment of Effects on Gitxaala:** The assessment of effects on Gitxaala's exercise of Aboriginal Interests does not reference Shandro et al., 2016. The Application takes into consideration "the relative importance of the Project vicinity...and the availability of other areas within the traditional territory where the meaningful exercise of the Aboriginal Interest could reasonably occur" (p. 12-156). Even if the exercise of an Aboriginal Interest "could reasonably occur" elsewhere, Gitxaala people should not be subjected to (further) environmental dispossession or economic displacement. If this cannot be avoided, then Gitxaala people should be appropriately compensated. The Application also states that "this interference [with aspects of Aboriginal title] is restricted to the PDA, which comprises 0.03% of Gitxaala Nation's traditional territory. The Project would not interfere with title rights in other areas of the traditional territory" (p. 12-159). This is not accurate, as inability to access the PDA could affect patterns of land use and marine activity outside of the PDA, thus affecting traditional territory outside of the PDA. In addition, this section identifies the Proponent's commitment to continue to consult with Gitxaala to develop appropriate mitigation measures. We propose that the Proponent seek to not only consult and accommodate, but moreover to obtain the Free, Prior and Informed Consent of Gitxaala and other Aboriginal Groups as per the IFC Performance Standards.	Please refer to Aurora LNG's technical memo entitled: Aurora LNG's response to the "Potential Risks, Impacts and Opportunities of the Aurora LNG Project for Gitxaala Nation". In addition, please refer to the technical memo entitled: "Additional Information Regarding CEAA 5(1)(c) and Part C Assessment Methodologies and the Consideration of Traditional Use Information in the Assessment". Finally, Aurora LNG requested specific feedback on proposed mitigation measures from Gitxaala Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures (including comments received in the 2016 Shandro Report) and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
1999.1	round 1	Gitxaala Nation	12.6	Aboriginal Consultation	Although this section identifies the potential for adverse effects on Aboriginal Groups due to accident or malfunction, it does not outline corresponding mitigation measures to ensure the exercise of Aboriginal Interests and cultural continuity. See comments on Section 9 for further recommendations.	The assessment of effects of Accidents or Malfunctions (Section 9) includes Preventative and Response Measures for each potential accident or malfunction. These measures will, by extension, reduce or avoid effects from an accident or malfunction on the exercise of Aboriginal Interests, including cultural wellbeing.
2000.1	round 1	Gitxaala Nation	14.12	Environmental and Operational Management Plans	A community health monitoring system should be included as part of the Social Management Plan. A local employment and procurement management plan should be included as part of the Social Management Plan. A formal grievance mechanism (unclear if this is covered under "community feedback processes") should be included as part of the Community Engagement Plan. See Memo "0217_AGIforGitxaala_Social Impacts" for further details on management plans.	Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with regulators, Aboriginal Groups, and interested stakeholders to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Mitigation 6.4.8 (community grievance process) will be included under the Community Engagement Plan (mitigation 6.3.4) as part of the overall Social Management Plan (mitigation 6.3.1). Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.

2001.1	round 1	Gitxaala Nation	14.12.1	Environmental and Operational Management Plans	A community health monitoring system should be included as part of the Social Management Plan. A local employment and procurement management plan should be included as part of the Social Management Plan. A formal grievance mechanism (unclear if this is covered under "community feedback processes") should be included as part of the Community Engagement Plan. See Memo "0217_AGIforGitxaala_Social Impacts" for further details on management plans.	Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with regulators, Aboriginal Groups, and interested stakeholders to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Mitigation 6.4.8 (community grievance process) will be included under the Community Engagement Plan (mitigation 6.3.4) as part of the overall Social Management Plan (mitigation 6.3.1). Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
2002.1	round 1	Gitxaala Nation	14.12.2	Environmental and Operational Management Plans	A community health monitoring system should be included as part of the Social Management Plan. A local employment and procurement management plan should be included as part of the Social Management Plan. A formal grievance mechanism (unclear if this is covered under "community feedback processes") should be included as part of the Community Engagement Plan. See Memo "0217_AGIforGitxaala_Social Impacts" for further details on management plans.	Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with regulators, Aboriginal Groups, and interested stakeholders to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Mitigation 6.4.8 (community grievance process) will be included under the Community Engagement Plan (mitigation 6.3.4) as part of the overall Social Management Plan (mitigation 6.3.1). Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
2003.1	round 1	Gitxaala Nation	14.12.3	Environmental and Operational Management Plans	A community health monitoring system should be included as part of the Social Management Plan. A local employment and procurement management plan should be included as part of the Social Management Plan. A formal grievance mechanism (unclear if this is covered under "community feedback processes") should be included as part of the Community Engagement Plan. See Memo "0217_AGIforGitxaala_Social Impacts" for further details on management plans.	Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with regulators, Aboriginal Groups, and interested stakeholders to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Mitigation 6.4.8 (community grievance process) will be included under the Community Engagement Plan (mitigation 6.3.4) as part of the overall Social Management Plan (mitigation 6.3.1). Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
2004.1	round 1	Gitxaala Nation	14.12.4	Environmental and Operational Management Plans	A community health monitoring system should be included as part of the Social Management Plan. A local employment and procurement management plan should be included as part of the Social Management Plan. A formal grievance mechanism (unclear if this is covered under "community feedback processes") should be included as part of the Community Engagement Plan. See Memo "0217_AGIforGitxaala_Social Impacts" for further details on management plans.	Mitigation Measures 6.3.1 (Social Management Plan [SMP]) requires Aurora LNG to engage with regulators, Aboriginal Groups, and interested stakeholders to develop metrics used to monitor changes in demand on infrastructure and services (e.g., health care infrastructure and services). On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status. Mitigation 6.4.8 (community grievance process) will be included under the Community Engagement Plan (mitigation 6.3.4) as part of the overall Social Management Plan (mitigation 6.3.1). Also see the "Response to Gitxaala Nation Review of the Aurora LNG Environmental Assessment" technical memo for consideration of the referenced memo '0217_AGIforGitxaala_Social Impacts'. The technical memo will be filed with the BC EAO.
2005.1	round 1	Gitxaala Nation	1.2.10	Proposed Project Overview	Commitment stated to undertake adaptive management as "best in class" for "HSE&SR Management System... ...Throughout the Application process, Aurora LNG will continue to consider results of environmental surveys and will adopt an adaptive management approach." Specific reference made to Section 14 of EA application for "series of EMPs based on industry best management practices and standards, applicable regulations, commitments made during the Application process, and EAC and permit condition, to protect specific components of the environment, Project personnel, and the public by reducing or avoiding potential adverse effects from Project activities." Adaptive managment has been stated as a commitment for EMPs developed during all phases. Observation has been noted and will be referred to throughout EA application review.	Aurora LNG acknowledges the comment from Gitxaala Nation. Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2006.1	round 1	Gitxaala Nation	1.3.1	Proposed Project Overview	Re: PNCIMA - statement to monitor with adaptive management and implement goals for "integrity of marine ecosystems, human wellbeing, governance, and improving the understanding of complex marine ecosystems", as it pertains to "risk assessment tools and cumulative effects". Observation has been noted and will be referred to throughout EA application review.	Aurora LNG acknowledges this comment.
2007.1	round 1	Gitxaala Nation	1.5.1.1	Proposed Project Overview	LNG from the Western Sedimentary Basin, as the upstream gas supply, currently uses a great deal of hydraulic fracturing in the extraction process and relies on off-grid technologies in the natural gas procurement process, which principally involves use of fossil fuels as an energy source (e.g., off-grid diesel generation). The extraction process is prone to fugitive emissions of methane (25+ times more effective of a GHG than carbon dioxide in the short term), which cannot be reliably factored into a carbon lifecycle assessment using current quantification methods. This has been acknowledged and accepted as problematic by the Parliamentary Secretary for ECCC and the Government of Canada and is a major source of uncertainty surrounding the Proponent's claim, but necessarily results in a more carbon intensive fossil fuel than conventional natural gas. It is also a major source of uncertainty underestimating overall GHG accounting for LNG production and export. The principal objective of adaptive management is to address such uncertainties and meaningfully inform the resource development process over time, particularly with respect to the risks to values held by all interests in the decision-making process. Management actions are an outcome of open and participatory consultation, where individual values and interests are given credible consideration in a formal consultative process (i.e., through workshops). How does the Proponent justify the production and export of LNG as a less "carbon intensive" supply to foreign markets, given these uncertainties and limitations, and how does its commitment to adaptive management factor into the decision making process for excluding upstream sources in the effects assessment of GHGs as a VC?	In fulfillment of Environment and Climate Change Canada (ECCC) requirements, Aurora LNG prepared a technical report titled: "Aurora LNG: Review of Upstream Greenhouse Gas Emissions Report." This document, provides an estimate of upstream GHG emissions associated with the Project. It is stated in Section 1.5.1.1 that the "Environmental benefits of the proposed Project include lessening dependence of foreign market on more carbon intensive fossil fuels through the production and export of LNG." This statement refers to the far lower GHG intensity of LNG as an energy source, compared to oil or coal, on a life-cycle basis.
2008.1	round 1	Gitxaala Nation	1.7.1.1	Proposed Project Overview	The Province is building the Site C dam as a major component of its "hydrolelectric backbone for storage capacity capable of meeting future demand" according to BC Hydro President Jessica Lewis, yet there is currently no economic case for Site C according to Harry Swain, Site C Joint Review Panel Chair, because demand for energy has been flat for the past twenty years. This Project represents a substantive demand centre for up to 250 MW of power that could draw from Site C power supply, if not making use of the local resource potential from local clean energy development interests. Grid-connected power should be given more serious consideration, either as a complete energy source or as a component of an electric drive liquefaction process.	As noted in Section 1.7.1.1 of the Application, BC Hydro will be evaluating the feasibility of providing additional power from the existing hydro grid to Digby Island, which is expected to require various infrastructure upgrades including the installation of a new transmission line to the island. Engagement to date with BC Hydro has indicated that it is unlikely that the existing grid can supply all of the power to operate the Project. Given the uncertainty surrounding the technical feasibility, power sourced from the BC Hydro grid is not identified as a preferred alternative.
2009.1	round 1	Gitxaala Nation	1.7.1.1	Proposed Project Overview	The outcome of BC Hydro's evaluation is a critical factor in the Project from an environmental and economic perspective that would reduce the Project's carbon footprint. The Project is expected to have significant cumulative adverse environmental effects based on the GHG VC assessment (See Section 4.3). What is the outcome of BC Hydro's evaluation? Can available local clean energy (especially onshore and offshore wind) also be supplied, possibly in combination with Site C power and feed gas as firm and stable energy sources for ancillary needs and liquefaction process?	As noted in Section 1.7.1.1 of the Application, engagement to date with BC Hydro has indicated it is unlikely that the existing grid can supply all of the power to operate the Project. BC Hydro is continuing to investigate options to supply power but this is expected to require various infrastructure upgrades including a new power line to the island. Given the uncertainty surrounding the technical feasibility of this option, it is not identified as a preferred alternative. Aurora LNG is not aware of any local energy projects that could reliably supply power to the Project, and has therefore not considered their feasibility as part of the assessment of alternative power supply options.
2010.1	round 1	Gitxaala Nation	1.7.1.2	Proposed Project Overview	The Proponent has not seriously considered the prospect of integrating local power supplied with either BC Hydro grid or micro-grid connectivity that could use reliable supply of feed gas along with available clean energy (particularly onshore and offshore wind resources) to be jointly developed by local interests? Such an energy supply could provide local economic benefits and would work to meaningfully reduce the overall GHG emissions expected to have significant adverse environmental effects based on the GHG VC assessment (Section 4.3) relative to natural gas. Incredibly, this conclusion does not even consider the upstream sources of emissions, LNG shipping-related emissions, or the product's end use (which is iteself a fossil fuel). This does not accord with Canada's binding commitments to the Paris Agreement and the BC Clean Energy Plan, neither of which are on course to meet their intended GHG reduction targets according to an analysis provided in the GHG VC effects assessment (refer to Section 4.3.3.2 on p. 4.3-11, paragraph 5).	Section 1.7.1 of the Application (Proposed Project Overview) includes an analysis of technically and economically feasible alternative options to supply power to the proposed Project. This includes power coming from the the existing BC Hydro grid, and onsite natural gas plants. Aurora LNG is not aware of any micro-grid projects that could reliably provide energy to the Project, and does not consider this a technically or economically feasible option to include in the assessment of alternatives.
2011.1	round 1	Gitxaala Nation	1.7.2	Proposed Project Overview	Prince Rupert and region is the wettest area in Canada with over 3000 mm of annual rainfall on average. Why have alternatives like the collection and storage of rainwater not been given meaningful consideration as a potential source of this process water? What kind of desalination method is being proposed and how can this be economically justified given the local environmental context?	The assessment of alternatives water supply options in section 1.7.2 considers the three options Aurora LNG considers technically and economically feasible for the Project, given that the Project water requirements (9,955 m3/day during operations). Given the seasonality of precipitation in the region, this source is not considered feasible to address the Project requirement for a consistent year round water supply.
2012.1	round 1	Gitxaala Nation	1.7.2.1	Proposed Project Overview	Desalination is likely to be much more expensive than the alternative options, especially given the local environmental context and energetic demands, which are preferred to be supplied by fossil fuel sources (i.e., feedstock gas). Please justify the economic criteria (i.e., high costs for all three alternative options), especially given the expected capital and operational costs for desalination, treatment, and disposal of waste products from the desalination process.	The preliminary evaluation conducted by Aurora LNG indicates that all three water supply options will have high costs when considering the volume of water required for the Project during operations which is anticipated to be approximately 9,855 m3/day.
2013.1	round 1	Gitxaala Nation	1.7.5.1	Proposed Project Overview	Why has the disposal of wastewater from the desalination process not been considered as a potential effect on "marine fish and fish habitat and aquatic species" in the summary table? The conceptual layout of the Project on Figure 1-2 shows the desalination plant footprint is located within the PDA, as well as its incurrent and excurrent water lines. A wastewater line exits the plant and leads directly to the deep outfall at Charles Point. There is no indication in the figure that wastewater from the desalination process will be effectively treated at the Wastewater Treatment Plant and Stormwater Retention Ponds located further south in the PDA. Effective wastewater treatment will be necessary prior to disposal at the outfall to avoid environmental effects, given the elevated concentration of solutes, including metals and other contaminants likely to be in the seawater from surrounding industrial activities (i.e., the "long history of industrial activity noted in Section 4.5.13.2, p. 4.5-53 of the Application, which references a "complete list of potential contaminant sources in the Prince Rupert Harbour area" in Appendix F), and especially because the location of te seawater intake will be in Casey Cove where the MOF will essentially serve as an industrial port with its "historical marine waste dump". This stands to be an obvious source of potential effects, with effluent discharge at the deep outfall as a pathway of effects to "marine fish and fish habitat and aquatic species" as the receptors in the marine receiving environment at Chrles Point. Please justify the exclusion and clarify if/how desalination wastewater will be treated prior to disposal? Where will any solids be disposed of?	The intent of Table 1-28 in Section 1.7 (Alternative Means of Undertaking the Proposed Project, Project Overview Chapter) was to evaluate options for disposing of material dredged from the dredge pockets associated with construction of the MOF and the LNG jetty. The intent was not to identify options around the release of wastewater into the marine environment. As described in the Project Overview Chapter, based on preliminary engineering and design, wastewater (warm brine with elevated salinity) from the desalination plant is expected to be combined with the power plant cooling tower blowdown, tested and treated to meet regulatory requirements, if required prior to being discharged to the marine environment through a deep water marine outfall (likely the deep water marine outfall off Charles Point, but to be determined during final engineering and design). Additional details on wastewater treatment for the Project is provided in the memo "Discharges to the Marine Environment" which will be filed with the BC EAO.Solids resulting from the wastewater treatment will be transported offsite for disposal at a licensed facility (see Section 1.2.5.3 of the Application). The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Potential effects to marine fish and fish habitat associated with the discharge of wastewater (including wastewater from the desalination process) out of the Charles Point outfall are assessed and characterized in the Marine Fish and Fish Habitat VC under the 'change in health' effect (Section 4.9.5.5). This assessment relies heavily on the results of the Water Quality VC (Section 4.5), which assessed potential changes to marine water quality associated with wastewater discharges. With respect to the comment ", ...given the elevated concentration of solutes, including metals and other contaminants likely to be in the seawater from surrounding industrial activities...", while there is a long history of industrial activities in the region, as described in Appendix F, the results of the water quality monitoring program indicate that metal concentrations in seawater are generally well below BC MOE water quality guidelines. Of the 41 metals analyzed, 23 were below detection limits in all samples analyzed, and only boron and copper exceeded guidelines. These results suggest that seawater chemistry in the area in the LAA is typical for the region, and does not show evidence of metal contamination. Please see Section 5.8.1 of Appendix F, Marine Sediment and Water Quality TDR for further discussion.
2014.1	round 1	Gitxaala Nation	1.7.5.1	Proposed Project Overview	What was the outcome of consultation with ECCC and why has Proponent decided not to pursue the Coast Island Disposal Site?	Aurora LNG met with ECCC on April 29, 2016 to discuss the Coast Island Disposal Site. During the meeting, ECCC informed Aurora LNG that the Coast Island Disposal Site would not be considered for future Disposal at Sea permits as the site was not suitable for multiple projects (i.e., projects other than the proposed Canpotex Potash Export Terminal). Based on this feedback, Aurora LNG removed the Coast Island Disposal Site from its DAS site alternatives.
2015.1	round 1	Gitxaala Nation	1.7.5.1	Proposed Project Overview	What are the applicable regulations and associated permitting requirements for each scenario and why has the regulatory burden of each alternative not been directly factored into the evaluation criterion for "Regulatory Requirements"?	Section 1.7.5.1 of the Application provides the applicable regulatory context for each scenario, specifying that the deep water disposal site at the Brown Passage site is regulated by ECCC under Section 127 of the Canadian Environmental Protection Act, 1999, and requires application for a Disposal at Sea Permit, while on-land disposal in BC must comply with the Environmental Management Act and its regulations, including contaminated sites and hazardous waste regulations, administered by BC MOE. The hybrid option is subject to both of these regulatory requirements. The regulatory requirements of each option were factored into the evaluation, as reflected in the text of this section.
2016.1	round 1	Gitxaala Nation	1.7.5.1	Proposed Project Overview	Disposal at sea is likely to have much less of a degree of land disturbance compared to the other options, especially given the local environmental context, yet all scenarios have been ranked as having a "moderate" effect. Please justify the rating and clarify how and why the evaluation criterion for "Land Disturbance" factored into this result.	Disposal at Sea at the proposed Brown Passage site will not result in land disturbance. An errata document is being created that will capture this correction and it will be filed with the BC EAO.
2017.1	round 1	Gitxaala Nation	2.4.1	Environmental Assessment Process	Water quality concerns acknowledged in summary table relate solely to water quality effects from LNG carriers and export tugs, but how does the response address Gitxaala's concerns about operational discharge?	Operational discharges to the marine environment are acknowledged as a potential Project interaction, under waste management, in Table 4.5-25, Section 4.5.14. Potential waste discharge effects are characterized in Section 4.5.15, with associated mitigation measures 4.5.8, and 4.5.9 listed in Table 4.5-26. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

2018.1	round 1	Gitxaala Nation	2.4.1	Environmental Assessment Process	Potential marine fish and fish habitat effects have not considered the discharge of operational wastewater and effluent from the desalination process into the marine receiving environment.	Potential effects to marine fish and fish habitat associated with the discharge of wastewater during Project operations are assessed and characterized in the Marine Fish and Fish Habitat VC under the 'change in health' effect (Section 4.9.5.5). Effluent discharges will be tested and treated, if required, prior to being discharged to the marine environment. Project-related effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone. For additional information on effluent treatment and permit requirements, please see the "Discharges to the Marine Environment" memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2019.1	round 1	Gitxaala Nation	2.4.2	Environmental Assessment Process	Potential marine fish and fish habitat effects have not considered the discharge of operational wastewater and effluent from the desalination process into the marine receiving environment. In terms of the effluent plume, it will immediately impart a continuous and persistent effect to an unknown volume of marine fish habitat. There is no indication of how the effluent will disperse in the water column or the direction of dispersion and these represent critical deficiencies in the baseline data requirements for a credible effects assessment.	Project wastewater (including Desalination waste discharge) will meet CCME and BC water quality guidelines (WQG) for temperature and salinity, outside of the initial dilution zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2020.1	round 1	Gitxaala Nation	4.3.2.2	Greenhouse Gases	Upstream sources of GHG emissions represent a key uncertainty with respect to the potential for GHG VC effects to occur. A results-based adaptive environmental management plan can be implemented through the stated commitment if the goals and values of all interests are given credible consideration in the consultation process. It is a necessary condition of the formal adaptive management process. Why has this uncertainty not been considered in the Project's GHG managment and emissions reduction plan and directly tied to the commitment to undertake an adaptive management approach, as stated in Section 1.2.10, page 1-43 of Part A of the Application?	Upstream GHG emissions will be emitted by other operators and not Aurora LNG. The management of upstream emissions are not controlled by this Project. Direct emissions from the Project will be managed through the GHG Management Plan identified in Section 4.3.5.2 of the Application. Following receipt of a letter from ECCC to the EAO (dated December 1, 2016) regarding the requirement for an Aurora LNG Project Upstream Greenhouse Gas Assessment, Aurora LNG and the EAO agreed on the delivery date of Feb 22, 2017 for the upstream assessment report. The Aurora LNG Project Upstream Greenhouse Gas Assessment has been completed and delivered to the EAO.
2021.1	round 1	Gitxaala Nation	4.3.5.1	Greenhouse Gases	Appendix B was completed by Sana Talebi and Sandra Banholzer with a quality review by Daniel Hegg. Michael Murphy conducted the "independent" review; however, all of these individuals, including Murphy, work for Stantec, so how is the review considered to be independent? Is it not a conflict of interest?	The designated roles of Author, Discipline Lead, Quality Reviewer, and Independent Reviewer refer to the internal quality review processes undertaken as part of document development and completion. It is not intended to indicate that an independent third-party review was completed.
2022.1	round 1	Gitxaala Nation	4.3.4	Greenhouse Gases	Presumably any and all GHG emissions represent a measurable form of waste that warrants direct consideration as a Project interaction. Explain how the exclusion of treated and disposed of sewage and wastewater (especially from the desalination process) can be justified as not applicable to the effects assessment for the GHG VC?	The treatment of sanitary, stormwater, and wastewater were excluded from the GHG assessment due to the expected minimal concentration of GHGs entrained in the liquids. The handling of these liquids was assumed to not generate predictable or substantive volumes of GHG emissions.
2023.1	round 1	Gitxaala Nation	4.3.5.1	Greenhouse Gases	The expectation of negligible fugitive emissions with the stated mitigation is not a fair assumption. Numerous sources of fugitive emissions potentially exist apart from the few examples listed in the assessment. The Proponent identifies in its VC assessment scope and selection of GHGs that "[methane] is the main component of natural gas... produced by human activities, including the burning of fossil fuels, fugitive sources, and venting activities" (Section 4.3.2.4, p. 4.3-6). There is clear potential for fugitive emissions to result as a VC effect because it is present in all phases of the industry as a whole and is conventionally known and understood to be a problem in other phases. It is also a source of uncertainty that cannot be factored into GHG emissions reporting and this must not be overlooked. Fugitive emissions should not be assumed as negligible in the LNG production process. Rather, the problem represents a key uncertainty with respect to GHGs effects and should be managed through a credible operational monitoring program in the very least, and directly tied to the commitment to undertake an adaptive management approach, as stated in Section 1.2.10, page 1-43 of Part A of the Application.	As identified in Section 4.3.5.2 of the Application, "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislations and will contain continuous assessment of monitoring and management requirements applicable to the mitigations listed in Table 4.3-12". Mitigation 4.3.5 states a fugitive emission detection program will be implemented with the aim to detect and repair fugitive leaks.
2024.1	round 1	Gitxaala Nation	4.3.5.1	Greenhouse Gases	Presence of international LNG carriers is a necessary outcome of this Project. The analysis warrants better justification for excluding LNG shipping from the Project's operational total for GHGs emissions, especially if this is already known (or assumed to be known) based on a previous assessment completed by the same consultancy (i.e., PNW 2014).	Shipping activities have been quantified and presented in Table 4.3-14 of Section 4.3 of the Application. These totals include emissions from LNG carriers (international) and domestic boats. In the GHG assessment, Project operation emissions are compared to PIR and NIR totals to determine the impact or percent contribution. However, the PIR and NIR totals do not include international shipping activities so they were excluded in this comparison. The GHG emission intensity presented in the Application also does not include international shipping emissions as these would not be included in future compliance reporting obligations and would not be included in annual operation GHG intensity calculations.
2025.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	Please explain and provide more details to justify this conclusion that GHG emissions from the dismantling of LNG facility during the decommissioning phase is expected to result in less GHG emissions in comparison to the construction phase.	Given the nature of the activity, it is expected that equipment usage will be for a shorter period and less intensive than the construction phase (i.e. no land clearing during decommissioning), and future mobile equipment (i.e., 30 years in the future) will likely consume fuel more efficiently. These factors suggest that during the decommissioning phase of the Project, GHG emissions are predicted to be less than the construction phase.
2026.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	A rationale has been provided for the mitigation, but not for the conclusions around likelihood and uncertainty. This is not meaningful as rationale and should not be considered acceptable. If the need has been identified for mitigation in the effects assessment, the rationale should not be limited to a response for selecting a specific mitigation measure. It should be provided in response to the actual assessment of the mitigation measure (i.e., determining that the mitigation will be successful, given the uncertainty it proffers). By the current logic, a reviewer has no choice but to accept all statements re: success and uncertainty of mitigation without any rationale provided. This is a critical element of any credible effects assessment, otherwise how can the assessment of the success of mitigation be meaningfully justified?	The majority of the mitigations presented in the GHG Assessment have been proposed with the understanding that there is a high degree of certainty that they will reduce the amount of GHG emissions released to the atmosphere. These mitigations relate to the removal or reduction of the source of GHG emissions (i.e. reduction in fuel consumption reduces the source of GHG emissions).
2027.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	How does "project design" constitute acceptable rationale for selecting a mitigation measure? The reviewer is supposed to just accept statements re: success and uncertainty of mitigation without a rationale, but this is a critical element of any credible effects assessment. Furthermore, stating that an "industry standard" is appropriate rationale for selecting a mitigation measure is quite meaningless. it does not indicate any interest by the Proponent to innovate or work to assist the Province and federal government in achieving legally binding GHG reduction targets. The Proponent already indicated in the GHG VC assessment that targets will not be met based on an analysis previously provided in the effects assessment (refer to Section 4.3.3.2 on p. 4.3-11, paragraph 5).	Project design refers to mitigations that are project specific and have historically been demonstrated to reduce GHG emission with a high degree of certainty. For instance, the use of efficient natural gas turbine technology to drive the refrigeration compressors in the liquefaction process will reduce fuel consumption. A reduction of fuel consumption is known (to a high degree of certainty) to reduce GHG emissions from combustion. Industry standard mitigations are those that were considered to be commonly adopted by proponents in the LNG industry and in other sectors. For instance, conducting scheduled preventative maintenance of facility and equipment as per the maintenance management system, will aim to avoid instances where GHG emissions are unintentionally released or where equipment is not operated at its most efficient state.
2028.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	A fugitive emissions detection program (Mitigation No. 4.3.5) is considered to have "a high likelihood of success" with a "high degree of certainty", yet there is no mention of the program in any other part of the VC assessment or in Part E. The Proponent has previously excluded the contribution of upstream GHG emissions in the VC assessment, claiming it cannot conclusively factor upstream GHGs into the assessment due to the high degree of uncertainty around the methods for quantification (Table 4.3-3, p. 4.3-4). This uncertainty is principally due to the problem of fugitive emissions, so clearly this will be a challenge and the conclusion about the success of the measure is not valid. More details should be provided to justify this conclusion, especially given the current uncertainty around the ability to detect and account for fugitive emissions in the industry as a whole, including the upstream phase that has been excluded from the assessment despite the stated directive from CEA Agency to include it.	A fugitive emission detection program has been identified as a mitigation for Project direct (onsite) GHG emissions. Upstream activities may also release fugitive GHG emissions; however, these emissions will need to be addressed by the proponent who owns/operates the upstream operations. The Project specific fugitive emission detection program identified in Mitigation 4.3.5 will be discussed in further detail in the GHG Management Plan. The proposed Project fugitive emission detection program is not related to the upstream assessment requested by the CEA Agency. The Upstream GHG Assessment identified in Table 4.3-3 of the Application was delivered, as request by the EAO, in February 2017.
2029.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	Please provide rationale for including the following mitigations in both the GHG Management and Air Quality Management plans: Mitigation Nos. 4.2.1, 4.2.3 to 4.2.6, and 4.2.11 to 4.2.13. Explain how they are intended to apply to each specific plan.	The rationale for including Mitigation 4.2.1, 4.2.3 to 4.2.6, and 4.2.11 to 4.2.13 in the GHG Assessment and Air Quality Assessment are identified in Table 4.3-12 and Table 4.2.10, respectively . These mitigations are either recognized as industry best practice, a project specific design element, or required by a policy/regulation/guideline.
2030.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	Explain the logic behind a "moderate" likelihood of success and certainty of the GHG Management Plan when all other mitigation measures associated with it, excluding Mitigation No. 4.2.1, have been considered to have a high likelihood of success with a high degree of certainty. This is untenable.	The majority of the mitigations presented in the GHG Assessment have been proposed with the understanding that there is a high degree of certainty that they will reduce the amount of Project GHG emissions released to the atmosphere. These mitigations relate to the removal or reduction of the source of GHG emissions (i.e. reduction in fuel consumption reduces the source of GHG emissions). The GHG Management Plan does not directly reduce GHG emissions, but instead it is used to understand and identify activities that should or could be taken to reduce GHG emissions. Therefore, implementation of the Plan and the reduction activities are required to realize the benefits. Without all the details of the Plan finalized, slightly more uncertainty (around success of the proposed mitigations) was conservatively factored in to the assessment characterizations.
2031.1	round 1	Gitxaala Nation	4.3.6	Greenhouse Gases	The Proponent has determined the Project to have a high likelihood of residual effects that are indicative of a long-term disturbance that is irreversible during all phases. This represents among the worst of possible outcomes in terms of characterizing a residual effect, yet a cumulative effects assessment is allegedly not possible according to the assessment methods developed? The assessment methods are weak and inappropriate for this VC in particular. For example, the Project's operational carbon footprint alone is estimated at 6.7 Mt/year continually, which is approximately 10.6% of the entire Province's GHG emissions and 0.9% of the GHGs for all of Canada (based on the 2014 NIR provided in Table 4.3-6, p 4.3-11). This is a substantive increase in GHG emissions and is directly cumulative to current known GHG emissions for provincial and federal jurisdictions. A jurisdictional assessment alone is indicative of the cumulative impact from a single project. This cumulative effects assessment requires more direct consideration of other projects in BC and Canada of similar economic magnitude and for all industry sectors, many of which currently use clean power sources in BC. In light of BC's and Canada's annual contributions to global GHGs and the legislated commitments for GHG emissions reduction (Table 4.3-2; pp. 4.3-2 for Canada and 4.3-3 for BC), this should be the benchmark for assessing cumulative risk. The Proponent should revise its cumulative effects assessment methodology to be more credible and efficacious, since GHG emissions represent among the most contentious of VCs identified for this project with respect to human values at this point in history.	As outlined in the approved AIR, the cumulative environmental effect related to GHGs is measured at the global level by international bodies such as the Intergovernmental Panel on Climate Change (IPCC) and is associated with global climate change. Thereby, the evaluation of cumulative effects to the degree outlined in this comment is outside of the scope of this assessment. Conclusions of the GHG assessment (Section 4.3.6 and 4.3.7 of the Application) acknowledge that GHG emissions from anthropogenic sources are extremely likely (as defined by IPCC) to be altering the global climate (IPCC 2013). Since the Project is contributing GHG emissions to an already significant cumulative effect of global GHG levels on climate change, the Project's GHG emissions are considered significant in the CEA case.
2032.1	round 1	Gitxaala Nation	4.3.6	Greenhouse Gases	This statement that "LNG would displace higher carbon intensity fuels (such as oil and coal)" is inappropriate and out of context, given the uncertainty and underestimation of the overall GHG intensity for BC's natural gas industry. Such language ignores the current carbon footprint associated with the upstream extraction phase of the industry in BC, upon which it inextricably depends and much of which is now largely sourced through hydraulic fracturing. This is a well known source of fugitive methane emissions that cannot reliably be measured and factored into the current accounting system of GHG emissions for the industry in BC (see previous comment in response to Part A, Section 1.5.1.1, p. 1-73). The statement should be removed from the assessment.	The sentence following the statement quoted in this comment provides additional context. It states "if the LNG exported from BC manages to reach a lower life cycle intensity than other fuel sources around the world, then exporting BC LNG could have an overall positive effect on global GHG levels." In this respect, it is acknowledged that the benefits are dependent on the life cycle intensity of the LNG compared with the fuel it is displacing.
2033.1	round 1	Gitxaala Nation	4.3.8	Greenhouse Gases	High onfidence based on "Scientific certainty relative to the effectiveness of the proposed mitigation measures", among other measures is untenable if the likelihood of success and certainty of the GHG Management Plan (i.e., Mitigation No. 4.3.6) has been considered as "moderate". Moreover, all other mitigation measures associated with the GHG Management Plan have been considered to have a "high" likelihood of success with a "high" degree of certainty, except Mitigation No. 4.2.1. This represents 8 of 12 or 75% of all mitigation proposed for the VC, so the conclusion is illogical. It either ignores additional, less certain mitigation measures that have not been listed or it fails to effectively weigh the individual value of the listed mitigation measures in the proposed GHG Management Plan. Please explain this conclusion.	The majority of the mitigations presented in the GHG Assessment have been proposed with the understanding that there is a high degree of certainty that they will reduce the amount of GHG emissions released to the atmosphere. These mitigations relate to the removal or reduction of the source of GHG emissions (i.e. reduction in fuel consumption reduces the source of GHG emissions). The GHG Management Plan does not directly reduce GHG emissions, but instead it is used to understand and identify further activities that should or could be taken to reduce GHG emissions. Until all details of the Plan have been finalized and implemented, a lower level of certainty has been conservatively applied. The calculation of 8 of 12 or 75% is not clearly described in the comment and the request to explain a conclusion is not understood.
2034.1	round 1	Gitxaala Nation	4.5.13.1	Water Quality	Appendix F was completed by Pola Wojnarowicz with contributions by Molly Brewis and a quality review by Karen Munro. Janine Beckett conducted the "independent" review; however, all of these individuals, including Beckett, work for Stantec, so how is the review considered to be independent? Is it not a conflict of interest?	Author, discipline lead, quality reviewer, and independent reviewer designations refer to the internal quality review processes undertaken as part of document development and completion. It is not intended to indicate that an independent third-party review was completed.
2035.1	round 1	Gitxaala Nation	4.5.5.3	Water Quality	Explain the logic behind the "moderate" likelihood of success and certainty of the Air Quality Management Plan. Measures associated with the plan, excluding Mitigation No. 4.2.10, represent >75% of all mitigation proposed for the VC and are considered to have a "high" likelihood of success with a high degree of certainty. The conclusion is illogical and either ignores additional, less certain mitigation measures that have not been listed or fails to effectively weigh the individual value of the listed mitigation measures in the proposed Air Quality Management Plan. Please explain this conclusion.	Mitigations with a "high" likelihood of success (4.1.1, 4.2.2, 4.1.3, 4.2.4, 4.1.5, 4.2.6, 4.1.7, 4.2.9, 4.1.11, 4.1.12, 4.2.13) will highly control or eliminate specific types of air emissions (e.g. avoid or eliminate burning). As such they are rated "high". Mitigations with a "moderate" likelihood of success (4.1.8, 4.2.10) will reduce emissions but cannot completely eliminate other types of air emissions (e.g. adopting BAT for gas turbines, implementing an AQMP with a mix of actions rated "high" and "moderate"). To be conservative, they are rated "moderate". Certainty relates to the expected degree of success. Not burning will be 100% successful in eliminating emissions from burning; hence the high degree of certainty. Gas turbine emission controls are proven, effective, measurable, and can be improved upon through mitigation measures. But they cannot be completely eliminated; hence the moderate uncertainty.
2036.1	round 1	Gitxaala Nation	4.5.8	Water Quality	There is a "high degree of confidence" that residual and cumulative effects will not be significant and the Air Quality Management Plan (i.e., Mitigation No. 4.2.8) is the principal mitigation measure for this VC effect. It has been considered as "moderate". Conclusions on prediction confidence and effectiveness of mitigation are illogical and either ignore additional, less certain mitigation measures that have not been listed or the conclusion has failed to effectively weigh the individual value of the listed mitigation measures in the proposed for the Air Quality Management Plan. Please explain this conclusion.	The significance of adverse residual effects to freshwater ecosystems from acidification and eutrophication is based on a review of existing conditions, and consideration of predicted pH changes and critical load exceedances. The degree of confidence is based on the quality of the baseline data, understanding of project effect mechanisms, effectiveness of mitigation measures, and by using conservative assumptions and thresholds throughout the assessment. Because facility emissions are predicted to result in deposition of acid and nutrient inputs into the aquatic ecosystems, air quality mitigation measures are expected to manage and reduce the overall air emissions, which will in turn reduce the predicted effects to aquatic ecosystems.

2037.1	round 1	Gitxaala Nation	4.5.14	Water Quality	How has wastewater discharge at the deep outfall from the desalination process been factored into the project interactions table? The desalination process will lead to wastewater disposal at Charles Point withough any clear demonstaration that it will be treated prior to dispoal based on the conceptual layout provided in Figure 1-2 of Part A, Section 1. Effluent will be highly concentrated in ambient solutes including salts and metals, among other contaminants that are likely to be present in seawater from the surrounding industrial activities.	Desalination waste water will meet CCME and BC water quality guidelines (WQG) for temperature and salinity, outside of the initial dilution zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). Results of the baseline water quality monitoring program indicate that metal concentrations in seawater in the Local Assessment Area, are generally well below BC MOE water quality guidelines. Of the 41 metals analyzed, 23 were below detection limits in all samples analyzed, and only boron and copper, which are naturally elevated in the area, exceeded guidelines (see Section 5.8.1 of Appendix F, Marine Sediment and Water Quality TDR). Metal contamination is therefore not predicted to be an issue in desalination waste water. The exact size of the initial dilution zone at the discharge site is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2038.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	The Proponent has previously acknowledged the potential effect from desalinated water, but there is no indication that the disposal of wastewater from the desalination process itself, an apparent requirement for hydrostatic testing during the construction and commissioning phase, will affect marine sediment and water quality or the associated marine biota. Also, the conceptual layout of the Project on Figure 1-2 of Section 1 shows the desalination plant footprint with a single excurrent water line leading to the deep outfall at Charles Point. There is no indication that any sanitary or treated wastewater from the construction camp or other sources will interact with this single pipe leading to the deep outfall. Please explain the inconsistency.	As stated in Section 4.5.15.3 of the Application (Project Mechanisms for a Change in the Physical or Chemical Composition of Marine Waters): "Desalinated seawater is anticipated to be used for hydrostatic testing of the LNG storage tanks and associated piping. Because discharge of test water will comply with the regulations and guidelines listed in Mitigation 4.5.9, the discharged water will not contain contaminants or “deleterious substances” (as defined in section 36 of the Fisheries Act). The test water will be released in a controlled manner to limit changes in general chemistry (e.g., temperature, salinity, pH) of the receiving marine waters. Therefore, no adverse effect on marine water quality is predicted due to hydrostatic testing." Mitigation 4.5.9, Table 4.5-26 states: "Hydrostatic testing will comply with the Canadian Association of Petroleum Producers Hydrostatic Test Water Management Guidelines (CAPP 1996), and discharged water will meet CCME Water Quality Guidelines for the Protection of Aquatic Life. If biocides are used, the test water will be neutralized prior to discharge" Figure 1-2 is a high-level conceptual layout, intended to show approximate locations of major Project components. Full details of the waste water management system will be developed during Front End Engineering Design. As stated in Mitigation 4.5.8, Table 4.5-26 "Waste discharges to the marine environment will comply with the Fisheries Act, CEPA, CSA 2001, BC Environmental Management Act, Waste Discharge Regulation, the Petroleum Storage and Distribution Facilities Storm Water Regulation, and the CCME Water Quality Guidelines for the Protection of Aquatic Life." Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2039.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	The conceptual layout on Figure 1-2 of Part A, Section 1 shows the desalination plant footprint located within the PDA, as well as its incurrent and excurrent water lines. A single wastewater line exits the plant and leads directly to the deep outfall at Charles Point. There is no indication that wastewater from the desalination process will be effectively treated at the Wastewater Treatment Plant and Stormwater Retention Ponds located further south in the PDA. There is also no indication that any sanitary or treated wastewater from the construction camp or other sources will be connected to the deep outfall based on this conceptual layout. Please justify the exclusion and clarify if/how desalination wastewater will be treated prior to disposal?	Figure 1-2 is a high-level conceptual layout, intended to show approximate locations of major Project components. Full details of the wastewater management system will be developed during Front End Engineering Design. As stated in Mitigation 4.5.8, Table 4.5-26 "Waste discharges to the marine environment will comply with the Fisheries Act, CEPA, CSA 2001, BC Environmental Management Act, Waste Discharge Regulation, the Petroleum Storage and Distribution Facilities Storm Water Regulation, and the CCME Water Quality Guidelines for the Protection of Aquatic Life." Desalination wastewater will meet CCME and BC regulatory water quality guidelines (WQG) for temperature and salinity, outside of the initial dilution zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2040.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	The expected "high" success and "no expected risk" in terms of the uncertainty of Mitigation No. 4.5.8 are not justifiable with respect to the possible disposal of disharge cooling water from the power station and desalination plant effluent. The mechanism has not even been finalized according to the Proponent (see p. 4.5-62, paragraph 3). Clearly it cannot be credibly factored into the effects assessment for wastewater disposal. It also represents a key uncertainty that has been irresponsibly ignored such that the Proponent has not adequately considered the risks to marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species". Therefore, this conclusion is untenable and should be re-evaluated.	Please see the "Discharges to the Marine Environment" technical memo for more details on how waste discharges to the marine environment are managed and how their potential effects were assessed. The technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2041.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	The expected "high" success and "no expected risk" in terms of the uncertainty of Mitigation No. 4.5.9 are not justifiable with respect to the possible disposal of wastewater from hydrostatic testing and desalination plant effluent. The mechanism has not even been finalized according to the Proponent (see p. 4.5-62, paragraph 3), although the desalination process has been stated as a necessary condition since hydrostatic testing involves desalinated water (see p. 4.5-60, final bulleted statement). The effect has not has not been credibly factored into the effects assessment for wastewater disposal and represents a key uncertainty that the Proponent has not adequately considered as a risk to marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species". Therefore, this conclusion is untenable and should be re-evaluated.	Please see the "Discharges to the Marine Environment" technical memo for more details on how waste discharges to the marine environment are managed and how their potential effects were assessed. The technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2042.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	This is not sufficient waste management information to credibly undertake an effects assessment of discharge at the deep outfall and its impact on marine sediment and water quality and "marine fish and fish habitat and aquatic species" . Therefore the conclusions for Mitigation Nos. 4.5.8 and 4.5.9 are unjustiable and should be re-evaluated to acknowledge the high uncertainty with respect to potential effects..	Please see the "Discharges to the Marine Environment" technical memo for more details on how waste discharges to the marine environment are managed and how their potential effects were assessed. The technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2043.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	The Proponent states on p. 4.5-79 that "with mitigation, the receiving marine waters will meet CCME and BC water quality guidelines (mitigation 4.5.8). How is this commitment considered mitigation? There is no indication of what specific processes will be required to achieve this commitment such that it mitigates effects to marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species", should they occur. Mitigation 4.5.8 has been determined by the Proponent to have "high" success such that "there are no expected risks with this mitigation measure" during the construction phase of the Project, yet there is no description provided about the mitigation itself. This conclusion is untenable and should be re-evaluated.	Please see the "Discharges to the Marine Environment" technical memo for more details on how waste discharges to the marine environment are managed and how their potential effects were assessed. The technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2044.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	This is a vague statement with respect to managing "power station cooling water". How exactly will the temperature and volume be "managed"? Is the desalination process expected lead to temperature changes that must be similarly "managed"?	Project waste water (including Desalination and cooling waste water) will meet CCME and BC water quality guidelines (WQG) for temperature and salinity, outside of the initial dilution zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2045.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	What about the treatment of other water quality parameters in the desalination effluent? Desalination will likely lead to wastewater that is highly concentrated in ambient solutes including salts and dissolved metals, among other contaminants that are likely to be present n seawater from the surrounding industrial activities near Prince Rupert (i.e., the "long history of industrial activity noted in Section 4.5.13.2, p. 4.5-53 of the Application, which references a "complete list of potential contaminant sources in the Prince Rupert Harbour area" in Appendix F), and especially because the location of te seawater intake will be in Casey Cove where the MOF will essentially serve as an industrial port with its "historical marine waste dump". Other parameters, such as temperature, have not be adequately considered. No treatment mechanisms have been proposed for the desalination effluent, apart from a stated potential need for dechlorination of any wastewater, presumably because initial chlorination would be intended as a biocide? This is a deficiency of the effects assesment on marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species" and should be re-evaluated.	Project waste water (including Desalination waste water) will meet CCME and BC water quality guidelines (WQG) for temperature and salinity, outside of the initial dilution zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). Results of the baseline water quality monitoring program indicate that metal concentrations in seawater in the Local Assessment Area, are generally well below BC MOE water quality guidelines. Of the 41 metals analyzed, 23 were below detection limits in all samples analyzed, and only boron and copper, which are naturally elevated in the area, exceeded guidelines (see Section 5.8.1 of Appendix F, Marine Sediment and Water Quality TDR). Metal contamination is therefore not predicted to be an issue in desalination waste water. The exact size of the initial dilution zone at the discharge site is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2046.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	It is not possible to determine that the "likelihood of residual effects will be low during the operations phase because of the effectiveness of the mitigation measures" on marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species" at this stage. There is not enough information about the Project design to provide specific and meaningful mitigation measures. It is also irresponsible to make likelihood statements at this stage of the Project and in terms of uncertainty and the effectiveness of mitigation, which has not been articulated with any degree of certainty. The statements favour the Proponent's interest over the interests the public and the potential risks posed to the marine environment.	The primary mitigation measures to protect marine water during operations, are treatment and monitoring of waste discharges. Waste discharges are subject to regulatory and permit constraints, designed to protect the marine environment. Aurora LNG will be legally obliged to adhere to these regulatory and permit constraints. The likelihood of residual effects under normal operations is therefore low. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2047.1	round 1	Gitxaala Nation	4.5.15.3	Water Quality	It is not possible to determine the likelihood of the mitigation measures for the effects on marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species" at this stage. There is not enough information about the Project design to provide specific and meaningful mitigation measures. It is also irresponsible to make likelihood statements at this stage of the Project and in terms of uncertainty and the effectiveness of mitigation. The statements favour the Proponent's interest over the interests the public and the potential risks posed to the marine environment.	The mitigation measures proposed for marine water and sediment quality are based on well-understood, established practices. While not all details of the Project design are available at this stage, mitigation measures such as those pertaining to Project waste discharges to the marine environment are regulated, permitted activities. As such, the Project must be designed in a manner that adheres to these regulations and permits. The likelihood of success of mitigation measures was determined based on this rationale. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2048.1	round 1	Gitxaala Nation	4.5.16	Water Quality	Please correct the Table of Contents document of the EA application for this subsection. It is on p. 4.5-82, not p. 4.5-79.	Aurora LNG acknowledges the error in the Table of Contents. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.

2049.1	round 1	Gitxaala Nation	4.5.16.2	Water Quality	The Proponent states "the scale and type of effects to water quality are similar for the Project and for other activities and projects in the RAA". How many proposed LNG projects in the RAA will contain desalination plants for operational water supply with a plan to take in enough seawater in an area of a former marine waste dump to supply approxiamtely 9500 cubic metres of desalinated process water daily, then discharge all wastewater into the marine receiving environment? The conceptual layout (Figure 1-2 in Section 1, Part A) has no apparent linkage to the expected water treatment areas in the PDA. Although other LNG terminals proposed in the RAA may discharge effluent from cooling towers, how many other non-LNG industrial projects in the RAA currently discharge cooling tower effluent or desalination wastewater into the marine receiving environment? This is not a credible statement, given the lack of information on the Project and deficiencies in the residual effects assessment for wastewater and effluent discharge. How is the anticipated "ongoing releases of wastewater (treated and untreated, as applicable) to the marine environment during construction, operations, and decommissioning" similar for other activities and projects in the RAA?	The cumulative effects assessment takes into consideration that all other projects must abide by the same waste discharge regulations and permits that the Project will be subject to. For example, under the Fisheries Act, no project can discharge waste to fish habitat that is acutely toxic to fish; waste discharges are subject to permit conditions that limit the quantity and quality of waste and impose monitoring requirements. Therefore, the scale and type of effects to water quality will be similar for the Project and all other projects in the RAA. As acknowledged in Section 4.516.3 of the Application, several existing facilities have existing or historical effluent discharges to the marine environment, the effects of which are recognized in the existing baseline water quality conditions. Operating facilities require discharge permits, with associated effluent criteria, and typically produce a small mixing zone around the discharge point. These facilities are not near the proposed Project location (see Appendix F Marine Sediment and Water Quality TDR). The Project's contributions to cumulative effects on marine water quality are not expected to result in a health risk to a local or regional population of marine biota.
2050.1	round 1	Gitxaala Nation	4.5.16.3	Water Quality	In the likelihood statement no consideration has been given to the potential for cumulative effects due to discharge from effluent and wastewater in the marine receiving environment. The statement on p. 4.5-88 should be re-evaluated to acknowledge the uncertainty in wastewater discharge given the lack of baseline water quality information and lack of description of specific mitigation measures attributable to Mitigation Nos. 4.5.8 and 4.5.9 in terms of the means of treatment by which regulatory compliance will occur for marine water quality.	The likelihood of residual cumulative effects statement focused on dredging, because sediment dispersion associated with this activity has the potential for site-specific effects, and is not subject to dedicated legislation. As stated in Section 4.5.15.3, Characterization of Residual Effects, waste discharges are subject to legislation designed to protect marine life, so adverse effects to water quality from waste discharges under normal operations are therefore not predicted.
2051.1	round 1	Gitxaala Nation	4.5.18	Water Quality	In this likelihood statement no consideration has been given to the potential for cumulative effects due to discharge from effluent and wastewater in the marine receiving environment. The statement on p. 4.5-90 should be re-evaluated to acknowledge the uncertainty in wastewater discharge given the lack of baseline water quality information and lack of description of specific mitigation measures attributable to Mitigation Nos. 4.5.8 and 4.5.9 in terms of the means of treatment by which regulatory compliance will occur for marine water quality.	As noted in Section 4.5.18 of the Application, "The mechanisms for effects and the mitigation measures are well understood. Furthermore, the predicted effects to marine water quality were compared to conservative regulatory guidelines". This statement applies to waste discharges, which are stringently regulated, and will be subject to well-established treatment methods. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2052.1	round 1	Gitxaala Nation	4.5.19	Water Quality	Incredibly, no follow-up programs are proposed even though there are no baseline sediment or water quality data in the area of the deep outfall and only limited baseline fisheries data exist, which indicate the area of the outfall to be relatively high risk due to the diversity of marine species observed during the ROV surveys? This should be unacceptable.	A follow-up program is not proposed because dredging and marine construction activities are short term effects and not expected to affect water quality during operations or subsequent decommissioning. Waste discharge from the deep outfall will be subject to end-of-pipe monitoring in accordance with waste discharge permit requirements. These permit requirements are designed to protect marine life. Additional monitoring of the receiving marine environment is not proposed but the need for such monitoring will be re-assessed based on permit requirements. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2053.1	round 1	Gitxaala Nation	4.5.20	Water Quality	The Proponent states "with mitigation, the Project residual effects on marine water quality are predicted to be not significant because the significance threshold (risk to the health of marine organisms) will not be exceeded". For all the reasons previously stated in the commentary for Section 4.5, this statement is irresponsible, illogical, and should be unacceptable.	Aurora LNG acknowledges that Gitxaala Nation disagrees with the conclusions of the assessment. However, the conclusions were developed in accordance with the requirements of the AIR. The rationale supporting the residual effect conclusion noted above is provided in Section 4.5.20, Marine Water - Conclusions. Please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2054.1	round 1	Gitxaala Nation	4.6.3.1	Vegetation and Wetland Resources	Appendix I was completed by Christine Lion and Nicole Tennant asa discipline lead and quality reviewer. Matthew Ramsay conducted the "independent" review; however, all of these individuals, including Ramsay, work for Stantec, so how is the review considered to be independent? Is it not a conflict of interest?	The designated roles of Author, Discipline Lead, Quality Reviewer, and Independent Reviewer refer to the internal quality review processes undertaken as part of document development and completion. It is not intended to indicate that an independent third-party review was completed.
2055.1	round 1	Gitxaala Nation	4.6.5.2	Vegetation and Wetland Resources	An Invasive Species Management Plan and/or Inveasive Plant Management Plan is not listed among the "Management and/or Compensation Plans" of the mitigation summary table for this Mitigation No. 4.6.4. Please include it.	An Invasive Plant Management Plan is referenced in Table 4.6-10 for mitigation measure 4.6.4 in the column labelled "Expected Success/Risks and Uncertainty". This plan further mitigates the risk of adverse effects from invasive plant species that could occur while stockpiling the organic layer of soil for future use during reclamation.
2056.1	round 1	Gitxaala Nation	4.6.5.3	Vegetation and Wetland Resources	No reference is given for Mitigation No. 4.6.10 among the "Management and/or Component Plans". How will the BC MOE vegetation and soils monitoring request be tracked and what are the terms of reference to "monitor for changes in vegetation and soils, and provide adaptive management if necessary"?	Section 15.2.2 of the Application describes the proposed acidification and eutrophication follow-up program, which corresponds with mitigation measure 4.6.10. Monitoring in accordance with mitigation measure 4.6.10 will likely be among the EA Conditions issued by regulators if the Project is approved. Through the EA Conditions, it is anticipated that Aurora LNG will be directed to develop the monitoring plan in consultation with the Ministry of Environment and Aboriginal Groups. The Condition is also expected to outline any periodic reporting requirements. The resulting plan is expected to include the terms of reference for monitoring, detail reporting requirements, and include an adaptive management framework and criteria for selecting the management option during the course of the monitoring period. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2057.1	round 1	Gitxaala Nation	4.6.6.2	Vegetation and Wetland Resources	The field sampling methodology applied in the Appendix I study is not appropriate to reliably detect invasive plant presence in the PDA. Invasive plants are more likely to be found at or near disturbed sites that have not been identified in the survey sampling protocol. Results are limited to more generalized vegetation plots for all plant species of interest. This is relevant to the vegetation program, but the lack of observation of invasive plants among veg plots should not be so heavily relied upon in making likelihood statements about the risk of invasive species. The assumption that the PDA overall lacks invasive plant species solely based on general veg plot observations in Appendix I is unjustified. The assessment should be re-evaluated, given the limitations posed by the results in Appendix I with respect to invasive plant species presence in the PDA.	The conclusions of the assessment are not based solely on the absence of invasive species within the PDA, but also the implementation of Best Management Practices in the Invasive Plant Management Plan (the reasoning is the same as that described for residual project effects in Section 4.6.5.2 of the Application), and the fact that none of the reasonably foreseeable future projects overlap spatially with the LAA. It is the opinion of Aurora LNG that the conclusion of no residual cumulative effects on plant species of interest due to the introduction or spread of invasive plants is sound, regardless of a lack of baseline surveys focused exclusively on detecting invasive plant species within the PDA.
2058.1	round 1	Gitxaala Nation	4.6.6.3	Vegetation and Wetland Resources	There is no mention of the cumulative risk of invasive plants for "Change in Abundance of Plant Species of Interest". Given the limitations of the survey methods applied in Appendix I, in terms of the ability to credibly examine and verify the presence of invasive plants in the PDA, the cumulative effects assessment needs to be re-evaluated.	No residual project effects are predicted on plant species of interest by invasive plants (in Section 4.6.5.2 of the Application). Additionally, none of the reasonably foreseeable future projects overlap spatially with the LAA; therefore there are no cumulative interactions that may introduce invasive plant species. It is the opinion of Aurora LNG that there is no need to re-evaluate the cumulative effects assessment to include invasive plants.
2059.1	round 1	Gitxaala Nation	4.7.3.1	Wildlife Resources (Terrestrial)	Appendix J was completed by Eloise Rowland and Jayme Brooks with Megan Willie as a discipline lead and quality reviewer. Colleen Bryden conducted the "independent" review; however, all of these individuals, including Bryden, work for Stantec, so how is the review considered to be independent? Is it not a conflict of interest?	Author, discipline lead, quality reviewer, and independent reviewer designations refer to the internal quality review processes undertaken as part of document development and completion. It is not intended to indicate that an independent third-party review was completed.
2060.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	With respect to Mitigation No. 4.7.14 and "the extent to which marine birds are susceptible to light-induced mortality", how will monitoring and adaptive management occur if there are no follow-up programs proposed for marine birds in the Wildlife Management Plan, apart from the Marbled Murrelet Management Plan?	Mitigation 4.7.14 is inclusive of all bird species, and is listed in Sections 4.7 and 4.11 of the Application. The Wildlife Management Plan will provide a description of the procedures for searching, documenting, and reporting bird injuries and mortalities and will be consistent with applicable Environmental Assessment Certificate conditions. Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2061.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	With respect to Mitigation No. 4.7.16 and "the extent to which migratory birds are susceptible to light-induced mortality", how will monitoring and adaptive management occur if there are no follow-up programs proposed for migratory birds in the Wildlife Management Plan, apart from the Marbled Murrelet Management Plan?	Mitigation measure 4.7.16 is inclusive of all bird species, and is listed in Sections 4.7 and 4.11. The Wildlife Management Plan will provide a description of the procedures for searching, documenting, and reporting bird injuries and mortalities and will be consistent with applicable Environmental Assessment Certificate conditions. Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2062.1	round 1	Gitxaala Nation	4.9.2.4	Marine Fish and Fish Habitat	Table 4.9-3 effect mechanisms for changes in mortality risk and health do not acknowledge effluent discharge from the desalination process or desalinated LNG processing water at the deep outfall. The seawater intake has been acknowledged as a mechanism for mortality risk, but nowhere in the table are marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species" listed as measureable parameters for effect mechanisms at the deep outfall for any of the project effects identified. The potential effects should be re-evaluated to reflect this, otherwise a residual effects assessment cannot be credibly conducted.	Potential effects to fish and fish habitat resulting from waste discharges to the marine environment are assessed in the Marine Fish and Fish Habitat assessment under Project Mechanisms for Change in Health, Section 4.9.5 of the Application. This section details the mechanisms for change in fish health due to waste discharges during construction, operation, and decommissioning. The assessment identifies waste discharges during construction and operations, including power generation cooling water and treated sanitary wastewater (which may include chlorine content). Mitigation 4.5.8 in Table 4.9-20 covers waste discharges to the marine environment. Potential residual effects are assessed in the Characterization of Residual Effects for Change in Fish Health, under Construction – Waste Management, and Operations – Waste Management. The fish and fish habitat assessment did not assess waste discharge characteristics (e.g. temperature, chlorine concentration) individually. Instead, the potential for all waste discharges to affect fish health was assessed. Waste discharges, regardless of make up, are managed in the same manner; permit conditions limit the quality and quantity of the waste discharged and impose monitoring requirements. Aurora LNG is legally-obliged to abide by permit conditions, which are designed to protect marine life. Therefore, waste discharge effects to fish and fish habitat were considered not significant. The assessment of potential effects to fish and fish habitat resulting from waste discharges is supported by information from the Marine Water Quality assessment (Section 4.5.11 of the Application). A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota. The marine water quality assessment therefore covers changes in water quality that may significantly affect fish and fish habitat. Table 4.5-19 in the Marine Water Quality section lists Project-related wastewater inputs to the marine environment as a project effect mechanism, and potential effects of this mechanism are assessed in Section 4.5.15. Mitigations 4.5.8 and 4.8.9 in Table 4.5-26 cover waste discharges to the marine environment. Potential residual effects to marine water quality related to waste management are characterized in the Characterization of Residual Effects component of Section 4.5.15.3. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

2063.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	Results of algae, marine vegetation and sessile species for CRA marine invertebrates in Appendix L showed the highest community diversity at sites CC07 (10 species present) and CC08 (9 species present) in the Casey Cove study area, which are the closest to the location of the deep outfall at Charles Point . Similarly for the East Digby Island study area, the highest diversity was observed at sites ED01 (22 species present) and ED04 (29 species present) with Site ED1 being the closest to the deep outfallof all nine study area transects during November 2015. Why has this location been selected given the results from these surveys?	Species richness in the marine environment is driven by a variety of physical and biological factors. Principal among these is substrate type. For algae and sessile invertebrates, which require hard substrate for attachment, species richness is almost always higher on rocky substrates than on soft sediment substrates. Of the eight ROV transects surveyed in Casey Cove, CC07 and CC08 are the only two that overlapped areas where the dominant substrate type was rocky (see Figure 16 in the Marine Fish and Fish Habitat Technical Data Report, Appendix L). All other transects overlapped soft bottom substrates or mixed substrates. Hence, the relatively higher species richness on transects CC07 and CC08 is likely due to the presence of rocky substrates around Charles Point. Substrates along the east side of Digby Island are primarily rocky, with cobble/gravel being dominant (see Figure 18 in Appendix L). Differences in species richness among East Digby Island ROV transects are likely due to site-specific conditions, such as slope, depth, substrate type distribution, and exposure. The proposed location of the outfall pipe to the south of Charles Point considered a number of ecological and engineering factors. First, the location was selected to minimize the distance between water use and treatment areas (located near Casey Cove) and the point of discharge. Second, the location capitalizes on the steep slope of the seabed off Charles Point in order to minimize the length of submarine pipe required to discharge at depth. This reduces the marine footprint of the pipe. Third, the location avoids areas of eelgrass identified in Casey Cove, and delivers the effluent to a location far enough away from the intake to avoid interaction between the outfall and the intake. Fourth, the outfall point is located in the channel between Digby and Kaien Islands, where strong currents will effectively disperse the effluent stream. It is important to note that the outfall pipe has a relatively small footprint in the marine environment, and will therefore have limited interaction with marine species. Based on preliminary design the pipe itself is anticipated to have an outside diameter of 0.76 m. It will be trenched through the intertidal zone (approximately 100 m distance), and will lie on the seafloor in the subtidal zone (approximately 130 m distance). Following trenching and backfilling in the intertidal zone, substrates will be returned to conditions similar to those prior to construction (i.e., boulder, cobble, gravel). This will expedite the recolonization of the affected habitat by algae and invertebrates. Furthermore, Aurora LNG will implement habitat offsetting measures for the permanent alteration of rocky habitat that results from installation of the outfall pipe. For further discussion on the proposed offsetting measures, please see the Conceptual Fish Habitat Offsetting Plan (Appendix V).
2064.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	Results of marine fish and motile invertebrates summarized in Appendix L do indicate the presence of taxa among sites, but the data summary does not meaningfully indicate either mean or total abundance of taxa per site as a meaningful indication of the spatial distribution and relative abundance of taxa within the individual study areas. Tabulatng means per taxon within study areas gives no understanding of community structure within study areas and in relation to project mechanisms, such as the location of the deep outfall. Data should be properly summarized and re-interpreted to be meaningful to the residual effects assessment.	Determination of total abundance of taxa in a given study area is impractical; the dynamic, variable, and open nature of marine environments mean that an exhaustive amount of effort would need to be expended to try wo capture or sample all organisms. Instead, by subsampling within each study area using different methods (e.g., intertidal transects, ROV video, beach seines) over time, we can obtain an estimate of the typical relative abundance of each taxon observed (e.g., mean or median) and the typical variability of relative abundance (e.g., standard deviation or inter-quartile range). This comment refers to marine fish and motile invertebrates. Even if all of these organisms could be sampled in order to tabulate total abundance, daily, seasonal, and inter-annual movement of organisms mean that the specific location of capture in a study area would be of questionable relevance to the assessment of interaction with Project mechanisms. Understanding of community structure within a study area can be gained by interpreting patterns in relative abundance and variability of taxa over time.
2065.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	Why do the survey methods in Table 4.9-16 not mention the crab trapping surveys by Triton/Khtada (Aug. 2014 and Mar. 2015) and Stantec (Aug. 2015 and May 2016)? Have these data not been factored into the effects assessment?	The collection of crab presence information through opportunistic trap sampling is described in the paragraph above Table 4.9-6. Full crab trapping methods are described in Section 5.3.1 and 5.3.2 of Appendix L of the Application. Results of these trapping efforts are reported in Section 5.3.3 of Appendix L and were used, together with other data reported in Appendix L, to inform the effects assessments.
2066.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	According to Appendix L, no crab trapping baseline data exist in the East Digby study area near Charles Point where the deep outfall location is proposed. It is also unclear from the results how the distribution and abundance of marine crustaceans account specifically for this potentially affected location due to the physical presence of the discharge pipe and deep outfall. This represents a seasonal and spatial data deficiency and a source of uncertainty with respect to "marine fish and fish habitat and aquatic species" in subtidal marine habitats.	Crab and shrimp observations made during the ROV survey of the area near Charles Point are shown in Figure 20 of Appendix L of the Application. Crab and shrimp observed within the East Digby Island study area are described o p. 48 of Appendix L. These observations are used, along with the scientific literature described in Appendix L, to inform the assessment of effects relating to the discharge pipe and deep outfall.Characterization of residual effects resulting from the physical effects of the outfall pipe is found on p. 4.9-75 of the Application. The likelihood of residual effects for change in behaviour from the physical presence of the outfall is assessed on p. 4.9-78 of the Application. Aurora LNG believes that the field data and scientific information available are sufficient to support this assessment.
2067.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	According to Appendix L, no baseline data exist for marine fish in the area directly south of Charles Point where the deep outfall location is proposed. It is unclear from the results how the distribution and abundance of marine fishes account specifically for this potentially affected area due to the discharge pipe and outfall, effluent discharge from the desalination process or desalinated LNG process water at the deep outfall. This data should be considered measureable parameters, given the effects potential identified. This represents a seasonal and spatial data deficiency and a source of uncertainty with respect to "marine fish and fish habitat and aquatic species" in subtidal marine habitats.	Marine fish observations made during the ROV survey of the area near Charles Point are shown in Figure 19 of Appendix L of the Application. Marine fish observed within the East Digby Island study area are described o p. 47 of Appendix L. These observations are used, along with the scientific literature described in Appendix L, to inform the assessment of effects relating to the discharge pipe and deep outfall. Characterization of residual effects as a result of the physical effects of the outfall pipe is found on p. 4.9-75 of the Application. The likelihood of residual effects for change in behaviour from the physical presence of the outfall is assessed on p. 4.9-78 of the Application. Aurora LNG believes that the field data and scientific information available are sufficient to support this assessment.
2068.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	According to Appendix L, no 2014 baseline data exist for intertidal or subtidal habitats in Casey Cove, the MOF location where dredging is expected, or the area directly south of Charles Point where the deep outfall location is proposed. March 2015 trawls (Triton) cover part of the outfall area during the day (i.e., transects DT3 and DT4) and at night (i.e., transect NT2), but the transect lengths extend south to Emmerson and Phillips points, which are well beyond the potentially affected area. It is unclear from the results how the distribution and abundance of individual trawl data account specifically for the abundance in potentially affected areas, such as the deep outfall, where discharge from the desalination process or desalinated LNG processing water is expected. This represents a seasonal and spatial data deficiency and a source of uncertainty with respect to "marine fish and fish habitat and aquatic species" in subtidal and benthic marine habitats.	Baseline data characterizing intertidal and subtidal habitats in Casey Cove, including the MOF location where dredging is expected, are presented in Appendix L (intertidal: Section 5.1.3.1, Figure 9; subtidal: Section 5.2.3.1, Figures 14-17; eelgrass: Section 5.4.3.1, Figure 32, and marine fish: beginning on p. 79). Baseline data characterizing intertidal and subtidal habitats along East Digby Island, including the area south of Charles Point where the deep outfall is proposed, are presented in Appendix L (intertidal: Section 5.1.3.2, Figure 10; subtidal: Section 5.2.3.2, Figures 18-2; eelgrass: Section 5.4.3.2, Figure 33; and marine fish: beginning on p. 86). The trawl segments referred to in this comment and reported in Appendix 5 of Appendix L were exploratory in nature and were intended to inform a broad characterization of the Project LAA. The baseline observations referred to above are used, along with the scientific literature described in Appendix L, to inform the assessment of effects relating to the discharge pipe and deep outfall. Characterization of residual effects as a result of the physical effects of the outfall pipe is found on p. 4.9-75 of the Application. The likelihood of residual effects for change in behaviour from the physical presence of the outfall is assessed on p. 4.9-78 of the Application. Aurora LNG believes that the field data and scientific information available are sufficient to support this assessment.
2069.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	With respect to marine sediment and water quality sampling (Appendix F), no baseline data exist for the area directly south of Charles Point where the deep outfall location is proposed. Without an understanding of baseline conditions, it is unclear from the results how marine sediment and water quality will potentially be affected by persistent and continual effluent discharge from the desalination process or desalinated LNG processing water at the deep outfall. These should be considered important indicators for determining measureable parameters, given the effects potential from sustained effluent discharge. This represents a data deficiency and a source of uncertainty with respect to marine sediment and water quality and "marine fish and fish habitat and aquatic species" in subtidal marine habitats.	Although no marine sediment or water quality samples were collected specifically at the location of the proposed Charles Point outfall, water quality and sediment samples collected in other areas of the LAA are expected to be representative of conditions at the Charles Point outfall (i.e., conditions at the location of the Charles Point outfall are not expected to differ substantially from other areas in the LAA). Appendix F (Marine Sediment and Water Quality Technical Data Report) describes the methods and results of the water quality and sediment sampling programs. A total of 227 marine sediment samples were collected from 57 sites in December 2014 (surface grabs only) and January 2016 (surface grabs and cores). Sediment sampling locations are identified in Figure 1 and Figure 2 of Appendix F. Water quality monitoring was conducted during the December 2014 sediment sampling field program at a location within each of the three proposed Project dredge footprints. These data were supplemented with water quality monitoring data collected quarterly (from 2013 through 2015) by the Prince Rupert Port Authority at six nearby sites. Figure 5 of Appendix F identifies the location of the water quality monitoring sites. The potential parameters of concern for the sanitary treatment plant, desalination plant, and cooling-water blowdown are total suspended solids, biological oxygen demand, nutrients, temperature, salinity, and (to a lesser degree) chlorine, which are not expected to affect water quality (outside a defined initial dilution/mixing zone) or sediment quality. Please also see the "Discharges to the Marine Environment" memo , which was developed in response to several comments. This technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. The need for additional information to characterize existing conditions for marine water and sediment quality will be discussed with appropriate regulators (e.g., Ministry of Environment) during permitting for the Charles Point outfall. Aurora LNG is committed to completing a Marine Water Quality Monitoring Program to monitor water quality parameters in effluent discharges according to permitting requirements (see Section 15.3.6 of the Summary of Follow-Up Programs and Compliance Reporting Chapter). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine Water Quality Monitoring Program prior to use to the outfall.
2070.1	round 1	Gitxaala Nation	4.9.3.1	Marine Fish and Fish Habitat	Appendix L was completed by Sandra Warren and Stefan Dick with a quality review by Tim Edgell. Karen Munro conducted the "independent" review; however, all of these individuals, including Munro, work for Stantec, so how is the review considered to be independent? Is it not a conflict of interest?	The designated roles of Author, Discipline Lead, Quality Reviewer, and Independent Reviewer refer to the internal quality review processes undertaken as part of document development and completion. It is not intended to indicate that an independent third-party review was completed.
2071.1	round 1	Gitxaala Nation	4.9.4	Marine Fish and Fish Habitat	Potential effects exist for the seawater intake and discharge of wastewater at the deep outfall, due to desalination processes during commissioning and start-up. Effects would lead to changes in mortality risk and behavioural changes in marine fish through entrainment and impingement at the seawater intake, behavioural avoidance the seawater intake, behavioural disturbance at physically altered habitats at the intake and outfall pipes, and chemically altered habitats at the outfall. The determination on Table 4.9-8 is inappropriate and should be re-evaluated.	The assessment of potential injury or mortality of marine fish due to impingement/entrainment in the seawater intake pipe focused on the operations phase of the Project because this phase is of much longer duration (25+ years) than the commissioning and startup phase (1 year). However, Aurora LNG acknowledges that, if the desalination system is operational during commissioning(i.e., to withdraw water for hydrostatic testing), there is potential for impingement/entrainment of marine fish and invertebrates. The mitigation measure is the same as for operations (specifically, the implementation of DFO's guidelines for minimizing the entrainment and impingement of aquatic organisms; Mitigation number 4.9.15 in Table 4.9-19). The effect mechanism is the same as that described for the operations phase (see page 4.9-82, Operations - Waste Management: Seawater Intake). The effect characterization is also the same as that described for the operations phase, with the exception that frequency would be 'multiple irregular events' (i.e., whenthe water is drawn for hydrostatic testing purposes), as opposed to 'continuous' for operations. The remainder of the effect characterization criteria are the same: magnitude = moderate; geographic extent = LAA; duration = medium- to long-term; reversibility = reversible; context = disturbed. With the implementation of mitigation measures to reduce potential effects on marine fish and fish habitat associated with effluent discharge, such as commitments that all effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone, Project-related discharges are not expected to result in residual adverse effects to marine fish habitat or marine fish behaviour.
2072.1	round 1	Gitxaala Nation	4.9.5.3	Marine Fish and Fish Habitat	The Project has indicated use of the seawater intake and outfall and the intent to treat at least some of the wastewater, such that is meets all jurisdictional guidelines, yet there is no mention of the need to treat wasterwater prior to disposal at sea to avoid changes in water quality that influence the behaviour of "marine fish and fish habitat and aquatic species" in subtidal marine habitats. The conceptual layout on Figure 1-2 of Part A, Section 1 shows the desalination plant footprint located within the PDA, as well as its incurrent and excurrent water lines. A single wastewater line exits the plant and leads directly to the deep outfall at Charles Point. There is no indication that wastewater from the desalination process will be effectively treated at the Wastewater Treatment Plant and Stormwater Retention Ponds located further south in the PDA and there is also no indication that any sanitary or treated wastewater from the construction camp or other sources will be connected to the deep outfall based on this conceptual layout. Effects related to the use and disposal of seawater have not been mentioned so the assessment is deficient and needs to be re-assessed.	Effluent discharges will be tested and treated, if required, prior to being discharged to the marine environment. Project-related effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone. With adherence to these regulations and guidelines, Project-related discharges are not expected to result in residual adverse effects to marine fish behaviour. For further details, please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2073.1	round 1	Gitxaala Nation	4.9.5.3	Marine Fish and Fish Habitat	There is no mention in Table 4.9-15 of the need to mitigate the effect related to the physical presence of seawater intake and outfall as it influences the behaviour of marine fish and aquatic species in subtidal marine habitats. The assessment acknowledges the intake pipe (minimum 30 inch diameter) and outfall pipe (minimum 12 inch diameter) will sit "unburied and unprotected" on the seafloor and has based its results from a laboratory study with a protected (concrete-weight coated) pipe as is "unlikely to be insurmountable" to Dungeness and several other crab species (Section 4.9.5.3, p. 4.9-76), but "may be limited" to "smaller, less motile species", which have to migrate around the pipe and be put in direct exposure to effluent at the outfall and entrainment and impingement at the intake, both of which may also lead to mortality and health risks as a direct result of a changein behaviour. Please revise the mitigation table to address the effect.	Table 4.9-15 of the Application specifically describes measures to avoid or reduce changes in marine fish behaviour. Mitigation measure No. 4.9.15, provided in the Application, Table 4.9-18, describes measures to reduce mortality risk associated with entrainment and impingement of aquatic organisms at the seawater intake pipe. Mitigation measure No. 4.5.8, provided in the Application, Table 4.9-20, describes adherence to regulations and guidelines for wastewater discharges into the marine environment (i.e., via the outfall pipe) relevant to limiting adverse effects on marine fish health.
2074.1	round 1	Gitxaala Nation	4.9.5.3	Marine Fish and Fish Habitat	There is no mention in Table 4.9-15 of the effect related to the use and disposal of seawater at the deep outfall and a need to mitigate the effect as it influences the behaviour of marine fish and aquatic species in subtidal marine habitats. Please revise the mitigation table to address the effect.	Table 4.9-15 of the Application specifically describes measures to avoid or reduce changes in marine fish behaviour. The intake of seawater and outflow of wastewater discharge are considered within the Application, in Tables 4.9-19 and 4.9-20, which apply to mitigation measures for avoiding or reducing change in mortality risk and change in health of marine fish, respectively. Mitigation measure No. 4.9.15, provided in the Application, Table 4.9-18, describes measures to reduce mortality risk associated with entrainment and impingement of aquatic organisms at the seawater intake pipe. Mitigation No. 4.5.8, provided in the Application, Table 4.9-20, describes adherence to regulations and guidelines for wastewater discharges into the marine environment (i.e., via the outfall pipe) relevant to limiting adverse effects on marine fish health. For further details, please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2075.1	round 1	Gitxaala Nation	4.9.5.3	Marine Fish and Fish Habitat	Characterization of negligible "residual changes in the behaviour of marine fish caused by the physical presence of the marine water intake and outfall pipes on the seabed" is illogical - it is "continuous and permanent", indicating the pipes will not be removed, yet it is expected to be "reversible following the removal of the pipe structures"? Moreover, there are no baseline data to verify the presence of crustaceans in the affected area, since crab trapping surveys were neither conducted in the area of the deep outfall pipe according to Appendix L, nor have they crab trapping surveys been mentioned in the effects assessment methods for existig condiitons. It is therefore not possible to make statements about an effect as negligible if no baseline data exist upon which to make such a determination. Assuming crustaceans are present along with "smaller, less motile" invertebrate species, the assessment acknowledges at least portions of the intake pipe (minimum 30 inch diameter) and outfall pipe (minimum 12 inch diameter) will sit "unburied and unprotected" on the seafloor. The Proponent has based its determination on a laboratory study that used a protected (concrete-weight coated) pipe, which is not directly comparable as a surface, and deemed the pipe "unlikely to be insurmountable" to Dungeness and several other crab species (see Section 4.9.5.3, p. 4.9-76), but "may be limited" to "smaller, less motile species". These species would have to migrate around the pipe and be put in direct exposure to the effluent discharge plume that has not been modeled or estimated by volume at the outfall where is may or may not even be treated according to Figure 1-2 in Section 1 of Part A. This will also lead to potential mortality and health risks as a direct result of the change in behaviour. The assessment is deficient and needs to be re-evaluated.	The presence of unburied portions of the intake and outfall pipes on the seabed is considered of negligible magnitude for change in behaviour of marine fish because of the expected ability of highly motile species that undertake nearshore migrations (e.g., Dungeness crab) to cross unburied portions and the ability of less motile species to move around the edge of the unburied portions of pipe. The expected ability of highly motile invertebrate species to cross the intake and outflow pipes is supported by both field and laboratory studies (Glaholt 2008). Mitigation measure No. 4.5.8, provided in the Application, Table 4.9-20, describes adherence to regulations and guidelines for wastewater discharges into the marine environment (i.e., via the outfall pipe) relevant to limiting adverse effects on marine fish health. Reference Glaholt, R. D. 2008. Environment Concerns in Rights-of-Way Management. 8th International Symposium. Investigation of the Potential Effects of Marine Pipelines on Dungeness Crab Movement and Benthic Ecology.. J. W. Goodrich-Mahoney, L. P. Abrahamson, J. L. Ballard and S. M. Tikalsky. Amsterdam, Elsevier: 679-692.

2076.1	round 1	Gitxaala Nation	4.9.5.4	Marine Fish and Fish Habitat	The construction phase does not acknowledge mortality risk due to the operation of the seawater intake and outfall pipes and associated effect mechanisms during commissioning ans start-up. Hydrostatic testing for commissioning will make use of desalinated seawater, which indicates that the desalination plant and associated water use must be present as a mechanism in the construction phase, therefore the risk of impingement and entrainment is also present. The assessment is deficient and needs to be re-evaluated.	The assessment of potential injury or mortality of marine fish due to impingement/entrainment in the seawater intake pipe focused on the operations phase of the Project because this phase is of much longer duration (25+ years) than the commissioning and startup phase (1 year). However, Aurora LNG acknowledges that, if the desalination system is operational during commissioning (i.e., to withdraw water for hydrostatic testing), there is potential for impingement/entrainment of marine fish and invertebrates. The mitigation measure is the same as for operations (specifically, the implementation of DFO's guidelines for minimizing the entrainment and impingement of aquatic organisms; Mitigation number 4.9.15 in Table 4.9-19). The effect mechanism is the same as that described for the operations phase (see page 4.9-82, Operations - Waste Management: Seawater Intake). The effect charactrization is also the same as that described for the operations phase, with the exception that frequency would be 'multiple irregular events' (i.e., when the water is drawn for hydrostatic testing purposes), as opposed to 'continuous' for operations. The remainder of the effect characterization criteria are the same: magnitude = moderate; geographic extent = LAA; duration = medium- to long-term; reversibility = reversible; context = disturbed. For further details, please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2077.1	round 1	Gitxaala Nation	4.9.5.4	Marine Fish and Fish Habitat	The assessment acknowledges the intake pipe (minimum 30 inch diameter) and outfall pipe (minimum 12 inch diameter) will sit on "unburied and unprotected" on the seafloor and has based its results from a laboratory study with a protected (concrete-weight coated) pipe as is "unlikely to be insurmountable" to Dungeness and several other crab species (Section 4.9.5.3, p. 4.9-76), but "may be limited" to "smaller, less motile species", which have to migrate around the pipe and be put in direct exposure to effluent at the outfall and entrainment and impingement at the intake . How can this change in subtidal substrate be considered similar to "prior to construction" for Mitigation No. 4.9.7? There is not even a "low" likelihood of success with this mitigation as a "mechanism of recovery", since it is not even comparable to "perfect restoration of surface conditions" as stated in terms of expected success in the assessment. The assessment is deficient and needs to be re-evaluated.	This comment includes two points, which are addressed in turn below. -- Point 1: small, less motile species will have to migrate around the pipe and be put in direct exposure to effluent at the outfall and entrainment and impingement at the intake -- It is anticipated that most species (even "small, less motile species" whose movement "may be limited" by the pipeline) will be able to move across the infrastructure - an expectation based on field observations reported in Glahold (2008). "Smaller, less motile species" generally means infaunal (i.e. sediment dwelling) and demersal/epibenthic (i.e. on or near the seafloor) invertebrates. Glaholt (2008) complements his laboratory results with numerous field-based results, including many that relate to these species. Field observations come from (1) an outfall pipe (76 centimetres outer diameter [cm OD]) located in Bazan Bay, BC, and (2) a time series video, spanning ten years, of twin 25.4 cm OD pipelines crossing the Straight of Georgia, BC. Key conclusions from these field-based observations are summarised below: ___Bazan Bay___ 1. When community assemblages around the pipe were compared using standard statistical methods (i.e. Bray Curtis dissimilarity indices), the only major differences identified were between shallow eelgrass habitats and deep mud/silt habitats: "Other differences in community composition were not apparent using the analytical techniques employed". 2. Relationships between invertebrate abundance and increased distance from the pipeline depended on taxonomic group and side of the pipeline (north vs south), which (Glaholt postulates) could be due to differences in sediment composition. 3. Effects on benthic infaunal communities were highly localized and "non-pipeline related phenomena are likely at least as important as pipeline presence in determining patterns of species diversity and abundance in soft-bottom communities". 4. Observations from underwater video of the pipeline showed use of the infrastructure by demersal and epibenthic invertebrates, including many "small, less motile species", e.g. crabs (8 species, including Dungeness crab), shrimp (4 species), spot prawn, kelp fleas, nudibranchs (4 species), and "starfish" (2 species) were seen on the pipeline "suggesting that the pipeline was being traversed by these species". __Straight of Georgia___ 5. Crustaceans (box crab, red rock crab, california sea cucumber) actively crossed the pipelines. 6. There was a notable increase in abundances and diversity of species associated with the pipe infrastructure and protective concrete mattresses. Based on these observations, Aurora LNG does not expect seawater cooling system pipes to impede movement, except in rare circumstances, where individuals may have to circumnavigate the infrastructure via one end of the pipe. Regardless, if individuals do have to circumnavigate the infrastructure, they will not be impinged/entrained in the intake pipe because the mouth of the intake pipe will be elevated above the seafloor. Likewise, the end of the outfall pipe will be oriented upwards to promote mixing with the receiving environment and reduce exposure to benthic organisms. -- Point 2: How can this change in subtidal substrate be considered similar to "prior to construction" for Mitigation No. 4.9.7? There is not even a "low" likelihood of success with this mitigation as a "mechanism of recovery", since it is not even comparable to "perfect restoration of surface conditions" -- Please note that this section of the chapter relates to mortality risk; habitat effects are considered separately in Section 4.9.5.2, and in particular pages 4.9-55 (Installation of Seawater-System Pipes: Alteration of Substrate) and 4.9-64 (Physical Presence of Marine Water Intake and Outfall Pipes), where the substrate changes mentioned are fully assessed. The mitigation measures described in Table 4.9-18 pertain specifically to their capacity to avoid or reduce mortality risk. Even with the uncertainty relating to success as described in the table, the mitigation is expected to reduce mortality risk of 'fish' in the medium term.
2078.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	With respect to waste management on p. 4.9-96, the Proponent states that "treated sanitary wastewater released from the land-based construction camp will be discharged into the marine environment through a deepwater outfall located off of Charles Point (near Casey Cove)". The conceptual layout on Figure 1-2 of Part A, Section 1 shows the desalination plant footprint located within the PDA, as well as its incurrent and excurrent water lines. A single wastewater line exits the plant and leads directly to the deep outfall at Charles Point. There is no indication that sanitary wastewater will be effectively treated from the construction camp or other sources and connect with the line leading to the deep outfall from the desalination plant. The statement needs to be corrected and the effects require re-assessment.	Figure 1-2 is a high-level conceptual layout, intended to show approximate locations of major Project components. Full details of the waste water management system will be developed during Front End Engineering Design. As stated in Section 4.5.15.3, Characterization of Residual Effects – Waste Management: waste water outfall designs and locations will comply with federal and provincial legislation designed to protect water quality. Sanitary wastewater will meet permit requirements, including dechlorination of any chlorinated wastewater. Mitigation 4.5.8, Table 4.5-26 also states that Project waste discharges to the marine environment will comply with the Fisheries Act, CEPA, CSA 2001, and the BC Environmental Management Act, Waste Discharge Regulation. Specific details on waste volumes and contaminant concentrations are not yet available and will be determined during Front End Engineering Design. However, Aurora LNG is legally obliged to abide by waste discharge regulations, designed to protect the marine environment. Environmental effects from waste discharge are therefore predicted to be not significant. Further details on Project waste discharges are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2079.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	Statements pertaining to waste management on p. 4.9-97 confirm the preliminary state of the wastewater management system's design. Given this uncertainty, risk to marine sediments, water quality, and fish and aquatic species, cannot be evaluated with high confidence, as proclaimed in the mitigation measures. These statements are unfounded and misleading. The risks should be re-evaluated to admit these uncertainities and the Proponent should admit the uncertainty and frame mitigation in the context of adaptive management as a a commitment to address the potential effects.	All discharges to the marine environment, as a result of waste management, will comply with the Fisheries Act, Canadian Environmental Protection Act, the Canada Shipping Act (2001), the BC Environmental Management Act (i.e., Waste Discharge Regulations, Petroleum Storage and Distribution Facilities Storm Water Regulations), and will meet the CCME and BC water quality guidelines, which were specifically designed for the protection of aquatic life, and in consideration of health effects. Adherence with these regulations is a legislated requirement of all proponents, including Aurora LNG, and failure to adhere to them can have serious ramifications. Aurora LNG is committed to complying with these regulations and, hence, the mitigation measure assumes adherence will be achieved. See the "Discharges to the Marine Environment" technical memo which provides additional information and will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Details on the mitigation objectives, approach and field protocols will be developed and formalized in the Marine and Freshwater Resources Management Plan. This plan will include "water quality monitoring programs that will be implemented, including water quality thresholds, monitoring frequency and specific monitoring location". It is standard practice for management plans of this nature to include an adaptive management framework. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of environmental management plans.
2080.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	There is no indication of what measures will be required to achieve Mitigation No. 4.5.8 to avoid potential effects to fish health, should changes occur in marine sediment and water quality, as well as "marine fish and fish habitat and aquatic species". Expected "high likelihood of success" and "no expected risks" are not justifiable with respect to waste discharge effects to fish health at the deep outfall because the design is preliminary and the deep outfall location at Charles Point is only one possible location (see p. 4.9-97, paragraph 3). The mechanism has also not been finalized according to the Proponent (see p. 4.5-62, paragraph 3). To declare the commitment as mitigative with a "high likelihood of success" is not credible as an effects assessment for wastewater disposal, given such high uncertainty. The Proponent has neither considered the risks to fish health nor the potential cost of adequately meeting the mitigation measure, which may not even be economically feasible given the magnitude of wastewater generated, so the conclusion is untenable and should be re-evaluated.	All discharges to the marine environment, as a result of waste management, will comply with the Fisheries Act, Canadian Environmental Protection Act, the Canada Shipping Act (2001), the BC Environmental Management Act (i.e., Waste Discharge Regulations, Petroleum Storage and Distribution Facilities Storm Water Regulations), and will meet the CCME and BC water quality guidelines, which were specifically designed for the protection of aquatic life, and in consideration of health effects. Adherence with these regulations is a legislated requirement of all proponents, including Aurora LNG, and failure to adhere to them can have serious ramifications. Aurora LNG is committed to complying with these regulations and, hence, the mitigation measure assumes adherence will be achieved. See the "Discharges to the Marine Environment" technical memo which provides additional information and will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Details on the mitigation objectives, approach and field protocols will be developed and formalized in the Marine and Freshwater Resources Management Plan. This plan will include "water quality monitoring programs that will be implemented, including water quality thresholds, monitoring frequency and specific monitoring location". It is standard practice for management plans of this nature to include an adaptive management framework. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of environmental management plans.
2081.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	Why has Mitigation No. 4.5.9 been referenced in the waste management characterization on p. 4.9-104, but is not included in the mitigation summary table (Table 4.9-20) on p. 4.9-100? Please update the summary table to consider the potential for effects from desalinated water used for hydrostatic testing and associated discharge into the marine receiving environment (i.e., waste management).	Page 4.9-104 should say "Mitigation 4.5-8 [not 9]", which is included in Table 4.9-20. An errata document is being developed that will capture these corrections and it will be filed with the BC EAO.
2082.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	This statement is inappropriate for characterizing residual effects potential, given the uncertainty in the deep outfall design and location and baseline information provided on the appropriate VCs. Lack of baseline data on marine water and sediment quality near Charles Point also indicate high uncertainty and and potentially high risk with respect to wastewater discharge effects on fish health. In either case, this effects determination is not appropriate and inconclusive.	Aurora LNG acknowledges that details around the design and operation of the Charles Point outfall are preliminary and will be refined during final engineering and design; however, Aurora LNG is of the opinion that characterization of potential effects on marine fish health associated with effluent discharges at the Charles Point outfall is adequate. The assessment considered information on marine fish and fish habitat collected from scientific literature and Project-specific studies (see Appendix L, Marine Fish and Fish Habitat TDR). The following sections in Appendix L provide information to characterize intertidal and subtidal fish and fish habitats along East Digby Island, including the area south of Charles Point where the deep outfall is proposed: Section 5.1.3.2, Figure 10 (intertidal); Section 5.2.3.2, Figure 18, Figure 19, Figure 20, and Figure 21 (subtidal); Section 5.4.3.2, Figure 33 (eelgrass); and Section 5.5.6, Figure 42 and Figure 43 (marine fish). With the implementation of mitigation measures to reduce potential effects on marine fish and fish habitat associated with effluent discharge, such as commitments that all effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone, Project-related discharges are not expected to result in residual adverse effects to marine fish health. Aurora LNG is committed to conducting a Marine Water Quality Monitoring Program, which will include monitoring effluent discharges and the receiving environment as per permitting requirements (see Section 15.3.6 of the Summary of Follow-up Programs and Compliance Reporting). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine Water Quality Monitoring Program. The technical memo "Discharges to the Marine Environment" provides additional information. This technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

2083.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	Declaring that no measurable changes to marine fish health will be expected to occur due to waste management or commissioning and start-up is inappropriate for characterizing the residual effects potential, given the uncertainty in the deep outfall design and location and baseline information provided on the VC. There is a lack of baseline data on marine fish (i.e., no crab trapping, beach seining, or tangle netting conducted in the affected area), site-specific limitations on the quality of the mid-water trawling data in the affected area, and the relatively high diversity of marine species have been observed from existing baseline subtidal ROV data obtained near Charles Point (i.e., sites ED01, CC07, and CC08). All of these factors indicate high uncertainty and potentially high risk with respect to the ROV data in particular; however, because the ROV data have not been effectively organized to undersand the spatial distribution and abundance within individual study areas, there is more uncertainty than risk. In either case, this effects determination is inconclusive and inappropriate. The assessment should be re-evaluated.	Aurora LNG acknowledges that details around the design and operation of the Charles Point outfall are preliminary and will be refined during final engineering and design; however, Aurora LNG is of the opinion that characterization of potential effects on marine fish health associated with effluent discharges at the Charles Point outfall is adequate. The assessment considered information on marine fish and fish habitat collected from scientific literature and Project-specific studies (see Appendix L, Marine Fish and Fish Habitat TDR). For further details, please see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. The following sections provide information to characterize intertidal and subtidal fish and fish habitats along East Digby Island, including the area south of Charles Point where the deep outfall is proposed: Section 5.1.3.2, Figure 10 (intertidal); Section 5.2.3.2, Figure 18, Figure 19, Figure 20, and Figure 21 (subtidal); Section 5.4.3.2, Figure 33 (eelgrass); and Section 5.5.6, Figure 42 and Figure 43 (marine fish). With the implementation of mitigation measures to reduce potential effects on marine fish and fish habitat associated with effluent discharge, such as commitments that all effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone, Project-related discharges are not expected to result in residual adverse effects to marine fish health. Aurora LNG is committed to conducting a Marine Water Quality Monitoring Program, which will include monitoring effluent discharges as per permitting requirements (see Section 15.3.6 of the Summary of Follow-up Programs and Compliance Reporting). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine Water Quality Monitoring Program. With respect to the organization of subtidal ROV data, observations of CRA fish species along each transect are shown on Figures 15 through 25 in Appendix L to visualize the spatial distribution of CRA fish observations within each study area. Furthermore, relative abundances of marine fish and invertebrates were calculated across transects, for each study area, and are presented in Appendix 2 of Appendix L.
2084.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	There is not enough information about the preliminary project design to provide credible statements on the effectiveness of mitigation, given a lack of baseline data collected to understand the current environmental conditions (i.e., no sediment or water quality data and limited marine fish data in the area of the proposed deep outfall at Charles Point). Given the uncertainty in the deep outfall design, location, and limited baseline information provided on the VCs, a "negligible" residual effects determination (p. 4.9-105) is inappropriate. The assessment should be re-evaluated.	Aurora LNG acknowledges that details around the design and operation of the Charles Point outfall are preliminary and will be refined during final engineering and design; however, Aurora LNG is of the opinion that the characterization of potential effects on marine fish health associated with effluent discharges at the Charles Point outfall is appropriate. The assessment considered information on marine fish and fish habitat collected from scientific literature and Project-specific studies (see Appendix L, Marine Fish and Fish Habitat TDR). The following sections provide information to characterize intertidal and subtidal fish and fish habitats along East Digby Island, including the area south of Charles Point where the deep outfall is proposed: Section 5.1.3.2, Figure 10 (intertidal); Section 5.2.3.2, Figure 18, Figure 19, Figure 20, and Figure 21 (subtidal); Section 5.4.3.2, Figure 33 (eelgrass); and Section 5.5.6, Figure 42 and Figure 43 (marine fish). Furthermore, although no marine sediment or water quality samples were collected specifically at the location of the proposed Charles Point outfall, water quality and sediment samples collected in other areas of the LAA are expected to be representative of conditions at the Charles Point outfall (i.e., conditions at the location of the Charles Point outfall are not expected to differ substantially from other areas in the LAA). Appendix F (Marine Sediment and Water Quality Technical Data Report) describes the methods and results of the water quality and sediment sampling programs. A total of 227 marine sediment samples were collected from 57 sites in December 2014 (surface grabs only) and January 2016 (surface grabs and cores). Sediment sampling locations are identified in Figure 1 and Figure 2 of Appendix F. Water quality monitoring was conducted during the December 2014 sediment sampling field program at a location within each of the three proposed Project dredge footprints. These data were supplemented with water quality monitoring data collected quarterly (from 2013 through 2015) by the Prince Rupert Port Authority at six nearby sites. Figure 5 of Appendix F identifies the locations of the water quality monitoring sites. With the implementation of mitigation measures to reduce potential effects on marine fish health associated with effluent discharge, such as commitments that all effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone, Project-related discharges are not expected to result in residual adverse effects to marine fish health. Aurora LNG is committed to conducting a Marine Water Quality Monitoring Program, which will include monitoring effluent discharges as per permitting requirements (see Section 15.3.6 of the Summary of Follow-up Programs and Compliance Reporting). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine Water Quality Monitoring Program. With respect to the mitigation measures identified in the Marine Fish and Fish Habitat VC (Section 4.9), these measures are based on an understanding of existing conditions (characterized through scientific literature and extensive Project-specific field studies, see Appendix L), expected construction methods, timing, and Project design, professional experience with similar projects in the Pacific North Coast of BC, and industry-accepted best management practices. In most cases, mitigation measures proposed for marine fish and fish habitat are standard and have been proven to be effective at reducing effects to the marine environment. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the marine and Freshwater Resources Management Plan.
2085.1	round 1	Gitxaala Nation	4.9.5.5	Marine Fish and Fish Habitat	It is irresponsible to make any likelihood statements (p. 4.9-106) at this stage of the project and in terms of the effectiveness of mitigation, especially since the statements are in favour of the Proponent's interest over the interests the public and the potential risks posed to the marine environment. Given the uncertainty in the deep outfall design, location, and baseline information provided on the VCs, the likelihood statement is not appropriate and should be re-evaluated.	Aurora LNG was required to provide a likelihood determination for each effect in the Marine Fish and Fish Habitat assessment (Section 4.9), as per the Environmental Assessment (EA) methods. The EA methods were outlined in the final Application Information Requirement document for the Aurora LNG Project and approved by the EAO. Aurora LNG acknowledges that there is uncertainty in the assessment of residual effects and this uncertainty is captured under Section 4.9.8 (Prediction Confidence) of the Marine Fish and Fish Habitat assessment. Follow up programs will be implemented to assess the accuracy of the predictions made in the EA and the effectiveness of the mitigation measures. These programs will include a Marine Water Quality Monitoring Program to characterize water quality parameters in effluent discharges as per permitting requirements (see Section 15.3.6 of the Summary of Follow-up Programs and Compliance Reporting). Aurora LNG is of the opinion that the level of information provided in the assessment of potential effects on marine fish and fish habitat (Section 4.9) is sufficient to evaluate the likelihood of residual effects.
2086.1	round 1	Gitxaala Nation	4.9.6	Marine Fish and Fish Habitat	This cumulative effects assessment is predicated on limited baseline data pertaining to VCs of interest, ignores uncertainty in risks, given the preliminary stage of the project design, flaws in logic and deficiencies in the effects assessment, and the wholly inconclusive characterization of residual effects. Based on this, a cumulative assessment cannot be credibly determined and should not be given further consideration until a more credible effects assessment is complete.	Aurora LNG acknowledges this comment but disagrees with the provided characterization of the cumulative effects assessment for Marine Fish and Fish Habitat.
2087.1	round 1	Gitxaala Nation	4.9.7.2	Marine Fish and Fish Habitat	The "residual effects" likelihood statement on p. 4.9-121 directly contradicts previous statements made on p. 4.9-112: "The likelihood of residual cumulative effects on marine fish habitat is considered high since, despite the widespread implementation of habitat compensation/offsetting, some adverse changes in habitat have occurred as a consequence of existing projects and activities and are expected to occur during construction of reasonably foreseeable future projects," as well as in Table 4.9-23 on p.4.9-118. The significance determination is inconclusive and inappropriate. The assessment should be re-evaluated.	Aurora LNG thanks you for highlighting this contradiction. The statement on page 4.9-121 (Section 4.9.7.2, first paragraph, first sentence) should read: "The likelihood of residual cumulative effects on marine fish habitat is considered high since, despite the widespread implementation of habitat compensation/offsetting, some adverse changes in habitat have occurred as a consequence of existing projects and activities and are expected to occur during construction of reasonably foreseeable future projects." An errata document is being compiled that will capture this correction and it will be filed with the BC EAO.
2088.1	round 1	Gitxaala Nation	4.9.7.2	Marine Fish and Fish Habitat	Explain how "the combined residual cumulative effects on marine fish and fish habitat are predicted to be not significant"? How can this be a logical conclusion if three of the four effects identified (i.e., habitat, behaviour, and mortality) have all been considered as having a high likelihood of occurrence, are either long-term or permanent, and with all habitat effects being irreversible? Moreover, the conclusion of a "low" likelihood of changes in fish health is inappropriate due to myriad reasons in previously stated comments, sources of uncertainty related to the deep outfall design and location, lack of baseline information provided on the VCs of interest (i.e., marine sediment, water quality, and fish and fish habitat and aquatic species), and the faulty logic behind the mitigation proposed. This all indicates more uncertainty than risk. This determination is inconclusive and inappropriate. The assessment should be re-evaluated.	The statement referenced in Section 4.9.7.2 (page 4.9-122) refers to the significance of the combined residual cumulative effects, not the likelihood of those effects. While there is a high likelihood of residual cumulative effects for changes in fish habitat, behaviour, and mortality risk, all four of the effects assessed are predicted to be not significant (see page 4.9-121). As there are no individually-significant residual cumulative effects, the combined residual cumulative effects are also predicted to be not significant. The rationale for the characterization of residual cumulative effects on marine fish health as 'low likelihood' is provided in Section 4.9.6.6 (page 4.9-118).
2089.1	round 1	Gitxaala Nation	4.10.5.2	Marine Wildlife - Marine Mammals	There is no mention of adaptive management to assist the Proponent in the development of effective monitoring programs that address the uncertainties in Mitigation Nos. 4.10.1 and 4.10.2. Reference is made to the Marine and Freshwater Resources Management. Plan. If not through adaptive management, how with the Proponent address the risks and uncertainties?	The Marine and Freshwater Resources Management Plan will be developed through engagement with regulators (i.e., DFO, the BC Oil and Gas Commission) and Aboriginal Groups. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2090.1	round 1	Gitxaala Nation	4.10.5.3	Marine Wildlife - Marine Mammals	There is no mention of adaptive management to assist the Proponent in the development of effective monitoring programs that address the uncertainties in Mitigation Nos. 4.10.1 and 4.10.2. Reference is made to the Marine and Freshwater Resources Management Plan. If not through adaptive management, how with the Proponent address the risks and uncertainties?	The Marine and Freshwater Resources Management Plan will be developed through engagement with regulators (i.e., DFO, the BC Oil and Gas Commission) and Aboriginal Groups. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.
2091.1	round 1	Gitxaala Nation	4.10.5.4	Marine Wildlife - Marine Mammals	There is no mention of adaptive management to assist the Proponent in the development of effective monitoring programs that address the uncertainty in Mitigation No. 4.10.3. Reference is made to the Marine and Freshwater Resources Management Plan. If not through adaptive management, how with the Proponent address the risks and uncertainties?	The Marine and Freshwater Resources Management Plan will be developed through engagement with regulators (i.e., DFO, the BC Oil and Gas Commission) and Aboriginal Groups. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.
2092.1	round 1	Gitxaala Nation	4.10.5.5	Marine Wildlife - Marine Mammals	Please explain why the operations phase was not included in the residual effects assessment in Table 4.10-11 (p. 4.10-71).	The potential for residual effects of change in health to marine mammals during routine operations, or from Project-related vessel traffic during any phase, is considered low and the potential interaction was not carried further into the assessment of change in health (see Section 4.10.5.2 of the Application). As a result, the operations phase was not included in the summary of Project residual effects on marine mammals (Table 4.10-11) for change in health. The summary of potential residual effects on change in behaviour and change in mortality risk during the operations phase are summarized in Table 4.10-11.
2093.1	round 1	Gitxaala Nation	4.10.5.5	Marine Wildlife - Marine Mammals	Table 4.10-12 gives no indication of specific mitigation measures that may be necessary for individual species, given the uncertainties. Blanket mitigation measures generally applied for all marine mammal species are not sufficient to address residual cumulative effects across auch a range of individual species with unique life histories and habitats, and especially for harbour porpoises if the effects are considered to be significant for this species.	The mitigation measures proposed are consistent with recovery strategies and action plans, where such documents exist. The suite of mitigation measures proposed are expected to be effective at achieving their primary objectives (i.e., to reduce potential for changes in health and behaviour during in-water blasting; to reduce potential for changes in health and behaviour during impact pile driving; and to to reduce potential changes in marine mammal mortality risk from increased risk of vessel strikes) regardless of the species of marine mammal under consideration. While each species may exhibit individual and unique life histories and habitats, the mechanisms for potential effects are common to all species.
2094.1	round 1	Gitxaala Nation	4.10.8	Marine Wildlife - Marine Mammals	Despite the uncertainties listed to arrive at the conclusion, there is no mention of adaptive mangment to assist the Proponent in the development of effective monitoring programs that can meaningfully address this uncertainty. If not through adaptive management, how with the Proponent address the risks and uncertainties?	The Marine and Freshwater Resources Management Plan will be developed through engagement with regulators (i.e., DFO, the BC Oil and Gas Commission) and Aboriginal Groups. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.

2095.1	round 1	Gitxaala Nation	4.10.9	Marine Wildlife - Marine Mammals	Acceptance of siginificant cumulative adverse effects to harbour porpoise without any follow-up or monitoring programs is untenable. If the Proponent is committed to adaptive management for the Project and PNCIMA in general, the stated acknowledgement of uncertainities in the risk assessment necessarily involves follow-up programs if adaptive management is to be effectively implemented. Reference is solely made to the Marine and Freshwater Resources Management Plan, which does not further discuss any intent to invoke adaptive management as part of its implementation (Part E, Section 14.9).	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be completed to verify assumptions and predictions made in the assessment (Application) and to refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and in--water impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA. Additional mitigation measures will be assessed and implemented, as required, based on results from the field verification that will occur.
2096.1	round 1	Gitxaala Nation	6.4	Land and Resource Use	PNCIMA goal implementation cites monitoring with adaptive management largely related to "marine environments and marine use" (p. 6.4-16). Reference to adaptive management in the mitigation measure deals almost exclusively with land use activities for terrestrial wildlife (Mitigation No. 4.7.15), vegetation (Mitigation No. 4.6.10), wetlands (Mitigation 4.6.14 and 4.6.15), with the exception of marine birds (Mitigation Nos. 4.7.13) in terms of lighting-induced effects to migration (presumably this includes both onshore and offshore lighting). How is monitoring with adaptive management intended to address all the risk uncertainties associated with the marine environment specifically?	Aurora LNG have proposed multiple mitigation measures to reduce potential effects on Marine Use and Navigable Waters, only one of which focuses on adaptive management. The other mitigation measures are based on industry standards and proven techniques used at other federal ports. In consideration of all proposed mitigation measures, Aurora LNG is confident in the conclusions made in the Application. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). The creation of a Marine Activities Plan (Mitigation 6.5.2) will further describe how the Project's marine activities can be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan through engagement with the appropriate regulatory agencies, Schedule B Aboriginal Groups, marine users, and other relevant stakeholders. Other inputs to the planning process will be derived from the TERMPOL study, and Aurora LNG's participation on the PRPA's Marine Construction and Coordination Committee (e.g., they could lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention). Additional information on the nature of the Marine Activities Plan will be shared as the plan is developed.
2097.1	round 1	Gitxaala Nation	6.5.6.4	Marine Use and Navigable Waters	How will an adaptive management strategy be applied as an approach to addressing the impacts from inceremental increases in shipping traffic "where needed"?	Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). The use of adaptive management framework, as suggested for the Marine Activities Plan, provides flexibility to address changing conditions like increased shipping. It also provides a pathway for modifications and improvements to be made to Project-related shipping practices. This could include modifications to port practices and terminal operations.
2098.1	round 1	Gitxaala Nation	6.5.7.1	Marine Use and Navigable Waters	How will an adaptive management strategy be applied as a approach to addressing the impacts from increaseed vessel traffic, "if needed"?	Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). The use of adaptive management framework, as suggested for the Marine Activities Plan, provides flexibility to address changing conditions like increased shipping. It also provides a pathway for modifications and improvements to be made to Project-related shipping practices. This could include modifications to port practices and terminal operations.
2099.1	round 1	Gitxaala Nation	6.6.5.3	Community Health	How can Mitigation No. 6.3.3 specifically be refined and developed over time, as part of an adaptive management process in the Health and Medical Services Plan to reduce adverse effects on social environments and social support networks for staff and contractors in the workplace?	Mitigation No. 6.3.3 is proposed to be included as part of the Health and Medical Services Plan. Under the Northern Health's Health and Medical Services Plan Best Management Guide for Industrial Camps (March 2015), a section of the plan must allow for quality improvement, recognizing that conditions can be subject to ongoing change. The requirement for cultural awareness of staff and contractors is one such example of conditions that may be subject to change, given that the culture of staff is a constantly evolving medium. Mitigation 6.3.3 can be refined and developed over time to accommodate cultural awareness by offering associated training to promote continued growth and knowledge of all staff and contractors. Information provided at cultural awareness training would evolve, as required, to incorporate new cultural information.
2100.1	round 1	Gitxaala Nation	11	CEAA 2012	Why is there no mention of the adaptive management commitments to assist the Proponent in its compliance with federal statutory requirements?	Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2101.1	round 1	Gitxaala Nation	12.5.6.3	Aboriginal Consultation	Why has the consultation process neither acknowledged nor considered Gitxaala Nation's interest in participating in an adaptive management framework for ongoing environmental effects monitoring and management, as a stated commitment by the Proponent (see Part A, Section 1, pp. 1-43 and 1-48 of the Application)?	Aurora LNG understands that Gitxaala Nation is referring to Section 12.5.6.3, Summary of Past, Present, and Anticipated Future Use of the Project Vicinity in this comment. That section is a description of Aurora LNG's understanding of Gitxaala Nation's use of the area without the presence of the Project. This includes the "Future Use" section. Aurora LNG sought information from Gitxaala Nation regarding how it would use the Project Vicinity in the future if the Project were not present. Gitxaala Nation's interest in being part of future monitoring discussions is acknowledged in Table 12.9-1 (page 12-325). Aurora LNG is in the process to developing management plans and monitoring programs. Aurora LNG will continue to consult with Aboriginal Groups in the development of those plans. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2102.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Gitxaala cites the importance of echinoderms, crustaceans, cephalopods and other molluscs, halibut and other benthic fishes, which are listed on p. 12-160 as harvested marine resources in Casey Cove, where dredging and placement of the seawater intake are expected. There is a lack of baseline data to effectively understand the current state of the populations of these traditional marine resouces in the study areas, which stand to be adversely affected by the mechanisms for water use and wastewater disposal the project. This reprsents a key ucertainty in the Project that will require direct consultation and involvment of Gitxaala Nation in the monitoring and management process.	Aurora LNG conducted extensive field studies to characterize marine fish habitats and associated fish and invertebrate species occurring in Casey Cove. These studies include; an intertidal survey, a subtidal remotely operated vehicle (ROV) survey, crab trapping, and marine fish surveys (using beach seines and tangle nets). For a detailed discussion on the methods used and results of these studies, please refer to the Marine Fish and Fish Habitat TDR (Appendix L). Information gathered from the Project-specific field studies was supplemented with information obtained through a review of available technical reports and scientific literature. The results of this literature review are also presented in the Marine Fish and Fish Habitat TDR (Appendix L).
2103.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	The loss of access along east shore of Digby Island for traditional harvest of marine resources identified on p. 12-160 represents an issue that will require direct consultation and involvment of Gitxaala Nation in the monitoring and management process.	Aurora LNG would be pleased to discuss this matter with Gitxaala Nation during the development of management plans and monitoring programs.
2104.1	round 1	Gitxaala Nation	12.5.6.6	Aboriginal Consultation	Continual consultation with Aboriginal Groups to develop processes to monitor the implementation and evaluate the effectiveness of mitigation measures (p. 12-173) is critical step in the adaptive management process. The Proponent needs to clarify what "consultation" with Gitxaala Nation looks like in terms of the decision-making process and involvement in monitoring to mitigate any potential effects. This has not been adequately identified in the component environmental management plans that have been included as commitments of the Proponent.	Prior to the start of construction, Aurora LNG will develop environmental management plans and monitoring programs for the Project. Aurora LNG will engage with the appropriate regulatory agencies and Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) in the development of those plans. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2105.1	round 1	Gitxaala Nation	12.5.6.7	Aboriginal Consultation	Significant effects on harbour porpoise, which are important as a VC of interest to Gitxaala Nation, require that the Proponent identify how it intends to engage Gitxaala in the monitoring and management of project activities that have high potential for residual adverse effects. This has not been adequately identified in the component environmental management plans that have been included as commitments of the Proponent.	Prior to the start of construction, Aurora LNG will develop environmental management plans and monitoring programs for the Project. Aurora LNG will engage with the appropriate regulatory agencies and Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) in the development of those plans. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Potential effects to harbour porpoise as a culturally-important species to Gitxaala Nation are described in Section 12.5.6.7 (starting on page 12-177).
2106.1	round 1	Gitxaala Nation	12.5.6.12	Aboriginal Consultation	Why has the consultation process neither acknowledged nor considered Gitxaala Nation's (or any Aboriginal interest included in Part C) in participating in an adaptive management framework for ongoing environmental effects monitoring and management, as a stated commitment by the Proponent (see Part A, Section 1, pp. 1-43 and 1-48 of the Application)?	Gitxaala Nation's interest in being part of future monitoring discussions is acknowledged in Table 12.9-1 (page 12-325). Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Aurora LNG would be pleased to discuss this matter with Gitxaala Nation during the development of management plans and monitoring programs.
2107.1	round 1	Gitxaala Nation	12.5.6.13	Aboriginal Consultation	The consultation process has not expressly stated a commitment to uphold Gitxaala Nation's (or any Aboriginal interest included in Part C) in participating in the adaptive management framework for ongoing environmental effects monitoring and management, as a stated commitment by the Proponent (see Part A, Section 1, pp. 1-43 and 1-48 of the Application). This should be included in the summary as a key conclusion for addressing the uncertainty in residual effects.	Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Aurora LNG would be pleased to discuss this matter with Gitxaala Nation during the development of management plans and monitoring programs.
2108.1	round 1	Gitxaala Nation	12.8	Aboriginal Consultation	Why have the issues identified in Table 12.8-1 come after the assessment has been conducted? Concerns should be presented in Part C prior to conducting an effects assessment in order to adequately contextualize and validate the assessment. It provides the reviewer witha *priori* knowledge of Aboriginal concerns, since these concerns are precisely the basis of this section. The methodology is illogical in terms of the structure in which information has been presented.	Table 12.8-1 is a summary table, as per the requirement of the AIR. The structure of Part C mirrors the structure of the AIR. Aurora LNG included much of the information in Table 12.8-1 in the Key Findings table at the start of Part C (see Table 12.1-4) to address the point raised by Gitxaala Nation in this comment.
2109.1	round 1	Gitxaala Nation	12.9	Aboriginal Consultation	Why have the pre-application views in Table 12.9-1 come after the assessment has been conducted? Concerns should be presented in Part C prior to conducting an effects assessment in order to adequately contextualize and validate the assessment. It provides the reviewer witha *priori* knowledge of Aboriginal concerns, since these concerns are precisely the basis of this section. The methodology is illogical in terms of the structure in which information has been presented.	Table 12.9-1 is a summary table. The structure of Part C mirrors the structure of the AIR. Aurora LNG also included a table of Key Concerns for Gitxaala Nation in Section 12.3.3 (Table 12.3-3) prior to the assessment of effects on Aboriginal Interests.
2110.1	round 1	Gitxaala Nation	12.9	Aboriginal Consultation	Inclusion of Gitxaala Nation's cultural understanding of the VCs of interest will be necessary to reduce the uncertainty around VC effects and to effectively develop mitigation that includes Gitxaala's concerns. Although there is a stated commitment by Aurora LNG to use adaptive management, (see Part A, Section 1, pp. 1-43 and 1-48 of the Application), Gitxaala involvement in the adaptive management decision process has neither been identified nor described in any meaningful detail in any of the component environmental management plans. It has also not been described in Part B as part of the commitments of the Proponent and with respect to Gitxaala Nation.	Prior to the start of construction, Aurora LNG will develop environmental management plans and monitoring programs for the Project. Aurora LNG will engage with the appropriate regulatory agencies and Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) in the development of those plans. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).

2111.1	round 1	Gitxaala Nation	12.9	Aboriginal Consultation	Table 12.9-1 states, "Gitxaala Nation has the view that Fish Mortality or Fish Health are secondary considerations when assessing Gitxaala Harvesting. Instead, Gitxaala access to the fish should be the main concern", which then refers to specific VC assessment sections in Part B as a boiler plate response. These sections have very little to do with Gitxaala Nation and the VC assessments give no mention of effects related to access to the fishery by Gitxaala Nation. Therefore the effect of a change in access to the fishery has not been meaningfully factored into the VC assessment methodology, which is formatted differently in Part C compared to Part B.	Section 11.3.9.5 (Assessment of CEAA 5(1)(c) i--Aboriginal Socio-Economic Conditions) includes a specific consideration of "socio-economic barriers to increased participation in the fishing sector and the sensitivity of the practices to change" (page 11-204) that affect Gitxaala Nation's fishing practices beyond the effects assessed in Section 6.5 (Marine Use and Navigable Waters). The assessment of effects on CEAA 5(1)(c) factors is structured in the same way as Part B VC assessments.
2112.1	round 1	Gitxaala Nation	12.9	Aboriginal Consultation	Gitxaala Nation did not receive the full Application prior to submission, as the intent was to capture views on the draft Part C (Section 12) of the Application in accordance with the AIR. The lack of consultation in the steps leading up to submission has not effectively demonstrated the stated commitment to invoke adaptive management. This is particularly obvious with respect to insufficient VC baseline data describing existing conditions, ineffectively summarized results of data collected from baseline studies, overall lack of consideration about VC effects in Part B that are specific to Gitxaala Nation, illogical conclusions about likelihood and certainty of the success for proposed mitigation, irresponsible statements about significance despite certain residual and cumulative effects characterizations made, and most importantly, the high confidence in predictions given with respect to statements on likelihood and significance, despite clear uncertainties identified in the preliminary Project design, effect mechanisms, and numerous mitigation measures proposed. How does the Proponent intend to meaningfully adjust the consultation process undertaken to date to be more inclusive and participatory if it is truly committed to adaptive management? Given the relevance of this point to the EA process, please do not limit the response to a list of boiler plate statements.	Aurora LNG has been committed to ongoing consultation with Gitxaala Nation throughout the Application Review phase to discuss issues and concerns related to the Application. Aurora LNG was disappointed that Gitxaala Nation made the decision not to fully participate in Technical Workshop #4 held on January 25th and 26th in Prince Rupert. This workshop provided a meaningful opportunity to discuss concerns and issues associated with the assessment of VCs in Part B of the Application, and to explore new mitigation ideas. Aurora LNG offered Gitxaala Nation another opportunity to meet regarding the remaining material from Workshop #4, which occurred on March 28, 2017. On March 27, 2017, Aurora LNG held Technical Workshop #5 with Gitxaala Nation to further discuss the characterization of effects and significance conclusions outlined in the CEAA 2012 Section 5(1)(c) assessment, and the assessment of Project effects related to Aboriginal Interests in Part C. Technical Workshops #4 and #5 were also an opportunity to discuss feedback on mitigation measures, proposed management plans and follow-up programs. Throughout Technical Workshops #4 and #5, Aurora LNG documented Gitxaala Nation opinions, concerns and feedback. Aurora LNG was also disappointed that Gitxaala Nation chose not to participate at the EAO's Working Group session held on February 6th and 7th in Prince Rupert. A key purpose of these sessions was to facilitate a discussion of issues and concerns with the Application. Aurora LNG also invited Gitxaala Nation to participate in a Field Review (in March 2017), in response to Gitxaala Nation's desire to conduct a "Field Audit". While Aurora LNG understands that Gitxaala Nation wishes to conduct a full audit of the field work, Aurora LNG has outlined for Gitxaala Nation an approach designed to achieve a common understanding of the baseline study findings and how these findings were incorporated into the Application. Gitxaala Nation declined to participate in the Field Review. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitxaala Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order). Aurora LNG's framework for adaptive management is in relation to environmental management plans and is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Prior to the start of construction, Aurora LNG will develop environmental management plans and monitoring programs for the Project. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the plans.
2113.1	round 1	Gitxaala Nation	14.3	Environmental and Operational Management Plans	No mention of the use of adaptive management in its description. How is adaptive management being proposed if it is necessary for Mitigation No. 4.6.10: monitoring for effects to "vegetation from SO2 and NO2 atmospheric concentrations, soil acidification or soil eutrophication" in Section 4.6 (p. 4.6-35, Table 4.6-11)? Why has there been no mention of Gitxaala Nation involvement or the role of adaptive management?	For clarification purposes: the Air Quality Management Plan identified in section 14.3 of the Application is different than the proposed acidification and eutrophication follow-up monitoring program which relates to mitigation number 4.6.10 and is summarized in section 15.2.2 of the Application. The former plan will describe BMPs and mitigation measures that will be implemented to avoid or reduce potential effects to air quality from Project activities. The latter is a follow-up program designed to assess the modeled (predicted) effects of acidification and eutrophication on soils and ecological communities. The proposed acidification and eutrophication follow-up monitoring program, which relates to mitigation number 4.6.10, is summarized in section 15.2.2 (not section 14.3) of the Application. This follow-up program will entail the following steps: monitoring baseline conditions, monitoring conditions during operations, designating management thresholds (i.e., indicators of measurable changes in soils or ecological communities that warrant a mitigation-response), and implementing mitigation measures if management thresholds are exceeded. It is expected that the monitoring effort will be regionally focused to encompass all of the potential airshed contributors and coordinated through the BC Ministry of Environment. In establishing that regional monitoring effort, it is assumed that the Ministry will determine the monitoring criteria and outline a suite of potential mitigation measures to address expected outcomes based on the monitoring results It is expected that the proposed acidification and eutrophication follow-up monitoring program will be developed under direction of Ministry of Environment and through engagement with Schedule B Aboriginal Groups and key stakeholders. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2114.1	round 1	Gitxaala Nation	14.4	Environmental and Operational Management Plans	How is the plan, which is expected to be moderately successful, going to be implemented to address VC-specific issues using adaptive management principles, especially with respect to waste products, the Project's overall carbon footprint, and the issue of fugitive emissions?	The GHG Management Plan will be prepared to identify all the activities that are being taken to address GHG emissions, including reporting to regulators. As activities are adapted to updated technologies, techniques, or regulations, the Plan will be updated. As part of annual compliance reporting under the BC Greenhouse Gas Industrial Reporting and Control Act, total Project emissions (including fugitive emissions) will need to be evaluated and reported. These emissions would also be verified by a 3rd party before submission to regulators.
2115.1	round 1	Gitxaala Nation	14.6	Environmental and Operational Management Plans	An "Invasive Species Management Plan" was proposed for Mitigation No. 4.6.4 in Section 4.6 (p. 4.6-29, Table 4.6-10), but has not been mentioned in this section, unless it is the same thing as the Invasive Plant Management Plan, which gives no mention of the use of adaptive management in its description.	The "Invasive Plant Management Plan" is referenced in Table 4.6-10, Mitigation No. 4.6.6 and in Section 14 of the Application. and is the same as the "Invasive Species Management Plan" referenced in Mitigation No. 4.6.4. While the process of adaptive management may not be explicitly listed among the elements of the Invasive Plant Management Plan, it is included among the Best Management Practices that are referred to and will be included as part of the monitoring and management response of the Invasive Plant Management Plan when it is developed.
2116.1	round 1	Gitxaala Nation	14.7	Environmental and Operational Management Plans	Although a form of consultation has been acknowledged, it is not as an explicit statement to undertake adaptive management to implement the plan; however, the VC assessment stated adaptive management as the principal means for monitoring wetland function with reference given to the Wetland Compensation Plan. Why has there been no mention of Gitxaala Nation involvement or the role of adaptive management? More details are needed here about the process for implementing the plan to address the uncertainties.	Section 14 of the Application provides a summary of the proposed environmental and operational management plans, in accordance with the Application Information Requirements. Section 14.7 states that the Wetland Compensation Plan will be developed in consultation with Aboriginal Groups. Section 5.3 of the Wetland Compensation Plan (Appendix U of the Application) states that the details of the monitoring program for the Wetland Compensation Plan will be determined through engagement with appropriate regulatory agencies and with Schedule B Aboriginal Groups. Effectiveness monitoring will be a component of the monitoring program, to confirm that wetland functions are performing as intended. Mitigation measures 4.6.14 and 4.6.15 in Table 4.6-13 of the Application identify that adaptive management will be applied as needed in response to wetland monitoring results. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2117.1	round 1	Gitxaala Nation	14.8	Environmental and Operational Management Plans	How is the plan, which is expected to be moderately successful, going to be implemented to address VC-specific issues using adaptive management principles, especially with respect to Mitigation Nos. 4.7.14 for marine birds (i.e., MAMU) and 4.7.16 (i.e., migratory birds and bats)? Why has there been no mention of Gitxaala Nation involvement or the role of adaptive management? More details are needed here about the process for implementing the plan to address the uncertainties.	To support mitigation measures 4.7.14 and 4.7.16, the Wildlife Management Plan will provide a description of the procedures for searching, documenting, and reporting bird, bat and wildlife injuries and mortalities and will be consistent with applicable Environmental Assessment Certificate conditions. The Marbled Murrelet Management and Bat Management Plans will also include a description of activities to support these mitigation measures for targets species (or species groups) applicable to each. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of these plans.
2118.1	round 1	Gitxaala Nation	14.8.1	Environmental and Operational Management Plans	How is the plan going to be implemented to address specific issues pertaining to MAMU using adaptive management principles and why has there been no mention of Gitxaala Nation involvement or the role of adaptive management? More details are needed here about the process for implementing the plan to address the uncertainties.	The Marbled Murrelet Management Plan will specifically outline avoidance, reduction, mitigation, and monitoring measures to effects from change in habitat or mortality risk from Project construction and operation activities. The Marbled Murrelet Management Plan will include an adaptive management component to manage potential project effects in that it will be updated as the Project progresses and monitoring results are analyzed. Scheduled reviews will be undertaken annually,subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modifications to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2119.1	round 1	Gitxaala Nation	14.8.2	Environmental and Operational Management Plans	How is the plan going to be implemented to address specific issues pertaining to *Myotis lucifugus* and *M. septrentrionalis* using adaptive management principles and why has there been no mention of Gitxaala Nation involvement or the role of adaptive management? More details are needed here about the process for implementing the plan to address the uncertainties.	The Bat Management Plan will specifically outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects to bats from change in habitat or mortality risk from Project construction and operation activities. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan. Regarding planning related to northern myotis (Myotis septentrionalis), Aurora LNG notes that the Bat Management Plan will focus on potentially occurring species and that the northern myotis (Myotis septentrionalis) is not expected to occur in the RAA (Environment Canada 2015) and has not been observed as part of the field programs related to the Application. The Bat Management Plan will include an adaptive management component to manage potential project effects in that it will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Reference: Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.
2120.1	round 1	Gitxaala Nation	14.9	Environmental and Operational Management Plans	Of all management plans proposed, this plan is of the greatest importance in the context of adaptive management. This is largely due to the high degree of uncertainty associated with the preliminary design of the water management system, including the seawater intake, desalination, and deep outfall associated with desalination. Remaining disposal of LNG process water and sanitary wastewater has also not been adequately addressed by the conceptual layout in Figure 1-2 and the assessment gives an untold amount of unresolved statements in the body of the EA regarding the combined treatments and disposal of all waste in the marine receiving environment to more than one possible outfall. Why has there been no mention of Gitxaala Nation involvement or the role of adaptive management with respect to PNCIMA and as a commitment stated to undertake adaptive management as "best in class" for "HSE&SR Management System" (i.e., see p. 1-43 of Section 1.2.10 of Part A)? More details are needed here about the process, given the lack of baseline data and deficiencies in the effects assessment for this VC.	Aurora LNG recognizes the importance of adaptive management in guiding the development and implementation of the Marine and Freshwater Resources Management Plan. The plan will include details related to implementing water quality monitoring programs, and will identify water quality thresholds, monitoring frequency, and water quality monitoring locations (Section 14, Summary of Proposed Environmental and Operational Management Plans). As described in Section 15, Aurora LNG has committed to developing and implementing a Marine Water Quality Monitoring Program to confirm, among other aspects, effluent quality parameters prior to discharging to the marine environment. The Marine and Freshwater Resources Management Plan (and other environmental management plans, where appropriate) will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2121.1	round 1	Gitxaala Nation	14.9	Environmental and Operational Management Plans	Page 4.9-80 of Part B, Section 4.9.5.4 of the application states that "the risk of injury or mortality associated with operation of the intake is difficult to quantify because it depends on a variety of factors relating to the intake design, fish species and life stage, and environmental conditions (e.g., time of year). The final design of the marine intake will be confirmed through final engineering design." Given the uncertainty with respect to mortality risk due to this Project mechanism, why has there been no mention of Gitxaala Nation involvement or the role of adaptive management with respect to PNCIMA and as a commitment stated to undertake adaptive management as "best in class" for "HSE&SR Management System" (i.e., see p. 1-43 of Section 1.2.10 of Part A)? More details are needed here about the process, given the lack of baseline data and deficiencies in the effects assessment for this VC.	As discussed on page 4.9-93 of Section 4.9.5.4 (Marine Fish and Fish Habitat VC), the proposed seawater intake will be designed following DFO guidance for marine intakes (Fedorenko 1991) to reduce the potential for injury or mortality of marine organisms through impingement and entrainment. Specifically, the intake will be:Located to avoid areas of known Pacific herring spawning. The nearest documented area of herring spawning is located to the north of Dodge Cove, on the east side of Digby Island (Hay and McCarter 2013) Located to avoid topographical features that promote eddies, which may cause the retainment of planktonic organisms and larvae, which are most at risk of becoming entrained in intakes Located to avoid subtidal rock reefs, which support macroalgal communities (e.g., kelps) that serve as nursery habitats to juvenile fish and invertebrates; the intake terminus is located over soft sediment habitat near the mouth of Casey Cove Located at a depth of -25 m CD, which is below the layer where marine organisms are found in greatest numbers (e.g., juvenile salmon, larval eulachon, larval/juvenile Pacific herring) Elevated 2 m above the seabed, which helps to avoid entrainment of epibenthic plankton living near, and associated with, the seafloor substrate (e.g., mysids, prawn larvae, and larvae of various demersal fish species). In addition to these siting criteria, the intake terminus is proposed to be fitted with a “velocity cap”, which has been shown to induce an avoidance response in fish, reducing impingement and entrainment (Missimer et al. 2015). Seawater drawn into the intake will be conveyed to a screening and pump station located near the MOF, where it will pass through travelling screens designed in accordance with the guidelines developed by DFO (Fedorenko 1991). Screens will be sprayed from the inside and any marine organisms that have become impinged will be returned to the ocean through a wash water return line. With adherence to these design criteria, Aurora LNG believes that the risk of impingement and entrainment will be reduced to an acceptable level. As such, Aurora LNG is not proposing a follow-up monitoring program for the seawater intake. These measures (i.e., adherence to design criteria outlined above) and other mitigation measures developed during FEED will be included in the Marine and Freshwater Resources Management Plan. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
2122.1	round 1	Gitxaala Nation	14.9	Environmental and Operational Management Plans	Page 4.9-85 of Part B, Section 4.9.5.4 of the application states that "onsite monitoring will allow for the temporary suspension of activities should they result in the mortality of fish. This will limit the extent of impacts, and allow for adaptive management of mitigation measures to avoid or reduce the likelihood of further impacts." Given the uncertainty with respect to mortality risk due to Project activities, why has there been no mention of Gitxaala Nation involvement or the role of adaptive management with respect to PNCIMA and as a commitment stated to undertake adaptive management as "best in class" for "HSE&SR Management System" (i.e., see p. 1-43 of Section 1.2.10 of Part A)? More details are needed here about the process, given the lack of baseline data and deficiencies in the effects assessment for this VC.	Aurora LNG recognizes the importance of adaptive management in guiding the development and implementation of the Marine and Freshwater Resources Management Plan. The plan will include details related to implementing water quality monitoring programs, and will identify water quality thresholds, monitoring frequency, and water quality monitoring locations (Section 14, Summary of Proposed Environmental and Operational Management Plans). As described in Section 15, Aurora LNG has committed to developing and implementing a Marine Water Quality Monitoring Program to confirm, among other aspects, effluent quality parameters prior to discharging to the marine environment. The Marine and Freshwater Resources Management Plan (and other environmental management plans, where appropriate) will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).

2123.1	round 1	Gitxaala Nation	14.9	Environmental and Operational Management Plans	The marine mammal monitoring program is listed as a component of Mitigation No. 4.10.2 with reference to this plan, but is not mentioned in Sections 14 or 15 of Part E. Please discuss how the marine mammal monitoring program will be implemented as a follow-up rpogram.	As noted in Section 14 of the Application, no follow-up programs for marine mammals are being proposed. To verify compliance of the Project with commitments presented in the Application and conditions of an Environmental Assessment Certificate, mitigation 4.10.2 will be implemented via the Marine and Freshwater Resources Management Plan. This mitigation measure is captured in the third bullet of Section 14.9 of the Application (i.e., the Marine and Freshwater Resources Management Plan will include specific procedures and policies related to in-water pile driving). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. Details of this Plan will be developed prior to commencement of Project construction, and will be consistent with requirements outlined in Environmental Assessment Certificate Conditions.
2124.1	round 1	Gitxaala Nation	14.10	Environmental and Operational Management Plans	Although a form of consultation has been acknowledged, there is no explicit statement to undertake adaptive management to implement the plan, despite the uncertainty with respect to fisheries productivity losses due to the Project. Why has there been no mention of Gitxaala Nation involvement or the role of adaptive management with respect to PNCIMA and as a commitment stated to undertake adaptive management as "best in class" for "HSE&SR Management System" (i.e., see p. 1-43 of Section 1.2.10 of Part A)? More details are needed here about the process, given the lack of baseline data and deficiencies in the effects assessment for this VC.	The conceptual fish habitat offsetting plan is just the first step in the process of developing an effective, final habitat offsetting plan that would be submitted to DFO as part of a Fisheries Act authorization application. The intentions of this conceptual plan include (but are not limited to): 1) outline the structure of the habitat offsetting plan to show what components will be considered (including an adaptive management plan in the event that habitat offsetting does not perform as expected) 2) outline Aurora LNG's philosophy and approach to habitat offsetting to demonstrate that it aligns with DFO's guidance 3) identify potential offsets that could counterbalance serious harm to fish incurred by the project Aurora LNG is fully committed to fulfilling the legal obligation to effectively offset all Project-driven serious harm to fish, we see this conceptual plan as a starting point in the development of effective habitat offsetting. Through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets.
2125.1	round 1	Gitxaala Nation	14.12.1	Environmental and Operational Management Plans	This is the sole reference made to adaptive management for all proposed EMPs and OMPs listed in this section, which seems to indicates that consultation will drive a formal adaptive management process; however, all specified management plans referenced throughout the EA as part of the mitigation require a process to address uncertainties. The process should be expounded upon for its intended application in each component plan in this section.	Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2126.1	round 1	Gitxaala Nation	14.12.4	Environmental and Operational Management Plans	Mitigation No. 6.3.3 is listed and is specifically intended to indicate refinement over time and as part of an adaptive management process in the Health and Medical Services Plan. Why has there been no indication stated that the plan will undertake adaptive management such that Gitxaala Nation, or any other interests outside of Northern Health, are involved in a meaningfully consultative approach?	The Health and Medical Services Plan (HMSP) will be developed with reference to Northern Health's "Health and Medical Services Plan Best Management Guide for Industrial Camps" (March 2015). The HMSP will complement the Social Management Plan (mitigation 6.3.1) by outlining health and medical policies, services and protocols to be implemented at the worker accommodation camp. The HMSP is an internal shared document between Aurora LNG and Northern Health. Development of the Social Management Plan, which includes consideration of health care infrastructure and services (the subject matter mitigated through the HMSP), will be informed through engagement with concerned stakeholders, appropriate regulatory agencies and Schedule B Aboriginal Groups. Aurora LNG's framework for adaptive management is as follows: the social management plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2127.1	round 1	Gitxaala Nation	14.14	Environmental and Operational Management Plans	In order for these mitigation measures to be effective, some form of wastewater treatment and management will be necessary, especially for the desalination process to be in compliance with all provincial and federal regulatory requirements that have been acknowledged and listed in the associated mitigation descriptions. Given the uncertainty with respect to this Project mechanism, why has there been no mention of Gitxaala Nation involvement or the role of adaptive management with respect to PNCIMA and as a commitment stated to undertake adaptive management as "best in class" for "HSE&SR Management System" (i.e., see p. 1-43 of Section 1.2.10 of Part A)? More details are needed here about the process, given the lack of baseline data and deficiencies in the effects assessment for this VC.	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Waste Disposal Management Plan. Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2128.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	Although programs will be used to "support the implementation of adaptive management measures to address any previously unanticipated adverse effects" is a valid statement on p. 15-1 regarding the management of unforeseen risks, it does not acknowledge the uncertainty around those risks that have been identified and assessed as a part of the methodology. Numerous determinations have been made in Part B of the EA that are based on questionable assumptions and limited information. They are therefore unjustifiable, given the inherent uncertainty, and should be managed in such a manner to improve the understanding of effects potential and to implement appropriate measures proven to most effectively mitigate risks. If the Proponent is truly committed to adaptive management, which has been repeatedly stated in the EA, then all of the existing risks identified, as well as any stated "previously unanticipated adverse effects", will require a formal consultative process for arriving at the objective questions needed to set working hypothesis for experimental management and to derive agreed upon and focused monitoring programs that can be used to test these hypotheses and work to develop effective mitigation that appeases all interests in the consultative committee.	Aurora LNG is committed to implementing follow-up programs when there is a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the assessment. In these cases, the follow-up program will be used to verify the accuracy of predictions. Aurora LNG has committed to a number of follow-up programs (see Section 15, Summary of Follow-up Programs and Compliance Reporting). VCs that concluded moderate to high prediction confidence will be managed through the development of Environmental and Operational Management Plans (Section 14) designed to verify compliance of the Project with commitments in the Application and conditions of the Environmental Assessment Certificate. Criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011).
2129.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	A follow-up program is necessary for GHG emissions, given the determination of significant cumulative adverse effects in the VC assessment. The high degree of uncertainty surrounding potential effects warrants a follow-up program that addresses questionable logic surrounding the decision to remove upstream sources (a CEAA requirement) and international shipping sources in the overall GHG assessment, unsubstantiated mitigation measures proposed as part of the GHG Management Plan, and the moderate degree of confidence in the GHG Management Plan as a whole. Statements about compliance monitoring contained in Section 15.3.4 are insufficient for understanding the how the Project will contribute to GHGs. This requires some evidence-based means for ascertaining whether mitigation measures contained in the GHG Management Plan will truly be effective.	As per CEA Agency (2003) guidance, a project that has been determined to have a high magnitude of GHG emissions should prepare a GHG Management Plan. Aurora LNG has committed to developing a GHG Management Plan (Mitigation 4.3.6) following Project approval. In Section 4.3.5.2 of the Application, "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislation and will include a continuous assessment of monitoring and management requirements applicable to the mitigation listed in Table 4.3-12 (i.e., requirements of a fugitive emission survey program). The majority of the mitigation measures presented in the GHG Assessment have been proposed with the understanding that there is a high degree of certainty that they will reduce the amount of GHG emissions released to the atmosphere. These mitigation measures relate to the removal or reduction of the source of GHG emissions (i.e. reduction in fuel consumption reduces the source of GHG emissions). The GHG Management Plan does not directly reduce GHG emissions, but instead it is used to understand and identify activities that should be undertaken to reduce GHG emissions. Therefore, implementation of the Plan and the associated reduction activities are required to realize the benefits. Without all the details of the Plan finalized, slightly more uncertainty was conservatively factored in.
2130.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	The marine mammal monitoring program is listed as a component of Mitigation Nos. 4.10.1 and 4.10.2, but has not been mentioned in Sections 14 or 15 of Part E. Please include and discuss how the monitoring program will be implemented as a follow-up rpogram.	As noted in Section 14 of the Application, no follow-up programs for marine mammals are being proposed. To verify compliance of the Project with commitments presented in the Application and conditions of an Environmental Assessment Certificate, mitigation 4.10.2 will be implemented via the Marine and Freshwater Resources Management Plan. This mitigation measure is captured in the third bullet of Section 14.9 of the Application (i.e., the Marine and Freshwater Resources Management Plan will include specific procedures and policies related to in-water pile driving). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. Details of this Plan will be developed prior to commencement of Project construction, and will be consistent with requirements outlined in Environmental Assessment Certificate Conditions.
2131.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	A follow-up program is necessary for the harbour porpoise, given the determination of significant cumulative adverse effects in the VC assessment. The high degree of uncertainty in the potential effects warrants a follow-up program due to unsubstantiated blanket mitigation measures proposed for all marine mammals with no specific mitigation afforded to harbour porpoise, despite the determination of significance.	The Marine and Freshwater Resources Management Plan will be developed in consultation with DFO and the BC Oil and Gas Commission. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA. The mitigation measures proposed are consistent with recovery strategies and action plans, where such documents exist. The suite of mitigation measures proposed are expected to be effective at achieving their primary objectives (i.e., to reduce potential for changes in health and behaviour during in-water blasting; to reduce potential for changes in health and behaviour during impact pile driving; and to reduce potential changes in marine mammal mortality risk from increased risk of vessel strikes) regardless of the species of marine mammal under consideration. While each species may exhibit individual and unique life histories and habitats, the mechanisms for potential effects are common to all species.
2132.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	Section 4.6.9 (p. 4.6-78) clearly identifies follow-up and monitoring that includes an "invasive species monitoring program". Please include a follow-up program that can provide the collection of more baseline information using appropriate sampling protocols in order to credibly assess the potential for invasive species to occur in the PDA. Statements about compliance monitoring contained in Section 15.3.2 are not sufficient to understand the how the Project itself will influence the spread of invasive plant species in the absence of meaningful baseline data.	The success of implemented Best Management Practices (BMPs) related to invasive plants are well understood, and Environmental Inspectors will be well qualified to identify and manage invasive plants. Aurora LNG does not consider a specific invasive plant survey necessary for this Environmental Assessment. An Invasive Plant Management Plan (IPMP; Mitigation 4.6.6) will be developed in consultation with regulators. The IPMP (described in Section 14.6 of the Application) will include best management practices which will meet the legal obligations under the Weed Control Act and Regulations, which prohibit the spread of noxious weeds on highways and prohibits using seeds with noxious weed seeds intermixed, and will meet the BC Oil and Gas Commission (BC OGC) Environmental Protection and Management Guideline (2015) requiring control of invasive species during all phases of a project. Best management practices will be included in the invasive plant management plan and will include those in the following references:Best Practices for Managing Invasive Plants on Roadsides. Published by BC Ministry of Transportation and Infrastructure; available as a pocket guide. Contains best practices for roadside workers that are equally applicable to road contractors in the oil and gas sector. http://www.th.gov.bc.ca/publications/eng_publications/environment/ManagingInvasivePlants.pdfThe Best Practices for Managing Invasive Plants on Oil and Gas Operations. Pocket guide developed for British Columbia's Oil and Gas workers. Contains information on key aquatic invasive species as well. http://prrd.bc.ca/services/environmental/weed_control/documents/PRINT-READY-OG-Guide_2013_FINAL.v2.pdfMinistry of Agriculture, Seven Steps to Managing Your Weeds. A Guide for Integrated Weed Management in British Columbia. http://www.agf.gov.bc.ca/weedsbc/pdf/7StepsToManagingYourWeeds.pdfMinistry of Forests, Lands and Natural Resource Operations, Invasive Alien Plant Program - Reference Guide Part 1 https://www.for.gov.bc.ca/hra/plants/RefGuide.htm Mitigation 4.6.5 will also be included in the Invasive Plant Management Plan. Mitigation: Temporary workspaces, reclaimed land, and other revegetation activities will be vegetated using certified weed-free native plant seed and traditional use species where practicable. Mitigation mechanism: Reclaiming temporary workspaces as soon as practicable reduces the chance that invasive species will grow and will minimize erosion and therefore soil loss.

2133.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	A follow-up program for improving the baseline understanding of marine sediment, water quality, and marine fisheries is necessary due to high uncertainty arising from the wastewater management system and preliminary Project design; data deficiencies for sediment, water quality, and fisheries; lack of clearly presented baseline fisheries data for individual study areas; unproven and unsubstantiated mitigation measures proposed; and high likelihood of residual cumulative effects determined for marine fish habitat, behaviour, and mortality risk with an overall moderate degree of confidence in the prediction of non-significance. All these factors indicate uncertainty around the effects potential such that statements about compliance and effectiveness monitoring contained in Section 15.3.6 are insufficient for understanding baseline conditions and ascertaining how the Project effect mechanisms, once finalized, will influence the marine habitat and marine fish and aquatic species due to waste disposal at the deep outfall.	Aurora LNG is committed to implementing follow-up programs when there is a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the assessment. In these cases, the follow-up program will be used to verify the accuracy of predictions. Aurora LNG has committed to a number of follow-up programs specific to marine fish and fish habitat and marine water quality (see Section 15, Summary of Follow-up Programs and Compliance Reporting). VCs that concluded moderate to high prediction confidence will be managed through the development of Environmental and Operational Management Plans (Section 14) designed to verify compliance of the Project with commitments in the Application and conditions of the Environmental Assessment Certificate. Criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011). Aurora LNG is committed to developing and implementing a Marine and Freshwater Resources Management Plan. While Aurora LNG recognizes that some Project details are preliminary (e.g., around the design and operation of the Charles Point outfall - please see the technical memo "Discharges to the Marine Environment" for additional information about effluent discharges and marine outfalls), Aurora LNG is of the opinion that the level of detail and understanding of Project design and engineering, as well as the understanding of baseline conditions and effectiveness of mitigation measures, is sufficient to support the assessment of Project effects on marine fish and fish habitat, including effects associated with construction and operation of the Charles Point outfall (Section 4.9). This is based on the following:The assessment considered extensive baseline information collected from the scientific literature, information on TEK, and from field surveys (see Appendix L, Marine Fish and Fish Habitat TDR). This included baseline information specific to characterizing intertidal and subtidal fish and fish habitats along East Digby Island, including the area south of Charles Point where the deep outfall is proposed (Section 5.1.3.2, Figure 10 [intertidal]; Section 5.2.3.2, Figure 18, Figure 19, Figure 20, and Figure 21 [subtidal]; Section 5.4.3.2 Figure 33 [eelgrass]; and Section 5.5.6, Figure 42 and Figure 43 [marine fish]). Conservative assumptions and approaches were taken where uncertainties exist, to characterize potential effects associated with the most conservative scenario. A list of assumptions specific to the Marine Fish and Fish Habitat assessment is include in Section 4.9.5.1 (Methods). Mitigation measures identified in the Marine Fish and Fish Habitat VC (Section 4.9) are based on an understanding of existing conditions, expected construction methods, timing, and Project design, professional experience with similar projects in the Pacific North Coast of BC, and industry-accepted best management practices. In most cases, mitigation measures proposed for marine fish and fish habitat are standard and are proven to be effective at reducing effects to the marine environment. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan. Aurora LNG acknowledges that mitigation measures are subject to refinement through consultation with appropriate regulators, and will reflect Environmental Assessment Certificate Conditions. Uncertainty in the assessment of residual effects is captured under Section 4.9.8 (Prediction Confidence) of the Marine Fish and Fish Habitat VC. Follow up programs will be implemented to assess the accuracy of the predictions made in the EA and the effectiveness of mitigation measures. A final version of the Fish Habitat Offsetting plan (conceptual plan provided in Appendix V) will be developed and implemented to offset serious harm to fish associated with the Project. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. With respect to the comment regarding "…data deficiencies for sediment, water quality…", although no marine sediment or water quality samples were collected specifically at the location of the proposed Charles Point outfall, water quality and sediment samples collected in other areas of the LAA are expected to be representative of conditions at the Charles Point outfall (i.e., conditions at the location of the Charles Point outfall are not expected to differ substantially from other areas in the LAA). Appendix F (Marine Sediment and Water Quality Technical Data Report) describes the methods and results of the water quality and sediment sampling programs. The need for additional information to further characterize existing conditions will be discussed with appropriate regulators during permitting for the construction and operation of the Charles Point outfall. With respect to the comment regarding "…lack of clearly presented baseline fisheries data for individual study areas…", Appendix L (Marine Fish and Fish Habitat TDR) presents the data collected during each type of Project-specific field study (e.g., marine fish surveys) by study area. For the majority of studies, data were gathered from four study areas: Casey Cove, East Digby Island, South Digby Island, and Delusion Bay (see Figure 8). Aurora LNG is of the opinion that this structure provides a clear description of site conditions specific to areas potentially affected by Project infrastructure and activities.
2134.1	round 1	Gitxaala Nation	15.2	Follow-up Programs and Compliance Reporting	A follow-up program for improving the understanding of wastewater effluent dispersion through 3-D modelling of the dispersion plume and expected concentration of marine solutes at the deep outfall in absence of any clearly defined treatment mechanisms and incongruences in the effects assessment and the conceptual layout of the project provided in Figure 1-2 of Section 1, Part A. Myriad factors indicate uncertainty around the effects potential such that statements about compliance and effectiveness monitoring contained in Section 15.3.6 are insufficient for understanding baseline conditions and ascertaining how the Project effect mechanisms, once finalized, will influence the marine habitat and marine fish and aquatic species due to waste disposal at the deep outfall.	Wastewater effluent discharges will require permits under the Environmental Management Act. These permits mandate end-of-pipe and receiving environment monitoring, in addition to modeling of the dispersion plume at the outfall. Further details on waste discharges and associated monitoring are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2135.1	round 1	Gitxaala Nation	15.2.1	Follow-up Programs and Compliance Reporting	Please state how any objective questions for monitoring "that the colony will persist, continue to use this breeding location, and not be adversely affected by the Project" through adaptive management. Specifically, how will the proposed follow-up program address "key concerns raised by Aboriginal Groups, the public, and other stakeholders during the development of the Application", as well as any regulatory requirements?	Aurora LNG is committing to maintaining setbacks to decrease the extent of sensory disturbance in the vicinity of active nesting sites for great blue heron and to reduce the potential for flushing during the nesting and rearing period. Aurora LNG acknowledges that Develop with Care recommends as a best management practice that excessive noises should not occur within 1,000 m of a great blue heron colony during the nesting window (BC MOE 2014). As per mitigation 4.7.4, high-disturbance Project-related activities (e.g., blasting, pile driving) will be avoided where practicable during the breeding window (i.e., January 15 through September 15) within 500 m of the great blue heron rookery at Dodge Cove. To address the uncertainty over the degree to which high disturbance activities occurring within 1,000 m of the heron rookery may result in disturbance displays by nesting herons (as per provincial guidelines), Aurora LNG is committing to monitoring for changes in breeding activity at the rookery if high disturbance activities for Project construction occur within 1,000 m of the rookery during the breeding window (January 15 to September 15 for great blue heron). Given the geography of the area and the fact that there is a ridge of land that visually separates the rookery from proposed road corridor it is unlikely that road construction activities will cause a change in breeding activity. Monitoring protocols will follow the Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies (Vennesland and Norman 2006). Monitoring and adaptive approaches will be described in detail in the Wildlife Management Plan. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding development of the Wildlife Management Plan. Reference: British Columbia Ministry of Environment (BC MOE). 2014. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: April 2016. Vennesland, R. G. and D. M. Norman, 2006. Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies. The Heron Working Group.
2136.1	round 1	Gitxaala Nation	15.2.2	Follow-up Programs and Compliance Reporting	Please state how any objective questions for monitoring will determine "a response of waterbodies to Project emissions, compare to predictions made in the acidification and eutrophication assessment, and evaluate the effectiveness of proposed mitigation measures" through adaptive management. Specifically, how will the proposed follow-up program address "key concerns raised by Aboriginal Groups, the public, and other stakeholders during the development of the Application", as well as any regulatory requirements?	A key aspect of a monitoring program is to validate the predicted Project effects, particularly when scientific modelling approaches are used to estimate the effects. The Aurora LNG monitoring program is expected to include monitoring changes to water quality (before, during and following project operations) at select sites that include both waterbodies that are not predicted to have effects and those that are predicted to have effects (e.g. lakes with a critical load exceedance). Ongoing monitoring of water quality will identify changes to physical or chemical composition of water from baseline conditions or from expected project effects. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2137.1	round 1	Gitxaala Nation	15.2.2	Follow-up Programs and Compliance Reporting	Please state how any objective questions for monitoring will "document any effects to vegetation and soils from increased atmospheric NO2 and SO2 concentrations, soil acidification, or soil eutrophication in areas where deposition is predicted to occur" through adaptive management. Specifically, how will the proposed follow-up program address "key concerns raised by Aboriginal Groups, the public, and other stakeholders during the development of the Application", as well as any regulatory requirements?	The details of this monitoring plan are still to be determined. However, examples of monitoring parameters could include sampling of soils within predicted exceedance areas to measure pH and Nitrogen (various forms), along with vegetation attributes such as species composition, cover, and health and vigor at each soil-sampling site. Sampling outside the modeled area of exceedance would likely be required for comparison. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2138.1	round 1	Gitxaala Nation	15.2.3	Follow-up Programs and Compliance Reporting	Gitxaala Nation and other Aboriginal groups did not receive the full Application prior to submission, as the intent was "to capture views on the draft Part C (Section 12) of the Application in accordance with the AIR". This lack of consultation in the steps leading up to submission of the Application is not an effective demonstration of a stated commitment to invoke adaptive management. Please state how any objective questions for monitoring will be determined if "this [marine sediment deposition monitoring] program will not be developed or implemented if the pile-and-deck MOF option is selected". Specifically, how has this decision addressed "key concerns raised by Aboriginal Groups, the public, and other stakeholders during the development of the Application", as well as DFO regulatory requirements?	The objective of the Marine Sediment Deposition Monitoring Plan is "to monitor the potential accumulation of marine sediment along the shoreline at Charles Point". This accumulation is only predicted to occur under the concrete caisson MOF scenario. Please compare Figures 65c and 69b in Appendix M (Hydrodynamic Modelling of Changes in Sediment Erosion and Accretion due to Project Infrastructure). These figures show the difference between post-construction conditions and existing conditions in maximum bed thickness change for the two MOF scenarios. Red colours indicate that, after construction is complete, sediment accretion will be increased (or sediment scour will be reduced) "compared to existing conditions"; blue colours indicate the opposite - after construction is complete, sediment accretion will be reduced (or sediment scour will be increased) "compared to existing conditions". Note the area of deep red around Charles Point in the concrete caisson MOF scenario (Figure 69b), indicating the potential for an increase in sediment deposition approaching 4 cm per year. In contrast, the pile-and-deck MOF scenario (Figure 69c) shows only a small area of low-magnitude (predominantly < 1 cm per year) difference in sediment accretion compared to existing conditions. As such, the concern pertaining to ongoing effects from sediment accretion only applies to the concrete caisson MOF scenario; consequently, monitoring is not deemed necessary for the pile-and-deck MOF option. Nevertheless, Aurora LNG recognizes that (as stated in Section 15) "additional follow-up programs may be identified through further consultation and engagement". Aurora LNG welcomes further discussions with Gitxaala Nation on the Application and environmental management plans/programs during the workshops being held during the Application Review period.
2139.1	round 1	Gitxaala Nation	15.3.1	Vegetation and Wetland Resources	Please refer to and outline an adaptive management process for the Wetland Compensation Plan.	See Mitigation 4.6.15 in Table 4.6-13 of the Application which refers to monitoring the performance of restored, enhanced, or created wetlands that are established according to the Project's Wetland Compensation Plan. This effectiveness monitoring is intended to confirm that the ecological function of the compensatory habitat is performing as intended (See also Section 5.3 of Appendix U of the Application). In the event that restored, enhanced, or created wetland habitat is not functioning as intended, then adaptive management would be applied. Adaptive management measures cannot be defined in advance of knowing what the issue is, but could include such management measures as: adjustment to wetland hydrology through grading or channel design; replanting with more-suitable plant species; controlling herbivory; or removing invasive plant species. The precise measures would depend on the stressors and/or monitoring plan results.
2140.1	round 1	Gitxaala Nation	15.3.2	Follow-up Programs and Compliance Reporting	Please provide information about how the plan will address uncertainities in the presence and potential spread of invasive species. Given the deficiences in the survey sampling and data collection methodologies from Appendix I, lack of analysis undertaken to reliably assess the likelhood of invasive species due to Project activities, the current conclusions and prediction confidence are not justifiable.	TEM and rare plant field plots provide evidence that invasive species are not prevalent in undisturbed areas of the PDA. The Invasive Plant Management Plan will include industry Best Management Practices, which will meet legislated requirements and permit conditions related to invasive plants and invasive plant management. The management of invasive species in BC is well regulated. With the implementation of the Invasive Plant Management Plan, the potential introduction or spread of invasive plant species from disturbed areas of the PDA or off-site sources will be mitigated to acceptable levels.
2141.1	round 1	Gitxaala Nation	15.3.2	Follow-up Programs and Compliance Reporting	How will objective questions for monitoring be determined through adaptive management in the Invasive Species Management Plan, in terms of the spread of noxious weeds and the BC Oil and Gas Commission (2015) Environmental Protection and Management Guideline requirements for control of invasive species during all phases of projects. Specifically, how will the proposed follow-up program address "key concerns raised by Aboriginal Groups, the public, and other stakeholders during the development of the Application", as well as any regulatory requirements including the Weed Control Act?	As stated in Section 15.3.2 of the Application, an invasive species monitoring program will be included as part of the Invasive Plant Management Plan. Detection of noxious weeds or invasive plant species listed by the Northwest Invasive Species Council during monitoring would trigger the implementation of control methods in accordance with the BC Oil and Gas Commission Environmental Protection and Management Guide and the Weed Control Act. Controlling the establishment and spread of invasive plant species accordingly is expected to address concerns raised by Aboriginal Groups, the public, and other stakeholders, as well as meet regulatory requirements.
2142.1	round 1	Gitxaala Nation	15.3.3	Air Quality	How will SO2 and NO2 emissions also be considered in the monitoring of acidification and eutrophication effects to freshwater habitat, as well as Mitigation No. 4.6.10: to monitor effects to "vegetation from SO2 and NO2 atmospheric concentrations, soil acidification or soil eutrophication" in Section 4.6 (p. 4.6-35, Table 4.6-11)?	It is expected that commitments to monitor acidification and eutrophication will result in the collection of samples from the ambient environment (freshwater, vegetation, soil) to determine the potential increase in acidic and nitrogen deposition and the resultant changes in the biosphere. The scientists conducting this work will consider emissions of SO2 and NO2 in their interpretation of the results. For example, effects predicted in the Application can be compared to observed effects in the environment, given the actual vs. projected emissions. Monitoring may also allow an evaluation of how year-to-year changes in emissions are expressed in the environment.
2143.1	round 1	Gitxaala Nation	15.3.4	Greenhouse Gases	A commitment to monitoring and reporting of emissions discharge is not sufficient, given the determination of significant cumulative adverse effects in the VC assessment. There is a high degree of uncertainty in the potential for effects due to the removal of upstream sources as a CEAA requirement, as well as the shipping sources. There are unsubstantiated mitigation measures proposed in the GHG Management Plan, which has a moderate likelihood of success, despite an illogical claim that all of its component mitigation measures will have high likelihood of success. How will monitoring be undertaken in terms of the Project's contribution to GHGs? How will consultation with relevant interest groups be factored into this process if the Proponent is truly committed to the principles of adaptive management? What adjustments will be offered to improve on the uncertainty in the ability to reliably detect fugitive emissions since these represent additional methane sources potentially released in the production per tonne of LNG, apart from methane directly used to drive liquefaction. All methane releases should be accounted for in accordance with the Province's intensity-based metrics for LNG carbon pricing.	GHG emission monitoring during the operation phase will be completed through annual compliance reporting obligations. Following the quantification of project related GHG emissions, the Project will be able to monitor the effectiveness of any GHG mitigations that are implemented. Aurora LNG will have an open dialogue with regulators such as the BC Climate Action Secretariat in regards to annual GHG emissions and GHG management. Fugitive emissions released by the Project will be monitored in the Fugitive emission detection program. However, fugitive emissions from activities upstream of the Project will be the responsibility of the owner/operator of those upstream operations.
2144.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	Philip Molloy completed the plan and Karen Munro conducted the "independent" review for Appendix V; however, both of these individuals work for Stantec, so how is the review considered to be independent? Is it not a conflict of interest?	The term 'Independent Reviewer' is a Stantec internal term for a reviewer, who was not directly involved with the development of the report, but has expertise, or experience in the area, and can provide a review that focuses on the larger picture and presentation of the information in context of the project. The previous term for this was 'Senior Reviewer'. It is not meant to indicate that the person is independent of Stantec or the Project.
2145.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	Appendix V, Section 4.2.3.3, p.9 identifies "a sanitary wastewater treatment facility will be established for use during construction and operations within the camp system to treat wastewater prior to discharge through the outfall pipe located at Charles Point." The conceptual layout on Figure 1-2 of Part A, Section 1 shows the desalination plant footprint located within the PDA, as well as its incurrent and excurrent water lines. A single wastewater line exits the plant and leads directly to the deep outfall at Charles Point with no lines interconnecting with the sanitary wastewater treatment facility. Please explain how these two systems are expected to interact and state the implications for potential effects to fisheries productivity in the offsetting plan.	Figure 1-2 shows a conceptual layout of project infrastructure. Additional information will be provided during Front End Engineering and Design (FEED). Please see the memo "Discharges to the Marine Environment" for more discussion on this matter. This technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Any discharge into the marine environment from the combined outflow from the desalinization plant and sanitary wastewater treatment facility will meet water quality guidelines prescribed by the federal government outside of a defined mixing zone. This mixing zone will be determined during the permitting phase of the Project. Because of this, discharges to the marine environment from the desalinization plant and sanitary wastewater treatment plant are expected to have a negligible effect on the productivity of CRA fisheries in the RAA.

2146.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	Appendix V intends to derive a substantial amount of its productivity offsets from barrier removals; however, this measure was also proposed by Stantec for the offsetting plan for LNG Canada, which DFO ultimately did not accept. This conceptual plan was developed by the same consultancy and represents prior knowledge of the regulatory setting as weel as the conclusions anticipated by DFO for theregion. How can these measures be justified for the Project if they were not deemed to be acceptable for LNG Canada, which has not yet been granted a full Fisheries Act authorization?	The Conceptual Fish Habitat Offsetting Plan includes barrier removals as part of a suite of options available to compensate for the anticipated loss of freshwater habitat within the PDA. It does so because barrier removals, where they prevent fish from accessing high quality habitat or large amounts of habitat upstream, can provide large increases in fish production for perpetuity with very low risks of failure. Presence/absence of fish at the proposed barrier removal sites would need to be determined as part of development of the offsetting plan. The current offset plan included with the application is conceptual in nature.The offset plan will be refined through collaborative engagemen with regulatory agencies (primarily DFO) and Aboriginal Groups.
2147.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	Although Appendix V identifies the seawater desalination system as a "terrestrial component" that stands to affect fisheries productivity, it does not specifically identify how desalination and disposal of wastewater will affect marine fish and fish habitat. In its reference to the marine environment, "Project construction and operations could cause serious harm to fish either via death of fish or habitat effects. Specifically, death of fish could be caused via crushing, burial, entrainment or impingement; exposure to underwater noise or pressure waves; marine habitat change or loss could occur through: Removal of marine vegetation, including marine riparian vegetation, eelgrass and macroalgae; change in substrate shape, height or type; Removal of substrate". By this description and the estimate of losses provided (i.e., Table 16 of Appendix V on p. 46 states all project activities will amount to a total 130 square metres of marine habitat requiring offsetting due to the installatin of the pipes), potential effects due to effluent discharge in the marine environment have not been considered. Limited baseline data exist to indicate water quality conditions or marine fisheries productivity in the area of the deep outfall and no effects modelling has been undertaken in the environmentalassessment to determine effluent dispersion in the water column, given the estimated construction and operational volumes of daily discharge, as well as the proposed location of the deep outfall. There is a complete lack of information provided to indicate the prevailing ocean current system will influence dispersion. These are clear deficiencies in the overall assessment that requires baseline information and a more credible assessment of effects. These data are necessary for a more credible estimation of productivity losses, especially given the uncertainties surrounding the actual seawater desalination process and wholly unknown mechansisms for effective treatment of wastewater prior to disposal.	The release of wastewater at the deep water outfall near Charles Point is not expected to result in residual serious harm to fish. DFO (2013) defines serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; o c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. All effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in receiving water outside of a defined mixing zone. Therefore, Project-related discharges are not expected to harm (or kill) marine fish or invertebrates, nor are they expected to result in habitat changes that affect the ability of marine fish or invertebrates to complete their life processes. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
2148.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	Appendix V does not discuss the treatment and disposal of wastewater generated from the desalination process. Please explain how this wastewater will interact with any treatment and/or disposal systems and state the implications for potential effects to fisheries productivity in the offsetting plan.	Please refer to the "Discharges to the Marine Environment" technical memo for more information on how wastewater will be treated prior to discharge to the marine environment. This technical memo will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. The release of wastewater at the deep water outfall near Charles Point is not expected to result in residual serious harm to fish. DFO (2013) defines serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; o c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. All effluent discharges to the marine environment will comply with the CCME and BC water quality guidelines (which are designed to protect aquatic life) outside of a defined mixing zone. Therefore, Project-related discharges are not expected to harm (or kill) marine fish or invertebrates, nor are they expected to result in habitat changes that affect the ability of marine fish or invertebrates to complete their life processes. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
2149.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	Appendix V (Section 5.2.1, pp.18-21) identifies Casey Cove and South Digby Island as the areas where marine fish habitat and species have been considered. Please include the area east of Digby Island in the plan, particulary the location of the deep outfall near Charles Point, as an area where marine fish habitat and aquatic species should be considered.	The outfall location at Charles Point falls within the spatial scope of the Casey Cove area and, hence, has already been considered in this section. For confirmation, please see Figures 14-17, in the Marine Fish and Fish Habitat Technical Data Report (Appendix L).
2150.1	round 1	Gitxaala Nation	15.3.5	Follow-up Programs and Compliance Reporting	The persistent release of wastewater in the area of the deep outfall has not been factored in as a mechanism of change leading to serious harm to fisheries productivity defined as "death of fish and permanent alteration or destruction of fish habitat" (Appendix V Section 7.2, Table 8 on p.28). Please factor this mechanisms into the evaluation of marine fish habitat offsetting requirements as it pertains to waste management during construction and operations.	The release of wastewater at the deep water outfall near Charles Point is not expected to result in residual serious harm to fish. DFO (2013) defines serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; o c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. All effluent discharges to the marine environment will comply with the CCME and BC water quality guidelines (which are designed to protect aquatic life) outside of a defined mixing zone. Therefore, Project-related discharges are not expected to harm (or kill) marine fish or invertebrates, nor are they expected to result in habitat changes that affect the ability of marine fish or invertebrates to complete their life processes. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
2151.1	round 1	Gitxaala Nation	15.3.6	Follow-up Programs and Compliance Reporting	This issue stands to be one of the greatest sources of uncertainty with respect to environmental effects, principally due to the lack of baseline data for marine sediment and water quality, preliminary Project design, and contradicting statements regarding overall wastewater treatment prior to disposal compared to the conceptual layout of the desalination plant and outfall pipe presented in Figure 1-2 in Section 1 of Part A. Of the limited marine fisheries baseline data that do exist , the indication is that the area of the outfall represents among the most productive habitats observed in the East Digby Island and Casey Cove study areas, yet this has not been acknowledged at any point in the entire assessment. The marine water quality monitoring program should be a principle element of the adaptive management strategy for assessing and mitigating risks beyond simply monitoring "parameters in effluent discharges according to permit requirements" with no specific details provided about mitigation measures or any reference made to the stated commitment of adaptive management.	Aurora LNG acknowledges that details around the design and operation of the Charles Point outfall are preliminary and will be refined during final engineering and design; however, Aurora LNG is of the opinion that characterization of potential effects on marine fish health associated with effluent discharges at the Charles Point outfall is adequate. The assessment considered information on marine fish and fish habitat collected from scientific literature and Project-specific studies (see Appendix L, Marine Fish and Fish Habitat TDR). The following sections provide information to characterize intertidal and subtidal fish and fish habitats along East Digby Island, including the area south of Charles Point where the deep outfall is proposed: Section 5.1.3.2, Figure 10 (intertidal); Section 5.2.3.2, Figure 18, Figure 19, Figure 20, and Figure 21 (subtidal); Section 5.4.3.2, Figure 33 (eelgrass); and Section 5.5.6, Figure 42 and Figure 43 (marine fish). With the implementation of mitigation measures to reduce potential effects on marine fish and fish habitat associated with effluent discharge, such as commitments that all effluent discharges to the marine environment will comply with the BC Environmental Management Act regulations (i.e., Waste Discharge Regulation, Petroleum Storage and Distribution Facilities Storm Water Regulation), and will meet the CCME and BC water quality guidelines (which are designed to protect aquatic life) in the receiving environment outside of a defined mixing zone, Project-related discharges are not expected to result in residual adverse effects to marine fish health. Aurora LNG is committed to conducting a Marine Water Quality Monitoring Program, which will include monitoring effluent discharges and the receiving environment as per permitting requirements (see Section 15.3.6 of the Summary of Follow-up Programs and Compliance Reporting). Details on the mitigation objectives, approach and field protocols will be developed and formalized in the Marine and Freshwater Resources Management Plan. This plan will include "water quality monitoring programs that will be implemented, including water quality thresholds, monitoring frequency and specific monitoring location". It is standard practice for management plans of this nature to include an adaptive management framework. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine Water Quality Monitoring Program and the Marine and Freshwater Resources Management Plan.
2152.1	round 1	Gitxaala Nation	7.2.1	Heritage	This section states that the assessment incorporates information gathered during consultation with Aboriginal Groups however the document does not make it clear exactly how Gitxaala TUS/TK from Calliou 2016 has been incorporated. Further, Gitxaala has repeatedly asked to be included in the archeaological field work in order to ensure that our TUS/TK information is being properly accounted for. Despite these requests, Gitxaala was been repeatedly excluded. In order to rectify this exclusion and ensure that all Gitxaala archaeological and heritage resources have been properly accounted for, Nexen had agreed to support Gitxaala in a field audit of all field work that had been performed. Nexen has failed to follow through with this agreement to date and as such, Gitxaala does not have any certainty that our archeaological and heritage resources have been properly characterized and assessed in the application.	The TK/TU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. The results of these studies are summarized in Appendix S.2. The public versions of these TK/TU studies are available from the BC EAO. The AIA permit report (Appendix W) describes the assessment of the PDA conducted in 2015, prior to completion of project-specific TK/TU studies. The AIA included a desktop review of publicly available ethnographic and ethno-historic sources, as well as TK/TU reports from other environmental assessments near the LAA/RAA. Gitxaala Nation's TK/TU study, Caillou Group 2016, is cited in section 7.2.2.2 and 7.2.3.1. Aurora LNG has also invited Gitxaala Nation to participate in a Field Review (in March 2017), in response to Gitxaala Nation's desire to conduct a "Field Audit". While Aurora LNG understands that Gitxaala Nation wishes to conduct a full audit of the field work, Aurora LNG has outlined for Gitxaala Nation an approach designed to achieve a common understanding of the baseline study findings and how these findings were incorporated into the Application. Aurora LNG communicated this in a letter dated February 14, 2017 from Jason Gouw to James Witzke. Ultimately Gitxaala Nation declined to participate in the proposed field review. Further information that provides context related to Aurora LNG's approach to consultation and fieldwork participation is provided in the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the EAO.
2153.1	round 1	Gitxaala Nation	7.2.2.2	Heritage	This section does not accurately capture the issues and concerns that Gitxaala has continually expressed with the archealogical and heritage program during consultation. No mention is made of the ongoing issue of Gitxaala being excluded from field work and therefore unable to verify the success and accuracy of the application in properly assessing effects to Gitxaala archaeological and heritage resources.	Aurora LNG acknowledges the concern of Gitxaala Nation regarding the archaeological and heritage sites in the PDA. Further information that provides context related to Aurora LNG's approach to consultation and fieldwork participation is provided in the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the EAO.
2154.1	round 1	Gitxaala Nation	7.2.2.3	Heritage	This section states that the assessment incorporates information gathered during consultation with Aboriginal Groups however the document does not make it clear exactly how Gitxaala TUS/TK from Calliou 2016 has been incorporated. Further, Gitxaala has repeatedly asked to be included in the archeaological field work in order to ensure that our TUS/TK information is being properly accounted for. Despite these requests, Gitxaala was been repeatedly excluded. In order to rectify this exclusion and ensure that all Gitxaala archaeological and heritage resources have been properly accounted for, Nexen had agreed to support Gitxaala in a field audit of all field work that had been performed. Nexen has failed to follow through with this agreement to date and as such, Gitxaala does not have any certainty that our archeaological and heritage resources have been properly characterized and assessed in the application.	The TK/TU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. The results of these studies are summarized in Appendix S.2. The public versions of these TK/TU studies are available from the BC EAO. The AIA permit report (Appendix W) describes the assessment of the PDA conducted in 2015, prior to completion of project-specific TK/TU studies. The AIA included a desktop review of publicly available ethnographic and ethno-historic sources, as well as TK/TU reports from other environmental assessments near the LAA/RAA. Gitxaala Nation's TK/TU study, Caillou Group 2016, is cited in section 7.2.2.2 and 7.2.3.1. Aurora LNG has also invited Gitxaala Nation to participate in a Field Review (in March 2017), in response to Gitxaala Nation's desire to conduct a "Field Audit". While Aurora LNG understands that Gitxaala Nation wishes to conduct a full audit of the field work, Aurora LNG has outlined for Gitxaala Nation an approach designed to achieve a common understanding of the baseline study findings and how these findings were incorporated into the Application. Aurora LNG communicated this in a letter dated February 14, 2017 from Jason Gouw to James Witzke. Ultimately Gitxaala Nation declined to participate in the proposed field review. Further information that provides context related to Aurora LNG's approach to consultation and fieldwork participation is provided in the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the EAO.
2155.1	round 1	Gitxaala Nation	7.2.3	Heritage	This section states that the details related to studies are outlined in Section 7.2.3 (Existing Conditions for Archaeological and Heritage Resources). In Section 7.2.3. they then write that the existing conditions are described in AIA report for permit 2015-0007. In our review of permit 2015-0007, there is no reference to TUS/TK studies, specifically Calliou 2016. Please clarify what Gitxaala specific TUS/TK information was used, how it was used and where these details are outlined.	The TK/TU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. This includes Gitxaala Nation's TK/TU study, Caillou Group 2016, which is cited in Sections 7.2.2.2 and 7.2.3.1. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. The results of these studies are summarized in Appendix S.2. The public versions of these TK/TU studies are available from the BC EAO. The AIA permit report (Appendix W) describes the assessment of the PDA conducted in 2015, prior to completion of project-specific TK/TU studies. The AIA included a desktop review of publicly available ethnographic and ethno-historic sources, as well as TK/TU reports from other environmental assessments near the LAA/RAA.
2156.1	round 1	Gitxaala Nation	7.2.3.2	Heritage	As noted before, without having been a part of the fieldwork or having had the opportunity to perform a field audit (as had been agreed on but not followed through with by Nexen), Gitxaala has been unable to verify the conclusion that certain sites, such as the two rock overhangs at Spire Island, are not of archaeological or cultural significance to the Nation.	Regarding the two rock overhangs on Spire Island, while visual examination of the areas did not identify any archaeological materials or remains, given the potentially sensitive nature of these features as potential burial places, intrusive subsurface inspection was not conducted. As per the AIA report (Appendix W), avoidance is recommended. If avoidance is not feasible, additional archaeological study should be undertaken prior to construction. Aurora LNG has invited Gitxaala Nation to participate in a Field Review (in March 2017), in response to Gitxaala Nation's desire to conduct a "Field Audit". While Aurora LNG understands that Gitxaala Nation wishes to conduct a full audit of the field work, Aurora LNG has outlined for Gitxaala Nation an approach designed to achieve a common understanding of the baseline study findings and how these findings were incorporated into the Application. Aurora LNG communicated this in a letter dated February 14, 2017 from Jason Gouw to James Witzke. Ultimately Gitxaala Nation declined to participate in the proposed field review. Further information that provides context related to Aurora LNG's approach to consultation and fieldwork participation is provided in the technical memo entitled "Aurora LNG's Approach to Consultation with Aboriginal Groups" which will be filed with the EAO.
2157.1	round 1	Gitxaala Nation	7.2.4	Heritage	Why doesn't this section include any mention to indirect impacts to sites situated adjacent to proposed project area?	Potential Project interactions with archaeological and heritage resources are only anticipated to occur from activities that result in tree removal or ground disturbance (including dredging) within the Project Development Area during the construction phase.

2158.1	round 1	Gitxaala Nation	7.2.5.2	Heritage	See technical memo 0217_Gitxaala_Archaeological and Heritage Impacts	Technical memo 217 from Gitxaala Nation Site avoidance Aurora LNG has incorporated a buffer that avoids some coastal and riparian areas within the PDA (Figures 7-1, 7-2). The adoption of this buffer zone results in avoidance of most of the significant archaeological and heritage resources in the PDA. Final project design may result in opportunities for further avoidance of sites, but for purposes of the application we have conservatively assumed that any sites within the PDA that are not in the buffer zone will be altered. Proposed buffer zone and indirect impacts The buffer zone is 30 metres wide. While this avoids most of the significant archaeological and heritage resources in the PDA, it is recognized that once final project design is complete, site-specific mitigation measures will be established so that measures designed to ensure site avoidance will be effective for both direct impact as well as potential for erosion. Site-specific mitigation plans are not yet provided nor evaluated as project engineering plans are not sufficiently advanced to determine the exact nature of potential Project impacts. However, as mitigation measures will be determined in consultation with appropriate regulatory agencies, and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended), the success of the measures that are currently included in the Application with the addition of site specific planning, is predicted to be high. SDR Aurora LNG acknowledges the importance of the archaeological and heritage sites in the PDA to the Gitxaala Nation. While the Archaeology Branch (FLNRO) will determine the mitigation measures for protected archaeological sites, Aurora LNG welcomes further discussion with Gitxaala Nation during preparation of the Archaeological and Heritage Resources Management Plan. Vessel wake The potential for wake effects from vessels was considered in this assessment (Section 7.2.5.2), and is not expected to have adverse effects on marine intertidal areas. TU/TK The TK/TU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. The results of these studies are summarized in Appendix S.2. The public versions of these TK/TU studies are available from the BC EAO. The AIA permit report (Appendix W) describes the assessment of the PDA conducted in 2015, prior to completion of project-specific TK/TU studies. The AIA included a desktop review of publicly available ethnographic and ethno-historic sources, as well as TK/TU reports from other environmental assessments near the LAA/RAA. Gitxaala Nation's TK/TU study, Caillou Group 2016, is cited in section 7.2.2.2 and 7.2.3.1.
2159.1	round 1	Gitxaala Nation	Table 7-7	Heritage	Very little effort has been made to change proposed project footprint so that sites are avoided, aside from the proposed buffer zone. The Project Development Area is essentially unchanged from the one proposed in original assessments, and though Aurora LNG states that avoidance is the preferred option for archaeological and heritage sites, it doesn't appear to be reflected in any meaningful project re-design. GEM would like to see further efforts to prioritize site avoidance over mitigative measures.	Aurora LNG acknowledges that the PDA boundary has remained consistent, however by incorporating the proposed buffer some coastal and riparian areas are retained within the PDA (Figures 7-1, 7-2). The adoption of this buffer zone results in avoidance of most of the significant archaeological and heritage resources in the PDA (Section 7.2.5.2). While Aurora LNG will look for further opportunities during construction to avoid sites within the PDA where feasible, for purposes of the application it is assumed that sites that are not within the buffer will be impacted by construction.
2160.1	round 1	Gitxaala Nation	Table 7-8	Heritage	See technical memo 0217_Gitxaala_Archaeological and Heritage Impacts	Technical memo 217from Gitxaala Nation Site avoidance Aurora LNG has incorporated a buffer that avoids some coastal and riparian areas within the PDA (Figures 7-1, 7-2). The adoption of this buffer zone results in avoidance of most of the significant archaeological and heritage resources in the PDA. Final project design may result in opportunities for further avoidance of sites, but for purposes of the application we have conservatively assumed that any sites within the PDA that are not in the buffer zone will be altered. Proposed buffer zone and indirect impacts The buffer zone is 30 metres wide. While this avoids most of the significant archaeological and heritage resources in the PDA, it is recognized that once final project design is complete, site-specific mitigation measures will be established so that measures designed to ensure site avoidance will be effective for both direct impact as well as potential for erosion. Site-specific mitigation plans are not yet provided nor evaluated as project engineering plans are not sufficiently advanced to determine the exact nature of potential Project impacts. However, as mitigation measures will be determined in consultation with appropriate regulatory agencies, and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended), the success of the measures that are currently included in the Application with the addition of site specific planning, is predicted to be high. SDR Aurora LNG acknowledges the importance of the archaeological and heritage sites in the PDA to the Gitxaala Nation. While the Archaeology Branch (FLNRO) will determine the mitigation measures for protected archaeological sites, Aurora LNG welcomes further discussion with Gitxaala Nation during preparation of the Archaeological and Heritage Resources Management Plan. Vessel wake The potential for wake effects from vessels was considered in this assessment (Section 7.2.5.2), and is not expected to have adverse effects on marine intertidal areas. TU/TK The TK/TU studies that were available at the time of assessment are listed in Section 7.2.3.1 of the Application. These studies were reviewed for information that could inform the archaeological and heritage resources effects assessment, in particular, information regarding traditional land use sites, activity areas and place names in the LAA/RAA. The results of these studies are summarized in Appendix S.2. The public versions of these TK/TU studies are available from the BC EAO. The AIA permit report (Appendix W) describes the assessment of the PDA conducted in 2015, prior to completion of project-specific TK/TU studies. The AIA included a desktop review of publicly available ethnographic and ethno-historic sources, as well as TK/TU reports from other environmental assessments near the LAA/RAA. Gitxaala Nation's TK/TU study, Caillou Group 2016, is cited in section 7.2.2.2 and 7.2.3.1.
2161.1	round 1	Gitxaala Nation	Section 2.4	Greenhouse Gases	Aurora LNG indicates that "inherent uncertainty in estimating emission rates from the Project…the emissions estimates are conservatively high to capture worst-case full build-out conditions." In Section 1.2, Proposed Project Description (page 1-3) ,the Project includes three LNG storage tanks and based on 4 production trains will produce 24 MTPA of LNG at full build-out. Although Aurora ackowledges that the Project's 4 trains may be built over two phases, Aurora is not asking for approval related to Phase 1 only, it is seeking approval for both Phases. As such, the suggestion that the GHG emissions estimate is conservatively high and represents worst-case, full build-out conditions is neither justified, nor supported. It represents a minimally reasonable approach. *Questions: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high? Has Aurora committed to GHG emission intensity < 0.28 tCO2e/tCO2e LNG produced?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo "Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate", which will be filed with the BC EAO.
2162.1	round 1	Gitxaala Nation	Section 4	Greenhouse Gases	As noted above, the suggestion that the GHG assessment is conservative based on go/no go decision with respect Phase 2 and market demand is irrelevant and not supported by the Project Application. This is not a conservative assumption - it is a minimally reasonable approach. *Question: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo "Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate", which will be filed with the BC EAO.
2163.1	round 1	Gitxaala Nation	Section 5	Greenhouse Gases	"For the purpose of adhering to a conservative approach, the following assumptions apply: During operations, terminal liquefaction capacity is assumed to be 94.5%, which means that the facility is operating on average about 345 days a year at maximum capacity. Power for the entire facility is conservatively assumed to be produced onsite, including the power for the compressor gas turbines. There is no electricity consumption through BC Hydro. Therefore, emission estimates are conservative as GHG emissions from power generation onsite are included in the assessment, compared to when lower GHG intensity grid power is imported from BC Hydro." Section 1.2.5.3 Power Supply of the Proposed Project Overview (page 1-29) indicates that a ~250 MW power generation facility will be installed onsite and the preliminary design indicates that it will be a combined cycle natural gas power plant. The power plant will operate 24/7/365 and the liquefaction trains will operate 345 out of 365 days at maximum capacity. The proponent again suggests that the GHG assessment is conservative and may be over-estimating GHG emissions but fails to acknowledge the Project description that forms the basis for the Application. These are not conservative assumptions - they appear to be based on a minimally reasonable approach. Q*uestion: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo "Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate", which will be filed with the BC EAO.
2164.1	round 1	Gitxaala Nation	Section 5.1	Greenhouse Gases	As noted above, the suggestion that the GHG assessment is conservative based on onsite power generation and not grid power reflects the preliminary design philosophy in the Application and would be mis-stated as an over-estimation of effects. *Questions: Can Aurora describe why the GHG emission estimates for the power generation are conservatively high? Is Aurora committing to using grid power from BC Hydro, and if so, to what extent?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo "Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate", which will be filed with the BC EAO.

2165.1	round 1	Gitxaala Nation	Section 6	Greenhouse Gases	As noted above, the suggestion that the GHG assessment is conservative yet reflects the preliminary design philosophy in the Application cannot be characterised as an over-estimation of effects. Aurora has not committed to emit fewer GHG emissions through FEED design so the GHG assessment represents a minimally acceptable and non-conservative approach. *Questions: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high? Has Aurora committed to GHG emission intensity < 0.28 tCO2e/tCO2e LNG produced?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo “Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate”, which will be filed with the BC EAO.
2166.1	round 1	Gitxaala Nation	Section 4.3.2.4	Greenhouse Gases	"As stated in the CEA Agency (2003) document, GHG assessments cannot address the significance of a single project’s potential effect on climate change, as the effect on climate change cannot be accurately quantified or measured. Although it is understood that there is a relationship between GHG emissions from anthropogenic sources over the past 100+ years and a changing climate as an effect thereof, effects on climate change cannot be addressed in this GHG assessment. The science of climate change has not advanced to the point where a clear cause and effect relationship can be established between Project specific releases and measurable changes to global climate." This CEAA document is out of date with respect to the advancement of our our knowledge of the the effects of humans on climate change. It is not uncommon in EA's in Canada to assess Project effects on climate change. For example, Sections 6.4 (Project Effects) and 8.2 (Cumulative Effects) Assessment of GHG's of the Air Quality and Greenhouse Gas technical Report for the TransMountain Pipeline Project included a asummary of the Projects effect on climate change. https://transmountain.s3.amazonaws.com/application14/V5C_TECH_REPS/0730.html. Aurora LNG should undertake a similar assessment to report the effects of the Project's GHG emissions (i.e., construction, operations and marine) and cumulative effects on climate change. *Question: What are the quantified effects of the Project on climate change and the cumulative effect of the proposed LNG plants in BC on climate change?*	In relation to guidance on how Canadian projects are to evaluate their potential impact on climate change, CEA Agency 2003 is still the most current guidance from the relevant regulatory authorities. As outlined in the approved AIR, the cumulative environmental effect related to GHGs is measured at the global level by international bodies such as the Intergovernmental Panel on Climate Change (IPCC) and is associated with global climate change. Thereby, the evaluation of cumulative effects of proposed LNG facilities in BC to global climate change is not within the scope of the assessment.
2167.1	round 1	Gitxaala Nation	Section 4.3.2.8	Greenhouse Gases	See above comment.	In relation to guidance on how Canadian projects are to evaluate their potential impact on climate change, CEA Agency 2003 is still the most current guidance from the relevant regulatory authorities. As outlined in the approved AIR, the cumulative environmental effect related to GHGs is measured at the global level by international bodies such as the Intergovernmental Panel on Climate Change (IPCC) and is associated with global climate change. Thereby, the evaluation of cumulative effects of proposed LNG facilities in BC to global climate change is not within the scope of the assessment.
2168.1	round 1	Gitxaala Nation	Section 4.3.2.5	Greenhouse Gases	Aurora LNG indicates that "inherent uncertainty in estimating emission rates from the Project…the emissions estimates are conservatively high to capture worst-case full build-out conditions." In Section 1.2, Proposed Project Description (page 1-3) ,the Project includes three LNG storage tanks and based on 4 production trains will produce 24 MTPA of LNG at full build-out. Although Aurora ackowledges that the Project's 4 trains may be built over two phases, Aurora is not asking for approval related to Phase 1 only, it is seeking approval for both Phases. As such, the suggestion that the GHG emissions estimate is conservatively high and represents worst-case, full build-out conditions is neither justified, nor supported. It represents a minimally reasonable approach. *Questions: Can Aurora describe why the GHG emission estimates for the two phases are conservatively high? Has Aurora committed to GHG emission intensity < 0.28 tCO2e/tCO2e LNG produced? In the evcent that Phase Two does not proceed, what are the total GHG emissions for Phase One and the GHG intensity?*	The Project GHG emission estimates are conservative due to the assumed conditions that have been included in the worst-case, full build-out scenario. Conservative conditions include the following:Main gas supply is assumed to have a conservative 1.82% mol CO2 content. Other projects have used lower values for estimated C02 content. The entire facility power demand is expected to be produced onsite, including the power for the compressor gas turbines. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. Aurora LNG is continuing discussions with BC Hydro to determine if electrical options may become available. The current facility design is based on simple cycle gas turbine power generation which is the least efficient and most expensive to operate. As the facility design progresses through its engineering design, Aurora LNG will be looking for opportunities to improve facility efficiency and minimize energy waste. This is expected to include consideration of combined cycle gas turbines and waste heat recovery for use in other processes which would be expected to help lower the overall emissions including GHGs. Based on the current Project design, the GHG emission intensity has been conservatively estimated to be 0.28t CO2e/t LNG produced. This emission intensity is expected to be much lower once actual data is available during the operation phase of the Project. The current Project design includes the operations of the full build-out scenario. This method was approved in the AIR and meets the objective to evaluate the reasonable worst case scenario. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the memo “Feed Gas Carbon Dioxide (CO2) content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate”, which will be filed with the BC EAO.
2169.1	round 1	Gitxaala Nation	Section 4.3.5.2	Greenhouse Gases	"The GHG Management Plan will also contain a Best Achievable Technology analysis." Table 28 on page 38 of the TDR indicates that 99% of the GHG emissions from operations will be discharged by stationary combustion sources and thermal oxidizers for acid gas. *Questions: Explain what is meant by 'Best Achievable Technology' analysis? Does Aurora mean Best Available Control Technology? What opportunities does Aurora currently understand are available to control GHG emissions and what level of reduction is Aurora committed to achieve?*	The GHG Management Plan will contain discussion that aligns with guidance from the BC Ministry of Environment on " Best Achievable Technology" (BC MOE 2015) and guidance from the Ministry of Natural Gas Development (MNGD) entitled "Best Available Techniques Economically Achievable (MNGD 2014). As the facility design advances through detailed engineering, efficiencies and optimum equipment selections are expected to result in reduced overall project operation emissions. Commitments cannot be made at this time, but these Best Achievable Technologies will be identified and discussed in the GHG Management Plan. British Columbia Ministry of Environment (BC MOE). 2015. Ministry of Environment FactSheet – Waste Discharges. Best Achievable Technology. Ministry of Natural Gas Development (MNGD). 2014. Best Available Techniques Economically Achievable Guideline.
2170.1	round 1	Gitxaala Nation	Section 4.3.5.2	Greenhouse Gases	"Further, if future technology advancements in GHG emission reductions become available and are considered economically feasible, a reduced GHG intensity is expected." *Question: What reduced level of GHG emission intensity is Aurora committed to for Phases one and two?*	Commitments cannot be made at this time as to the level of reduction expected from future technology advancements. The statement quoted in this comment aligns with one of the intents of the BC Ministry of Natural Gas Developments (MNGD) guidance entitled "Best Available Techniques Economically Achievable" (MNGD 2014) and the Air Quality Mitigation #4.2.10 noted in the Application. Ministry of Natural Gas Development (MNGD). 2014. Best Available Techniques Economically Achievable Guideline.
2171.1	round 1	Gitxaala Nation	Section 4.3.5.3	Greenhouse Gases	In Table 4.3-13, Aurora reports that the estimated GHG emissions for the Project will total 925,970 t CO2e which as avery large amount of emissions. In Table 4.3-15 on page 4.2-28, Aurora ranks these GHG construction emissions to be "Low" in terms of magnitude. *Question, what metric is Aurora comparing these construction GHG emissions to arrive at this determination? How does Aurora define the magnitude of Low, Medium and High GHG emissions in terms of values and what is the basis for these values?*	In the absence of provincial and federal GHG policy and legislation related to a quantitative definition of magnitude in environmental assessments, the construction GHG emissions were evaluated in the context of the provincial and national inventory reports (PIR and NIR, respectively). The Project, under the full build-out scenario, which includes four trains, will release approximately 925,970 tonnes of CO2e into the atmosphere over the entire construction period. Approximately 46% of the Project’s GHG emissions are estimated to come from land clearing activities, 48% are from site preparation (fleet emissions) and on-shore construction, and 1% and 5% are from marine construction and vehicle traffic respectively. Construction emissions are not captured in the PIR and NIR. However, land clearing emissions are included. Land clearing makes up 46% (419,345 tonnes of CO2e) of the total construction emissions. Site preparation, which includes land clearing and decay, will take place over four years. Therefore, if assumed to be evenly distributed, emissions impacting the PIR and NIR would be approximately 104,836 tonnes of CO2e/year. Compared against the PIR and NIR totals, it is estimated that site preparation (land clearing and decay) activities would increase 2014 PIR and NIR totals by 0.17% and 0.01%, respectively. Therefore, the magnitude has been considered to be low. This assessment considers a low magnitude to be a measurable change from the existing conditions (i.e. increase 2014 PIR and NIR totals by 0.17% and 0.01%, respectively). However based on CEA Agency guidance (2003) and professional judgment the change is considered small in comparison to PIR and NIR totals.
2172.1	round 1	Gitxaala Nation	Section 4.3.6	Greenhouse Gases	Aurora cites a report from Global Advisors that exporting BC LNG is expected to have an overall positive effect on global GHG levels as LNG fuel would displace coal and oil as fuel, which emit higher GHG's, Whereas, combustion of LNG may have this desirable outcome, it is not clear whether this statement is true if the LNG plant GHG operational emissions from cooling, compression and liquefaction, and acid gas incineration and power generation are accounted for. *Question: Confirm the global benefit of using BC LNG still exists if proper accounting of operational GHG emissions includes those related to producing the LNG at Aurora.*	The Global Advisors Report can't be directly connected with Aurora LNG as it was published before the submission of this Application. The Application limited its reference to the Global Advisors Report as it was only known that "if LNG exported from BC manages to reach a lower life cycle intensity than other fuel sources around the world, then exporting BC LNG could have an overall positive effect on global GHG levels." The Project's GHG intensity (0.28 t CO2e/t LNG produced) closely reflects the Global Advisors GHG intensity for BC "Clean" LNG with no carbon capture and storage (0.27 t CO2e/ t LNG produced). Conclusions of the Global Advisor Report "shows that 'clean' natural gas from BC could result in significantly reduced global GHG emissions depending on which scenario is achieved. " (Globe Advisors. 2014)
2173.1	round 1	Gitxaala Nation	Section 4.3.7.1	Greenhouse Gases	Lost in the discussion is the fact that as AB is trying to reduce GHG emissions from the early retirement of its coal fired power plants, BC may potentially approve several LNG plants that create as much as or more GHG emissions that are being retired in AB. The outcome of this could be either no change in GHG emissions in AB and BC when Canadian commitments in international agreements were to reduce GHG emissions.	It is outside of the scope of this assessment to provide commentary on provincial and/or national policy or targets.
2174.1	round 1	Gitxaala Nation	3.6.6	Assessment Methods	The proponent describes thresholds as "the limits of an acceptable change in measurable parameter or state" (p.3-17). This establishes a reasonable expectation that the threshold should be indicated by a numerical or detailed qualitative value that can be used as a metric for establishing significance. In many cases throughout the application, however, the threshold provided is insufficiently defined to allow a clear statement about predicted effects being below or above the threshold, leaving determination of significance in the realm of opinion. Specific examples of this concern with threshold establishment are identified in relation to specific VC assessments, below.	Consistent with EAO guidelines (2013), the Application uses both quantitative and qualitative thresholds in the determination of significance. Per Section 3.6.6 of the AIR and Section 3.6.6 of the Application, threshold criteria were developed for each potential effect. Where thresholds were not set by guidelines, management standards or regulations, a qualitative threshold was developed to present the limits of an acceptable change. Other factors used to derive thresholds for significance include resource management objectives, community standards, scientific literature or ecological processes (e.g., desired states for fish or wildlife habitats or populations) and professional judgement. Reference: Environmental Assessment Office (EAO) 2013. Guideline for the Selection of Valued Components and Assessment of Potential Effects. Available at: http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf
2175.1	round 1	Gitxaala Nation	Table 3-4	Assessment Methods	Please indicate which of these projects will supply gas to the Aurora Project.	As outlined in Section 1.2.7 of the Application, the natural gas supply for the Project (also known as feed gas) will be sourced from within the Western Canadian Sedimentary Basin including the Horn River and the Liard and Cordova basins, as well as from market hubs. Natural gas will be delivered to the Project via a third party-owned pipeline which is yet to be determined and, consistent with the Section 11 Order and the final Application Information Requirements for the Project, not within the scope of this Project assessment.

2176.1	round 1	Gitxaala Nation	4.2.2.2	Air Quality	Rationale for exclusion of ozone due in part to thick cloud cover is not sufficient to preclude it from the air quality assessment, especially under a climate change scenario. Ozone should be included in the air quality assessment, especially given its potential impact on vegetation	Early in the EA process it was determined that the addition of precursor emissions from the Project is unlikely to alter the existing concentrations of ozone meaningfully. Consistent with the final Application Information Requirements (AIR), secondary ozone formation was therefore not pursued for the air quality assessment. None of the LNG assessments performed in BC has considered secondary ozone formation. It is not an issue associated with LNG facilities located in rural/remote regions
2177.1	round 1	Gitxaala Nation	4.2.2.4	Air Quality	Primary pollutants expected from the construction phase include coarse particulate matter such as TSP and PM10. TSP should also be included as a substance of concern.	Measures are proposed to reduce, avoid, or mitigate coarse fugitive particulate emissions from construction. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as limiting vehicle speed, and dust suppression. Coarse particulate matter emissions are easily managed in this setting, and are generally not an issue. The assessment focuses instead on fine particulate matter (PM2.5) from combustion sources
2178.1	round 1	Gitxaala Nation	4.2.4	Air Quality	Burning of biomass during land clearing is not identified as a project interaction. Can Aurora confirm that no burning activities will occur as part of the construction activities? If burning is to occur, it needs to be included as a project interaction.	Measures are proposed to reduce, avoid, or mitigate emissions from the burning of biomass. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as salvaging timber, avoiding biomass burning, and reducing or postponing biomass burning consistent with the Open Burning Smoke Control Regulation (BC Reg. 145/93 and BC Reg. 41/2016 amendments). Air curtain burners are an effective technology and will be considered during the FEED process as part of the land clearing procurement process.
2179.1	round 1	Gitxaala Nation	4.2.4	Air Quality	Exclusion of possible venting sources in the air quality assessment is not discussed. Exclusion requires a rationale.	Facility equipment associated with natural gas liquids (NGL) will be a closed system. There will not be any significant continuous venting of hydrocarbon emissions. Boil off gas will be recovered during storage and loading processes and re-injected into the fuel and feed gas systems. Piping, vessels, pumps and tanks will be designed to minimize potential for fugitive hydrocarbons by using best practices such as the Best Management Practice Report published by the Canadian Association of Petroleum Producers Management for Fugitive Emissions at Upstream Oil and Gas Facilities (January 2007). The design strategy to minimize fugitive emissions for each valve, seal, pump, and tank in hydrocarbon service will be determined during detailed design. Aurora LNG will also implement a Directed Inspection & Maintenance (DI&M) Program to routinely inspect and repair leaking components (Table 4.3-12, Mitigation No. 4.3.5)
2180.1	round 1	Gitxaala Nation	4.2.5.2	Air Quality	Aurora has not provided a description of potential effects from shipping traffic along the shipping route. Marine-based emission sources only include maneuvering and berthing activities by LNG carriers and tugs.	The approved Application Information Requirements (AIR: Sect 4.2.2) notes that air quality will be assessed through dispersion modeling to determine the potential effects of Project marine vessels on air quality for activities near the LNG facility. This includes the LNG and support vessels when maneuvering and at berth. The AIR notes that potential effects from shipping traffic associated with Project vessels are excluded from the dispersion modelling assessment based on experience with recent projects. More specifically, the Kitimat LNG project was approved and the dispersion modelling completed for the EA only assessed vessels at berth. The LNG Canada project dispersion modelling assessed vessels at berth and shipping traffic and that assessment clearly demonstrated that effects on air quality associated with marine shipping were not significant. The BC MOE approved the final Detailed Model Plan (Appendix 1, Air Quality - TDR) which excluded modelling of Project LNG vessels when underway.
2181.1	round 1	Gitxaala Nation	4.2.2.5	Air Quality	Sensitive receptors identified during the First Nations consultation process in addition to community receptors should be identified and provided on a figure.	Figure 3-2 from Appendix 4 (Air Quality Technical Data Report) has been revised to more clearly show the sensitive receptors identified during First Nation consultation and included in the air quality and human health risk assessments. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2182.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	The proponent has indicated that a GHG Management Plan will be prepared. The GHG Management Plan should be prepared as part of the application and address all project phases	As per CEA Agency (2003) guidance, a project that has been determined to have a high magnitude of GHG emissions should prepare a GHG Management Plan. The Aurora LNG has committed to developing a GHG Management Plan (Mitigation 4.3.6) upon Project approval. In Section 4.3.5.2 of the Application, "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislation and will contain continuous assessment of monitoring and management requirements applicable to the mitigation listed in Table 4.3-12 (i.e., requirements of a fugitive emission survey program). The management plan will also contain a Best Achievable Technology analysis." This Plan will consider all phases of the project
2183.1	round 1	Gitxaala Nation	4.3.5.2	Greenhouse Gases	The proponent states that the management plan will contain a Best Achievable Technology analysis. Given the proponents experience, an analysis would be expected as part of the application, which can be updated during each phase of the project.	A GHG Management Plan will be prepared to assess monitoring and management requirements applicable to all phases of the Project. The Plan will include discussion that aligns with guidance from the BC Ministry of the Environment on " Best Achievable Technology" (BC MOE 2015) and guidance from the Ministry of Natural Gas Development (MNGD) entitled "Best Available Techniques Economically Achievable" (MNGD 2014). British Columbia Ministry of Environment (BC MOE). 2015. Ministry of Environment FactSheet – Waste Discharges. Best Achievable Technology. Ministry of Natural Gas Development(MNGD). 2014. Best Available Techniques Economically Achievable Guideline.
2184.1	round 1	Gitxaala Nation	4.3.2.4	Greenhouse Gases	Greenhouse gases assessment does not assess whether the emissions from project will affect climate change and how potential changes in climate may affect infrastructure associated with the project as laid out by the Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment (FPTCCCEA) 2003 federal guidance document. A review of historical climate data and the analysis of future climate projections follows accepted practices for conducting EAs. Some of this information is provided in the "Effects of the Environment on the Project" section but needs to be referenced here for completeness.	As outlined in the AIR, the Greenhouse Gas (GHG) assessment does not include an evaluation of Project impacts on climate change. Canadian Environmental Assessment (CEA) Agency (2003) guidance states GHG assessments cannot address the significance of a single project's potential effect on climate change. As identified in Section 4.3.1 of the Application, the effect of climate change on the Project are addressed in the Effects of the Environment on the Proposed Project (Section 10.0) Historical climate trends can be found in the Air Quality TDR (Appendix A of the Application). Future climate projections can be found in Section 10.2.8 of the Application.
2185.1	round 1	Gitxaala Nation	4.3.2.5	Greenhouse Gases	The assessment should describe the historical climate trends and the future climate projections across spatial boundaries used across all disciplines.	Historical climate trends can be found in the Air Quality TDR (Appendix A of the Application). Future climate projections can be found in Section 10.2.8 of the Application.
2186.1	round 1	Gitxaala Nation	4.3.2.8	Greenhouse Gases	While the contribution of an individual project to climate change may not be easily measured, Project GHG emissions on climate change should be included and adequately assessed as a potential residual effect.	As outlined in the AIR, the GHG assessment evaluates the direct emissions from the Project. Climate change is studied at the global scale; its relation to global GHGs is evaluated by international bodies such as the Intergovernmental Panel on Climate Change (IPCC). The study of climate change is outside the scope of this assessment. IPCC conclusions applicable to this assessment are identified in Section 4.3.6 of the Application.
2187.1	round 1	Gitxaala Nation	4.3.4	Greenhouse Gases	Burning of biomass will result in GHG emissions. If burning is to occur, it needs to be included as a physical activity. If burning is not to be included, a commitment is required that it will not occur as part of construction or operations activities	Mitigation 4.2.5 states the Project will "Avoid burning of biomass." The construction GHG inventory conservatively includes burning of biomass to account for debris, stumps, and unused portions of the salvaged timber. However, the Project intends to avoid the burning of biomass.
2188.1	round 1	Gitxaala Nation	4.3.4	Greenhouse Gases	Vehicle traffic is not listed as an activity under Operations and needs to be assessed as a potential effect.	As per the WCI quantification methods used by the Greenhouse Gas Industrial Reporting and Control Act: Reporting Regulation, mobile equipment at facilities that are required to report GHG emissions include: -on-site transportation or movement of substances, materials or products, and -other mobile equipment such as tractors, mobile cranes, log transfer equipment, mining machinery, graders, backhoes and bulldozers, and other industrial equipment. These types of operations do not apply to the Project. The WCI quantification methods further states that on-road vehicles are not included. On-road vehicles would be the only types of vehicle traffic during Project operation.
2189.1	round 1	Gitxaala Nation	4.3.4	Greenhouse Gases	Given the duration of operations, how can waste management (including collection and treatment) not be considered to require GHGs and result in potential effects? Please include a description of waste management during the Project life-cycle on GHGs.	As indicated in the Application, it is not anticipated that waste management will contribute to GHGs in a substantial manner. Aurora LNG intends to avoid open burning of accumulated waste during construction and operation of the Project. These activities will be managed through a Solid Waste Management Plan. Activities in support of waste management at the site, such as handling and transport, will not be large GHG sources. Further, as per WCI guidance, the mobile equipment used for handling waste is not required to be reported to the BC GHG Industrial Reporting Regulation (refer to WCI.280 in guidance document). For a more detailed discussion on waste management, see Section 6.3.5.2 of the Application.
2190.1	round 1	Gitxaala Nation	4.3.10	Greenhouse Gases	Proponent already determined that GHG emissions during operations are considered to have a high magnitude and indicate that a detailed GHG Management Plan will be completed upon project approval. Given the magnitude, a management plan should be completed as part of the application	As per CEA Agency (2003) guidance, a project that has been determined to have a high magnitude of GHG emissions should prepare a GHG Management Plan. The Aurora LNG has committed to developing a GHG Management Plan (Mitigation 4.3.6) upon Project approval.
2191.1	round 1	Gitxaala Nation	Table 4.4-3 and Figure 4.4-1	Acoustic Environment	Port Edward does not appear to be included in the RAA. Given the projects proposed for Ridley and Lelu Islands, the potential for cumulative effects on Port Edward, and the high percentage of Nation members residing in Port Edward, it should be included in the RAA and effects assessed.	Please refer to the technical memo "Cumulative Noise Assessment" for the cumulative noise assessment at two additional Port Edward receptors. The technical memo will be filed with the BC EAO. The "Cumulative Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2192.1	round 1	Gitxaala Nation	Figure 4.4-1 and Table 4.4-4	Acoustic Environment	While the prevailing wind in the Prince Rupert region is from the south-east year round, winds in winter are considerably higher, suggesting that noise may be travel farther in winter. Please indicate how data from summer only stations (M1, in particular) have been used and the model ling based on it corrected to account for higher winter noise carriage. Please indicate where (which sections) winter predictions are presented in the relevant TDRs.	The ambient sound levels are higher during high wind and rainy weather conditions. For baseline monitoring, data collected during high wind events (exceeding 15 km/hr) and rain events is not included in the determination of baseline sound level. If the wind is higher during the winter period, the ambient sound level collected at receptor M1 during the summer season is likely to be lower. This is considered a conservative approach as the use of a lower ambient sound level (i.e. during summer and excluding high wind and rain events) will result in a higher predicted impact from the Project noise effect in the assessment. The noise model considered wind speed up to 5 m/s (or 18 km/hr) when the receptor is downwind of the noise source. The wind speed was based on ISO 9613-2 standard, which assumes 1 to 5 m/s downwind condition from the source to the receptor in the sound propagation calculation.
2193.1	round 1	Gitxaala Nation	4.4.3	Acoustic Environment	the Application notes that "the acoustic environment is characterized primarily by sounds from nature, such as those originating from bids, insects, wind-generated noise…" Noting that natural and anthropogenic noises can have similar noise levels but be perceived differently, how is the addition of anthropogenic noise distinguished as an effect. If distinguished through the metric of "annoyance" (%HA), have annoyance levels been disaggregated by receptor community to address the potential for first nations communities to be more highly annoyed by additional anthropogenic noise? If not, what is the rationale for not doing so? Failure to do so prevents a complete assessment of effects on TU.	Natural and anthropogenic noise effects may be perceived differently. The %HA metric does not separate the sound quality between anthropogenic noise and sounds from nature. While First Nations communities have indicated that anthropogenic noise may have different effects, the effects are in part, perceptually based values, which vary from one person to another. Also, there is no available literature that quantifies the potential annoyance of First Nations communities due to the difference in sound quality between anthropogenic noise and sounds from nature. In addition to sounds from nature, the acoustic environment is also influenced by noise effects from marine traffic (Section 4.4.3, page 4.4-13 of Application).
2194.1	round 1	Gitxaala Nation	4.4.4	Acoustic Environment	Environmental Assessment of LNG facilities in Australia indicate the potential for low frequency noise (LFN) and vibration to be generated from vehicles used during construction, and from both facility and vessel activity during operations. What is the rationale for excluding these from consideration and assessment, particularly given the proximity of flare stacks (which contribute LFN in the form of pressure waves) to Delusion Bay? Delusion Bay is presently home to large populations of birds which are known to be sensitive to LFN/vibration.	LFN analysis results during both construction and operation phases are included in Section 4.4.5.2 of the Application. The LFN analysis for Year 1 construction, Year 5 construction, and operations phase are presented in Table 4.4-17, Table 4.4-18, and Table 4.4-19 of the Application, respectively. The results are presented for both the daytime and nighttime period.
2195.1	round 1	Gitxaala Nation	Table 4.4-19	Acoustic Environment	dBA weighted noise is used because it is considered a better tool for measuring injury to human hearing in workplace exposure. dBC is a better metric for capturing LFN, particularly at night when sleep may be disturbed by LNF, experiences as hum or vibration. Some literature (e.g. Berglund and Lindvall, 1995, WHO) indicates that 30dB should be considered the maximum nighttime noise limit where significant portions of noise are derived from LFN. Given exceedances of OGC limits for dBC-dBA, what is the rationale for using the ANSI guidance rather than a more conservative value?	The BC OGC Noise Guideline uses a cautionary limit (e.g., 20 dB) on the difference between the C-weighted and the A-weighted levels. When the actual difference exceeds the cautionary limit, further evaluation is recommended. Under the BC OGC noise guideline, the evaluation considers low frequency tones. If no low frequency tonality is present, potential adverse LFN effects are deemed as acceptable even if the cautionary limit is exceeded. In order to identify tonal component at a receptor, the sound pressure level must be in one-third octave band center frequency. This low frequency tonality is commonly identified from measurements instead of prediction modelling because equipment noise emission information in one-third octave band center frequency is typically not available from the manufacturer. When there is no available information to confirm the low frequency tonality, the ANSI 12.9 standard is used in addition to the BC OGC Noise Guideline to assess potential LFN effects. Low frequency noise effect is addressed in the technical memo "Low Frequency Noise Assessment ". The "Low Frequency Noise Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. The sleep disturbance effect is address in the technical memo "Sleep Disturbance and Speech Interference" based on the WHO noise guidance. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. These documents will be filed with the BC EAO.
2196.1	round 1	Gitxaala Nation	Table 4.4-20, 4.4-21, and 4.4-22	Acoustic Environment	please provide additional columns for each of these tables that indicate Ld(dBC) and Ln(dBC) for Existing, Year 1 Construction, Year 5 Construction, and Operations time periods to allow a better understanding of nighttime effects on sleeping in sensitive areas including Kinehan Islands (where sleeping campers may be present)	The sleep disturbance effect is addressed in the "Sleep Disturbance and Speech Interference" technical memo based on the WHO noise guidance. The WHO noise guidance uses A-weighting decibel sound level for sleep disturbance threshold. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Existing Ld and Ln in C-weighting decibel is not available from the monitoring program. Prediction C-weighting decibel results for Year 1 Construction, Year 5 Construction, and Operation phases are presented in Table 4.4-17, Table 4.4-18, and Table 4.4-19 of the Application. The C-weighting decibel results were used to assess low frequency noise effect. Additional information on low frequency noise effect is also provided in the "Low Frequency Noise Assessment technical memo. The technical memos will be filed with the BC EAO. The "Low Frequency Noise Assessment" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2197.1	round 1	Gitxaala Nation	4.4.5.3	Acoustic Environment	The Application states that "no mitigation is proposed during the operations phase as negligible effects are expected". The absence of data regarding dBC at night suggests that this statement cannot be fully supported. LFN and vibration remain a concern for the community and, at a minimum, an ongoing monitoring and adaptive management plan must be developed to confirm predictions and respond if LFN/vibration result in community annoyance or adverse health effects.	Mitigation for the predicted change in noise level is presented in Section 4.4.5.2 Table 4.4-9 of the Application. Details on a noise monitoring program will be included in the Noise Management Plan (per Section 14.5 of the Application) to confirm assessment predictions and provide information for corrective actions (continuous improvement programs), if required. The Noise Management Plan will also describe a process for outlining how complaints regarding noise, including LFN and vibration, will be addressed. LFN analysis results during both construction and operation phases are included in Section 4.4.5.2 of the Application. The LFN analysis for Year 1 construction, Year 5 construction, and operations phase are presented in Table 4.4-17, Table 4.4-18, and Table 4.4-19 of the Application, respectively. The results are presented for both the daytime and nighttime period.

2198.1	round 1	Gitxaala Nation	4.4.10	Acoustic Environment	The Assessment is not satisfactory in two regards: 1) the application has dismissed the potential for LFN during operations without adequate data and rationale to do so and (2) the almost exclusive focus on dBA renders the assessment sufficient only to assess effects of noise on humans. Please provide an additional discussion of bird sensitivity to noise (both dBA and dBC) and an assessment of the predictions for noise on birds. Particular emphasis must be paid in this discussion to the potential effects to birds of operational noise given the proximity of infrastructure that may cause significant noise immediately adjacent to Delusion Bay, currently a site of high bird density.	A discussion on potential noise-based effects (i.e., dBA and dBC) to human receptors is provided in Section 4.4 of the Application. The low frequency noise effect analyses for construction and operation are summarized in Table 4.4-17 to Table 4.4-18 of the Application . The results indicate no exceedance when compared to the ANSI 12.9 standard threshold for human receptors. Wildlife-related literature has primarily centered on A-weighted decibel noise effects, as it represents the most common weighting used in noise measurement. There is limited information available on the effects of C-weighted decibel noise to wildlife. Section 4.7.5 of the Application discusses indirect effects of change in habitat, incorporating available scientific literature, based on noise-based effects for species occurring within the LAA (or for similar species whose effects are expected to be representative).
2199.1	round 1	Gitxaala Nation	4.5.3	Water Quality	Each lake/stream appears to only be sampled once. Why was seasonality not addressed through field work?	There are no effluent discharges to lakes or streams planned, so for general assessment of freshwater quality, seasonal water quality data is not needed. For freshwater quality, related to the potential for acidification and eutrophication, it has been common practice in other regional assessments to sample lakes during fall turnover to capture fully mixed conditions that represent times of maximum nutrient concentrations. Seasonal data for identified areas of concern (e.g., lakes with predicted critical load exceedances) should be collected as part of future regional monitoring programs.
2200.1	round 1	Gitxaala Nation	4.5.3	Water Quality	How was the methodology changed for LAK03 (exhibiting a thermocline)? Sampled collected above and below thermocline?	For LAK03, a composite sample was collected to incorporate stratified layers.
2201.1	round 1	Gitxaala Nation	4.5.6.3	Water Quality	What are the direct effects of the nutrient-nitrogen critical load values being exceeded for LAK11? How will this impact the community?	Refer to the technical memorandum, "Additional Information about Eutrophication and Acidification in Freshwater" which will be filed with the BC EAO. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting.
2202.1	round 1	Gitxaala Nation	Table 4.5-26	Water Quality	The use of tugs equipped with propulsion systems that reduce sediment scour will be considered.' Considered is a weak word that should not be given a high likelihood of success expectation.	This mitigation was rated as having a high likelihood of success because tugs equipped with propulsion systems that reduce sediment scour are widely used in industry, and their limitations are well-understood. Aurora LNG will make a final decision on tug propulsion type when Project detailed design is complete.
2203.1	round 1	Gitxaala Nation	Appendix E-Water Quality	Water Quality	Concentrations of TOC were not available for the historical datasets; therefore, DOC concentrations were used in the calculation.' Was the calculation modified to account for DOC being used instead of TOC?	Concentrations of TOC and DOC were often similar in waterbodies where both parameters were sampled. For the sites sampled on Digby Island and the Tsimpsean Peninsula, no change in the calculation was required, as TOC was measured. For the Environment Canada dataset only DOC was measured, therefore this value was supplemented into the calculation in place of TOC to calculate acid neutralizing capacity. Typically, dissolved concentrations are less than total concentrations and therefore the use of DOC will give a more conservative estimate (i.e., lower ANC value). There is no adjustment to the calculation required.
2204.1	round 1	Gitxaala Nation	Appendix I	Vegetation and Wetland Resources	Provide information why an invasive species specific survey wasn't conducted within the PDA and Terrestrial LAA? I.e. focus on roadways, cleared areas, corridors.	The success of implemented Best Management Practices (BMPs) related to invasive plants are well understood, and Environmental Inspectors will be well qualified to identify and manage invasive plants. Aurora LNG does not consider a specific invasive plant survey necessary for this Environmental Assessment. An Invasive Plant Management Plan (IPMP; Mitigation 4.6.6) will be developed in consultation with regulators. The IPMP (described in Section 14.6 of the Application) will describe BMPs which will meet legislated requirements and permit conditions related to invasive plants and invasive plant management.
2205.1	round 1	Gitxaala Nation	Appendix I	Vegetation and Wetland Resources	In addition to the Weeds Act and NWIPC invasive species list, were any other invasive species lists (additional unregulated invasive plants of concern in BC ISCBC) consulted?	No. The Northwest Invasive Species Council is the relevant regional partner to the broader BC ISCBC.
2206.1	round 1	Gitxaala Nation	4.6-10	Vegetation and Wetland Resources	Pre-construction rare plant surveys will be conducted in the PDA, near know locations of rare plants.' Define "near".	"Near" in this context means: within the spatial extent of contiguous suitable habitat for the known occurrence of a given species.
2207.1	round 1	Gitxaala Nation	4.6.3	Vegetation and Wetland Resources	The red-listed non-vascular plant, Sphagnum major (no common name) and blue-listed non-vascular plant, Sphagnum centrale (no common name) will be translocated from the known locations within the PDA. This mitigation measure involves salvaging the species from the PDA and transplanting it outside of the PDA so that it may persist within the RAA. How will compensation be achieved if transplants do not succeed?	An example of possible compensation, should translocation fail, could be securing, restoring, or enhancing populations of Sphagnum majus and Sphagnum centrale in a nearby area. There are several populations in the vicinity of the Project, including one on Kaien Island, east of Digby Island.
2208.1	round 1	Gitxaala Nation	4.6-31	Vegetation and Wetland Resources	4 TU species were identified in the PDA but not elsewhere in the terrestrial LAA. Are the locations of these recorded occurrences mapped?	Yes, spatial data for each record exists, though it is not presented graphically in the Application. This information can be made available to Metlakatla First Nation if interested.
2209.1	round 1	Gitxaala Nation	4.6.5.2	Vegetation and Wetland Resources	TU species commonly occur elsewhere in the RAA. Has the accessibility of these TU species by local FN groups been considered? Has compensation, transplanting TU species to be destroyed in the PDA to other FN accessible areas on Digby Island?	Yes, access to TU species has been considered in the assessment. Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include an assessment on vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address site-specific loss of vegetation resources for traditional use within the PDA. Also see the technical memo titled, "Assumptions Regarding Availability of Harvested Resources and Importance of PDA and Surrounding Area" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. Transplanting TU plant species from within the PDA to areas outside the PDA has not been considered among the mitigation measures for the Project.
2210.1	round 1	Gitxaala Nation	4.6	Vegetation and Wetland Resources	Please provide a figure showing rare plant survey locations	Rare Plant Survey locations are shown in Figure 3 of the Vegetation and Wetlands Resources Technical Data Report in Appendix I of the Application.
2211.1	round 1	Gitxaala Nation	Table 4.6-11, 4.6-10	Vegetation and Wetland Resources	Where effects to vegetation from NO2 and SO2 atmospheric concentrations, soil acidification or soil eutrophication are predicted to occur through modelling, vegetation and soils will be periodically monitored as necessary in consultation with the BC MOE. This mitigation measure will monitor for changes in vegetation and soils, and provide adaptive management if necessary. Provide details on the monitoring program expectations likely to be requested by MOE	The details of this monitoring plan are still to be determined. However, examples of monitoring parameters could include sampling of soils within predicted exceedance areas to measure pH and Nitrogen (various forms), along with vegetation attributes such as species composition, cover, and health and vigor at each soil-sampling site. Sampling outside the modeled area of exceedance would likely be required for comparison.
2212.1	round 1	Gitxaala Nation	4.6.5.4	Vegetation and Wetland Resources	Will there be any compensation for TU important wetlands destroyed by the project?	The Wetland Compensation Plan aims to achieve no net loss of wetland functions for wetlands that are designated as 'ecologically or socio-economically important to a region in BC, as defined by regional guidance issued by the Canadian Wildlife Service/Environment Canada (2014), which does not necessarily include wetlands that may be of importance to First Nations for traditional use purposes.
2213.1	round 1	Gitxaala Nation	4.6.5.4	Vegetation and Wetland Resources	Project is expected to destroy +450ha of wetlands, the majority which are bogs. Has carbon sequestration offsetting been considered? What are the mitigation methods to deal with the reduction in carbon storage?	The Project would affect 370 ha of wetlands within the PDA, the majority of which are bogs. The carbon sequestration function of wetlands within the PDA has been considered in Section 4.6.5.4 of the Application and Section 3.3.2.2 of the conceptual Wetland Compensation Plan. Table 4 of the Wetland Compensation Plan identifies the functions and wetland area that will be replaced through compensation, and it includes carbon sequestration. The details of the Wetland Compensation Plan, such as methods of replacing the carbon sequestration function, will be determined in consultation with the Canadian Wildlife Service/ Environment and Climate Change Canada, the Prince Rupert Port Authority (where relevant, as a federal lands manager), and potentially affected Aboriginal groups, following issuance of the Environmental Assessment Certificate. Examples of methods that could be considered to compensate for the loss of the carbon sequestration function include restoration, enhancement, or creation of swamp-class wetlands, or contributions to a carbon credit program.
2214.1	round 1	Gitxaala Nation	4.6.6.2	Vegetation and Wetland Resources	Why is the loss of red- and blue-l listed ecological communities from the PDA not being compensated? Their occurrence within the RAA does to seem like a sufficient answer	For regulatory guidance on this topic, the Application relies on the Objectives set for red- and blue-listed plant communities within the Great Bear Rainforest Order (GBRO), which is a Ministerial order that provides land use objectives according to ecosystem-based management principles for the region where the Project is located. The GBRO objectives for red- and blue-listed plant communities allow up to 5% of a red-listed community to be disturbed and 30% of a blue-listed community within a landscape unit to be disturbed, where there is no practicable alternative for avoidance. See Table 4 in Appendix I, Vegetation and Wetlands Resources Technical Data Report, for the proportions of each occurrence and regional extent that would be disturbed. All instances are below the allowable thresholds stated in the GBRO objectives. Other than the regulatory guidance provided by the GBRO objectives, Aurora LNG is not aware of any legislation or regulations that require compensation for the loss of red- or blue-listed communities.
2215.1	round 1	Gitxaala Nation	Appendix I	Vegetation and Wetland Resources	Why were seaweed and fungi not included in the TU study?	Seaweed were not included among Traditional Use Plants in the RAA, because the RAA for Vegetation and Wetland Resources is defined as the terrestrial portion of the Tuck and Kaien Landscape Units; terrestrial in this context refers to the area above the high tide/high water mark of the coast.Fungi were not included among Traditional Use Plants in the RAA, because plant species in the TDR and Application were limited to vascular and non-vascular plants and lichens.
2216.1	round 1	Gitxaala Nation	Appendix I	Vegetation and Wetland Resources	Figures are not included in the appendix	The figures for Appendix I of the Application are located within the PDF version of the Appendix. Please refer to BC EAO EPIC: https://projects.eao.gov.bc.ca/p/aurora-lng-digby-island/docs
2217.1	round 1	Gitxaala Nation	4.7.3.1	Wildlife Resources (Terrestrial)	Timing of surveys were inconsistent from year to year and many surveys only conducted once per year or season. Please explain the rationale for this approach.	Field studies for wildlife resources were completed to provide a record of occurrence and patterns in habitat use within the PDA and LAA. The scope and timing of field studies were consistent with recommendations within applicable Resource Inventory Standards Committee Standards. Although some surveys were in a single season, survey effort was replicated across and within habitat types in the PDA and LAA. To provide greater regional context, results of field studies were evaluated in consideration of regional datasets and information sources.
2218.1	round 1	Gitxaala Nation		Wildlife Resources (Terrestrial)	Traditional ecological knowledge should include which animal species are important, used or harvested, what times of year harvesting takes place, and areas within the RAA (if available).	Section 3.3.1 of Appendix J, informed by traditional ecological knowledge studies available at the time of Application submission (see references therein), outlines terrestrial wildlife species identified as being important for harvesting or cultural importance. Additional details on the timing and location of different harvesting practices are provided in Appendix S.2. Information on harvesting practices was used to support Section 4.7, Section 11, and Part C of the Application. Available information related to the referenced areas was compiled in Appendix S.2 (Aboriginal Consultation TDR) of the Application. In particular, Aurora LNG notes the information compiled for Metlakatla First Nation in Tables 6-11 to 6-16 (pg. 89 to 116). Section 4.7.2.3 (Traditional Knowledge and Traditional Use Incorporation) of the Application and Section 3.1.1 (Traditional Ecological Knowledge) of the associated Appendix J (Wildlife Resources (Terrestrial) TDR) indicate that available Traditional Knowledge /Traditional Use information (i.e. the information compiled in Appendix S.2) was reviewed, considered and, where appropriate, incorporated into Section 4.7 of the Application.
2219.1	round 1	Gitxaala Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Wildlife species of management concern - there are 19 listed in the table, not 18, as indicated in the text.	Aurora LNG acknowledges the error. The sentence preceding Table 4.7-7 should indicate 19 terrestrial wildlife species of management concern have potential to occur within the LAA or RAA. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.

2220.1	round 1	Gitxaala Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Wildlife habitat suitability modelling: Were other habitat suitability models available for species that reside in the LAA? Why were these four species chosen for habitat modelling?	The assessment for wildlife resources uses two modelling approaches to evaluate change in habitat for species known or potentially occurring within the PDA and LAA. Wildlife habitat community modelling was developed to provide an assessment of potential effects on habitat availability for 15 wildlife habitat communities within the LAA. These wildlife habitat communities provide coverage for all habitat types that occur within the LAA and are used to assess effects of change in habitat to a wider suite of wildlife species assemblages that occupy them. Methods and findings of the wildlife habitat community models are provided in Section 4.1 of Appendix J and carried forward in Section 4.7.5.2 of the Application. These sections provide a detailed description of each of the 15 communities, describes wildlife species that are expected to occur within each, and discusses potential effects to species assemblages due to construction and operation of the Project. Four terrestrial wildlife species were selected for wildlife habitat suitability modelling (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad) based on the following suite of criteria (also described in Sections 4.7.3 of the Application and Section 4 of Appendix J): (1) likelihood of occurrence or documented use of habitats within the LAA and RAA; (2) potential interaction with Project activities; (3) conservation status; (4) ecological importance; (5) established base of information, knowledge, or data; and, (6) cultural or traditional value. The four selected species were considered to best represent the criteria listed above, given consideration of the primary habitats available within the LAA and the likelihood of occurrence based on Project and regional datasets and known habitat requirements. In addition, the four selected species were determined to be good candidates for species-specific habitat suitability models because they each require a suite of habitat features that are best assessed at the species-level (rather than at the community-level). Provincial standards advise planners to select species for suitability modelling where there is a strong understanding of the relationship between habitat characteristics and species whose life requisites (e.g., breeding, feeding) compare well with terrestrial ecosystem map units (RIC 1999). Specifically, marbled murrelet requires old to mature coniferous forests with specific tree-level characteristics for nesting (e.g., large branches, high epiphyte cover); western screech owl requires open mixedwood forest with large diameter trees for nesting and roosting; little brown myotis requires mature and old growth forests with cavities and snags for male and maternal roosting; and western toad requires shallow wetlands with fine sediments that retain open water throughout the breeding season. Collectively, the habitat requirements of the four selected species are complementary and serve to evaluate a range of habitat types within the LAA. References: Resource Inventory Committee (RIC). 1999. Wildlife Habitat Rating Standards, Version 2. Ministry of Environment, Lands and Parks. Victoria, BC. 98 pp.
2221.1	round 1	Gitxaala Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Please show map of survey locations rather than referencing the appendix.	For brevity, figures of survey locations were only provided in Appendix J. To facilitate the assessment of change in habitat availability and for ease of comparison of habitat community and suitability models at full Project build-out, the habitat community and suitability models under existing conditions presented in Appendix J were carried forward into Section 4.7 of the Application.
2222.1	round 1	Gitxaala Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Where were marbled murrelet audiovisual surveys conducted? Were these located in "critical habitat" or high suitability habitat?	The locations of marbled murrelet audiovisual surveys are shown in Figure 9 of Appendix J. Survey locations were selected to provide survey coverage within or adjacent to critical or preferred breeding habitat (including areas of overlap), with individual stations positioned to provide optimal audio or visual detection.
2223.1	round 1	Gitxaala Nation	4.7.3.2	Wildlife Resources (Terrestrial)	Species listed as important for local FNs should be considered as species of concern for the Project and the effects assessment.	Sections 4.7.2.2 and 4.7.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how the information was incorporated into the assessment. Table 4.7-2 outlines key information and concerns raised by Aboriginal Groups and how that information influenced the assessment for wildlife resources. Section 4.7.3.2 provides a summary of findings of traditional ecological knowledge for wildlife resources, including identified species and areas of importance for harvesting by Aboriginal Groups; these details are also described in Appendix J. Species identified therein are discussed throughout Sections 4.7.5 and 4.7.6 where there was an identified mechanism for interaction with Project activities and infrastructure.
2224.1	round 1	Gitxaala Nation	Table 4.7-9	Wildlife Resources (Terrestrial)	Waste management should be included in Change in Habitat (change in nutrients/contaminants) for all phases. Remediation and reclamation should be included as a change in habitat (even if change is positive).	On-site waste management includes temporary container storage to contain waste materials as a means to limit environmental releases, and subsequent effects on environmental valued components. Contaminant storage and disposal is subject to regulatory requirements, but will also be contained to prevent environmental releases. Accordingly, waste management was not considered a mechanism for interaction with change in habitat. However, the potential for waste management to serve as an attractant for some terrestrial wildlife (e.g., bears, wolves) increases the potential for human-wildlife conflict, and was carried forward in the assessment of change in mortality risk for wildlife resources (see Section 4.7.5.3 of the Application). Aurora LNG recognizes that decommissioning activities may result in a positive change in habitat availability and quality for wildlife resources. Table 4.7-9 indicates that dismantling of land-based and marine infrastructure is the primary mechanism in which that change will occur.
2225.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	Mitigation measures in the tables (4.7-10, 4.7-14 and 4.7-15) consistently refer to implementing measures "as soon as practicable" or "where practicable". For the reviewer to have any faith in the assessment, stronger commitments are required. Precise language should be used. For example: What is the maximum length of time between clearing and revegetation? Where would measures not be practicable? Wording must leave no room for non-compliance.	Aurora LNG is committed to following a mitigation hierarchy to avoid, limit, and mitigate for potential effects to wildlife resources and will implement options that result in avoiding or reducing effects to wildlife resources. Some Project activities (e.g., vegetation clearing within the PDA) will result in direct and indirect loss of habitat, however, these activities will be scheduled to occur outside of restricted activity periods to avoid effects on wildlife (as per mitigation 4.7.17). In cases where Project activities or infrastructure cannot avoid effects to wildlife resources, Aurora LNG has proposed alternative mitigation measures to reduce and mitigate those effects. For example, if vegetation clearing is required during breeding bird and amphibian periods, pre-clearing surveys will be completed (as per mitigation measures 4.7.18 and 4.7.19). Applicable management plans will provide detail on timelines for implementing Project mitigation measures, and will describe monitoring and reporting requirements, as appropriate, to support compliance monitoring.
2226.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	The Wetland Compensation Plan is only compensating for a very small fraction of wetlands to be disturbed or removed through the Project. Please see comments in the Vegetation and Wetland Resources section.	The Wetland Compensation Plan was prepared according to regional guidance issued by the Canadian Wildlife Service of Environment Canada (2014), which stipulates which wetlands are subject to the no-net-loss goal of the Federal Policy on Wetland Compensation. Offsetting for estuarine wetlands will occur through the Fish Habitat Offsetting Plan. Reference: Environment Canada. 2014. Federal Policy on Wetland Conservation – Guidance for Application and Implementation in Environmental Assessment. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p403/d37786/1404937173815_193684738c554031afd3fe7a5b3bf6196c13620cba3241eac8c3f318682e8f7f.pdf. Accessed: March 2017.
2227.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	Revegetating temporary work spaces is assumed to have a high success rate but some uncertainty as regeneration may take longer than expect or have lower productivity. It should also be noted that mature forests cannot be "replaced". The assumption that the success rate is high is false. From a habitat perspective, areas of forest cannot be replaced, or at the very least, take generations to replace. This timeframe is too long to be of value.	Revegetating temporary workspaces and reclaimed land (Mitigation 4.6.5) is considered to be effective during the construction phase of the Project (i.e., short-term) and therefore expected success was evaluated for the construction phase only. The goal of this mitigation measure is to establish functional habitat to promote wildlife use after temporary spaces are no longer needed. For example, regenerating vegetation will provide security cover to support wildlife movement. To reduce the extent of necessary vegetation clearing, including clearing of mature or old forests, temporary workspaces will be limited to within the PDA boundaries to the extent practical (as per mitigation 4.7.1). Revegetation activities for temporary workspace will be provided in the Invasive Plant Management Plan. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development ofthis plan.
2228.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	When will a bat management plan be developed, and by whom?	Management plans will be developed by Aurora LNG prior to the commencement of construction. The Bat Management Plan will specifically outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects from change in habitat or mortality risk from Project construction and operation activities. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
2229.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	High-disturbance project related activities are to be avoided within 300m of occupied bald eagle nests. This language leaves too much room for uncertainty. Use stronger language than "avoid". In addition, helicopter distances of greater than 500m from bald eagle nests and heron rookeries has been proposed. While both these measures are good mitigation practices (with stronger language for the 300m distance), there should be monitoring that goes along with these measures to confirm that bald eagle and heron are not disturbed from nests. At least at the beginning stages of the work. In addition, heron nests/rookery should be added to the 300m buffer for high-disturbance activities.	High-disturbance Project-related activities (e.g., blasting, pile driving) will be avoided where practicable within 500 m of occupied nest locations for great blue heron (i.e., the rookery at Dodge Cove) and within 300 m of occupied nest locations for bald eagles during the breeding windows for either species. Helicopter flights will be a minimum of 500 m from known locations of great blue heron and bald eagle nests. The setback distances are based on prescribed setbacks provided in A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia, Interim Guidance, North Area (BC MFLNRO 2014), the Environmental Protection and Management Guideline (BC OGC 2016) and Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (BC MOE 2014). As per Mitigation 4.7.18, setbacks will be established around active nests to limit disturbance or displacement. The on-site Environmental Monitor will be responsible for monitoring the effectiveness of no-disturbance setbacks for all active nests within or adjacent to the PDA (including bald eagle nests), and to modify disturbance buffers as necessary to maintain effectiveness. Details for active nest setbacks will be described in the Wildlife Management Plan. Aurora LNG has further committed to monitoring the rookery for changes in breeding activity if vegetation clearing for Project construction overlaps with the breeding window for great blue heron. References: British Columbia Ministry of Environment (BC MOE). 2014c. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: February 2017. British Columbia Ministry of Forests, Lands, and Natural Resource Operations (BC MFLNRO). 2014. A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia, Interim Guidance, North Area. 212 pp. British Columbia Oil and Gas Commission (BC OGC). 2016. Environmental Protection and Management Guideline. Version 2.2. Available at: http://www.bcogc.ca/node/5899/download. Accessed: February 2017.
2230.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	Please provide details for marbled murrelet management plan. Who will be responsible for this? When will it be prepared? What will it include? Same for Wildlife Management Plan and Bat Management Plan.	The Marbled Murrelet, Wildlife, and Bat Management Plans will specifically outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects from change in habitat, mortality risk, or movement (as applicable) from Project construction and operation activities. Management plans will be developed by Aurora LNG prior to commencement of construction. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
2231.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	Will management plans be prepared for other species of concern, such as great blue heron or western toad?	There are no species-specific management plans currently proposed for great blue heron or western toad. The Wildlife Management Plan will outline measures to avoid, reduce, mitigate, and monitor for breeding birds and amphibians, and will include direction on mitigation measures specific to great blue heron and western toad (e.g., Mitigation measures 4.7.4, 4.7.6, 4.7.10, 4.7.12, 4.7.16, 4.7.17, and 4.7.19).
2232.1	round 1	Gitxaala Nation	4.7.5	Wildlife Resources (Terrestrial)	"Proposed clearing for the entire PDA footprint is estimated to result in the removal of 19ha of marbled murrelet critical habitat and 77ha of preferred habitat for marbled murrelet. Project specific studies indicate that areas outside of the PDA, specifically on the north side of Casey Cove and Metford Island, represent high-suitability with a moderate likelihood to support nesting activities." Is this statement supposed to justify the loss of critical habitat?	This statement is intended to provide context for the extent and distribution of critical and preferred breeding habitat for marbled murrelet within the PDA or LAA, and provides context for characterizing the effects of change in habitat availability for the species. Please refer to Figure 9 in the Wildlife Resources (Terrestrial) Technical Data Report for the distribution of critical and preferred habitat.
2233.1	round 1	Gitxaala Nation	Table 4.7-12	Wildlife Resources (Terrestrial)	Table only includes four of the 19 species of management concern that may occur in the LAA or RAA. Of those, it is known that great blue heron, band-tailed pigeon, and barn-swallow are known to occur in the PDA. Why have these species not been included in the assessment?	The assessment of Project effects on wildlife resources considers effects on great blue heron, band-tailed pigeon, and barn swallow in consideration of documented or potential occurrence within the PDA and LAA, how habitats within these boundaries support life history requirements, and the mechanisms for interaction with Project activities and infrastructure. Section 4.7.5 discusses potential effects of change in habitat, mortality risk, or movement as applicable to each species. Field studies and the wildlife habitat community model (existing condition and full Project build-out scenarios) are used to support the characterization of effects for each.
2234.1	round 1	Gitxaala Nation	4.7.5.2	Wildlife Resources (Terrestrial)	Indirect change in habitat: Only a brief discussion of acoustic emissions or in-air noise has been included. However, this discussion is based on A-weighted decibels. Where is the discussion of C-weighted decibels? The C-weighted dBs have a lower frequency sound and produce a stronger pressure wave. These waves could have a greater effect on birds, and should be considered in the assessment. How will the vibration cavity of birds be affected by the acoustic emissions? How will this relate to sudden pressure and sudden noise associated with flaring? Or with construction and operational noise?	Section 4.7.5.2 of the assessment considered indirect effects of change in habitat incorporated information on noise-based effects available in scientific literature, for species occurring within the LAA (or for similar species whose effects are expected to be representative). Available wildlife-related literature has centered on A-weighted decibel noise, as it represents the most common weighting used in noise measurement. Although there is limited information available on effects of C-weighted decibel noise to wildlife, a discussion on potential effects to human receptors is provided in Section 4.4of the Application. The low frequency noise effect analyses for construction and operation are summarized in Table 4.4-17 to Table 4.4-18. The results indicate no exceedance when compared to the ANSI 12.9 standard threshold for human receptors. Continuous flaring with high flow rate and no noise mitigation considerations can result in noise effects at nearby receptors. The LNG facility will be designed such that continuous flaring during operations will not result in regulatory exceedances. There will be flaring with higher flow rate during the startup phase; however, effects are expected to be temporary, short term, and intermittent. While flaring will affect noise production during Project operations, it is not expected to generate substantial vibration for wildlife receptors unless they are in the immediate vicinity of an active flare, in which case individuals are likely close enough to a heat source sufficient to cause injury or mortality (as assessed in Section 4.7.5.3). Aurora LNG has committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injury or mortality related to Project activities; where possible, Project personnel will be required to describe the cause of mortality (including pressure-based mortality [e.g., barotrauma]).
2235.1	round 1	Gitxaala Nation	4.7.5.2	Wildlife Resources (Terrestrial)	The habitat suitability models chosen (marbled murrelet, western toad, western screech-owl, and little brown myotis) do not represent a diverse range of wildlife habitat types. No medium or large mammals have been considered, no small terrestrial mammals (only bats for small mammals), no songbirds, no primary cavity nesters, no aerial foraging birds (swifts, swallows).	The assessment for wildlife resources uses two modelling approaches to evaluate change in habitat for species known or potentially occurring within the PDA and LAA. Wildlife habitat community modelling was developed to provide an assessment of potential effects on habitat availability for 15 wildlife habitat communities within the LAA. These wildlife habitat communities provide coverage for all habitat types that occur within the LAA and are used to assess effects of change in habitat to a wider suite of wildlife species assemblages that occupy them. Methods and findings of the wildlife habitat community models are provided in Section 4.1 of Appendix J and carried forward in Section 4.7.5.2 of the Application. These sections provide a detailed description of each of the 15 communities, describes wildlife species that are expected to occur within each, and discusses potential effects to species assemblages due to construction and operation of the Project. Habitat suitability models were developed for four terrestrial wildlife species (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad) based on criteria described in Section 4.7.3 of the Application and Section 4 of Appendix J. Although these models were not specifically developed for large, medium, or small mammals (other than bats), songbirds, cavity nesting species, or aerial foragers, their habitat requirements are accounted for through the wildlife habitat community modelling approach.

2236.1	round 1	Gitxaala Nation	4.7.5.2	Wildlife Resources (Terrestrial)	What explanation is there for federally designated critical habitat for marbled murrelet being assessed as "low or moderate likelihood to support nesting activity and were generally ranked as moderately suitable based on habitat attributes described…"? These critical habitat features were added to the recovery strategy in 2014, thus they should be up to date and accurate. Furthermore, while retention objectives for suitable habitat on the northern mainland coast are currently being achieved, cumulative effects of additional losses in the region are not advised. These are minimum amounts.	Environment Canada (2014) acknowledges that their current identification of marbled murrelet critical habitat "constitutes a partial identification of nesting critical habitat". The current extent of mapped critical habitat represents areas "within which nesting critical habitat is found for marbled murrelet is delineated by a set of geographic location polygons". The recovery strategy provides a set of polygons representing the largest extent of areas thought to contain suitable nesting habitat, using the best available information. Although the recovery strategy was released in 2014, it incorporates several different mapping approaches, some of which have incorporated older datasets and may not accurately reflect current conditions at individual sites (see Environment Canada 2014 for full details on methods). As a result of this mapping approach, identified polygons represent areas where the biophysical attributes for marbled murrelet nesting habitat are found but it does not necessarily mean that the entire extent of an identified critical habitat polygon meets the attributes necessary to support nesting activities. Aurora LNG used a combination of wildlife habitat assessments (i.e., desktop mapping verified by ground plots), detailed habitat assessments focused on preferred suitability habitat and identified critical habitat, and audio-visual surveys to provide a detailed, ground-truthed, assessment and verification of the availability and quality of nesting habitat on Digby Island (see Appendix J for details). Given that these field studies reflect current existing conditions and are comprehensive and site-specific, Aurora LNG expects some discrepancy between the extent of potential critical habitat identified in Environment Canada (2014) and that which has been verified through site-specific field assessments completed for the Project. For the purpose of comparison, Figure 9 of Appendix J provides an overview of the spatial extent of Project-specific habitat data superimposed with identified critical habitat polygons. In Section 4.7 of the Application, the net change in identified critical habitat was estimated to be 14 ha, accounting for less than 0.0001% of the habitat supply target for the Northern Mainland Coast population. The Project's contribution to cumulative effects is considered a conservative estimate given that: (a) the full extent of identified critical habitat polygons were used to estimate direct effects, (b) the majority of habitat is located within 500 m of shoreline and is therefore only 'moderately likely' to support nesting (Environment Canada 2014), and (c) Aurora LNG is committed to implementing a Marbled Murrelet Management Plan to avoid or reduce potential Project effects to changes in nesting habitat. Accordingly, the Project's contribution to cumulative effects of change in nesting habitat is not expected to affect the ability to achieve short and long-term regional population and habitat objectives as per the recovery strategy (Environment Canada 2014). References: Environment Canada. 2014. Recovery Strategy for the Marbled Murrelet (Brachyramphus marmoratus) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 49 pp.
2237.1	round 1	Gitxaala Nation	4.7.5.2	Wildlife Resources (Terrestrial)	"Direct habitat removal will occur once during vegetation clearing and will persist until the PDA is reclaimed following decommissioning of the Project." Revegetation may take generations to be fully functional when replacing mature forests. Ecosystem functions will not be the equivalent of existing conditions for potentially a hundred years, if possible to recover at all.	The statement quoted is meant to confirm that vegetation in the PDA will remain cleared until decommissioning and reclamation - not that the effect on habitat will only last until decommissioning and reclamation. Duration of effects to direct habitat removal is characterized as long-term, which is defined in Section 4.7.2.6, as "Residual effect occurs across multiple breeding seasons or generations".
2238.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.9 includes measures for reducing the risk of lighting to "marine birds". Should include terrestrial birds and bats.	Aurora LNG acknowledges the comment from Metlakatla First Nation. To clarify, mitigation measure 4.7.9 is applicable to terrestrial and marine birds, as well as bats and is carried forward in Sections 4.7 and 4.11. An errata documentis being compiled that captures these corrections and it will be filed with the BC EAO.
2239.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.20 should include shielding to prevent birds and bats from injury or death during flaring events.	Section 1.2.5.1 describes the proposed flare system design and does not include a shielding mechanism, due to infrastructure constraints. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). As per mitigation measure 4.7.20, maintenance flaring events will be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. This is expected to reduce potential effects of injury or mortality to birds and bats; however, Aurora LNG is committed to monitoring the effectiveness of this mitigation measure through the reporting of injuries and mortalities (mitigation measures 4.7.14 and 4.7.16).
2240.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.12 includes mitigation measures to reduce injuries and mortalities to amphibians and other wildlife. How will this be monitored? Who is responsible? Who decides when temporary drift fencing needs to be installed? These details are important in determining the efficacy of the mitigation strategies. Furthermore, it would be advisable to develop strategies to allow amphibians and other small wildlife to cross roads in areas where migration between wetlands or other features is observed. This could include the installation of small underpasses with drift fences leading to the underpasses at key locations. This has the potential to significantly reduce road mortalities for migrating western toad.	Aurora LNG has committed to developing a Wildlife Management Plan and Transportation Management Plan (see Section 14 of the Application), both of which will include a description of activities to meet the commitment for Mitigation 4.7.12. These plans will outline detailed mitigation activities (e.g., instructions for timing, locations, and procedures for drift fence installation), effectiveness monitoring, and education and training requirements for Project personnel. The need, locations, and extent of drift fencing installation will be determined by a Qualified Environmental Professional in consultation with the on-site Environmental Monitor.
2241.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Table 4.7-14: Mitigation 4.7.14 includes the reporting of bird injuries or fatalities related to Project activities. This should also include any other wildlife injuries or fatalities. In addition, the mitigation mechanism should include birds, bats and other wildlife, and an Adaptive Management plan to be developed (identify when this will be prepared and by whom).	Aurora LNG acknowledges the comment and will amend Mitigation 4.7.14 to include bat and wildlife injury and fatality reporting. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. The Wildlife Management Plan will include reporting requirements of wildlife sightings and is inclusive of detections of wildlife injuries or fatalities, as a means to evaluate patterns in use, potential mortality, and for monitoring the effectiveness of mitigation measures. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Wildlife Management Plan. An errata document is being compiled that captures this additional commitment and it will be filed with the BC EAO.
2242.1	round 1	Gitxaala Nation	4.7.5.3	Wildlife Resources (Terrestrial)	Characterization of Residual Effects for Change in Mortality Risk: How does having the PDA on an island affect the ability of local populations to recruit to offset losses? This is a limited resource if populations are restricted by waterbodies. Are there unique genetic populations on the island, specifically for non-flying wildlife such as terrestrial mammals and amphibians? If wildlife is salvaged during the construction phase, what is the risk of breaching the carrying capacity of populations on the rest of Digby Island?	Natural recruitment (e.g., through reproduction and immigration) is expected to offset potential Project effects to a regional population, accounting for individuals located within the LAA and RAA (including areas of Digby Island, other coastal islands, and the mainland). The area in which recruitment can occur depends on the mobility of organisms, with less mobile species (e.g., amphibians) restricted to recruitment from regional populations elsewhere on Digby Island, while mobile species (e.g., songbirds) having broader capacity. Although individual distribution for some species may be restricted to Digby Island, the Island is not known to support genetically distinct populations. If salvage is required, preference will be to relocate individuals to adjacent suitable habitats present on Digby Island to support maintenance of the overall viability of Island populations. However, the extent of salvage (e.g., the number of individuals) and the size, suitability, and access to relocation sites will inform the inclusion of alternate sites for relocation to maintain viable populations at each. Relocation sites are subject to review and approval through application for wildlife salvage under the BC Wildlife Act, and will be developed in consultation with the Ministry of Forest, Lands, and Natural Resource Operations.
2243.1	round 1	Gitxaala Nation	4.7.4	Wildlife Resources (Terrestrial)	Table 4.7-15: See comments from previous tables (4.7-10 and 4.7-14).	Clarifications to mitigation measures presented in Tables 4.7.10 or 4.7.14 also apply to those mitigation measures that have been carried forward in Table 4.7-15.
2244.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	While a vegetated buffer around the PDA has been proposed as mitigation, this narrow strip of mature and old growth forest (30m in most parts) is inadequate to prevent losses of marbled murrelet habitat. The critical habitat within the vegetated buffer strips should also be considered effectively lost and calculated in the total losses. This is fragmentation of critical habitat. Furthermore, removing forested areas beyond 30m leaves trees exposed to wind damage and creates edge habitat. How is this useful to marbled murrelet? What is the viability of this vegetated buffer? Areas designated as "high suitability" during Project surveys should also be included in losses. These statements are based on the recovery strategy that states that the most likely suitable sites for nest habitat are 0.5 to 30km from saltwater habitat. Leaving 30m adjacent to saltwater with nothing left behind provides unsuitable habitat for marbled murrelet. Please also discuss the effectiveness of these thin vegetated buffers with respect to bat habitat.	Section 4.7.5.2 of the Application provides an estimate of direct and indirect loss of preferred breeding habitat and identified critical habitat for marbled murrelet within the LAA, after accounting for the riparian buffer. The Project is estimated to result in the direct removal of 61 ha of preferred and 14 ha of identified critical habitat (with overlap in extent between those two classifications; see Figure 9 of Appendix J). The majority of preferred and identified critical habitat is located in stands of old-growth forests located on the perimeter of Digby Island. Environment Canada (2014) identifies marbled murrelet critical habitat as "a set of polygons representing the largest extent of areas thought to contain suitable nesting habitat, using the best available information". The entire extent of an identified polygon does not necessarily meet the attributes for critical habitat. In absence of more detailed mapping information in the recovery strategy, the Application used a conservative estimate of potential effects to identified critical habitat, including: (a) using full extent of identified critical habitat polygons to estimate direct effects, (b) qualifying habitat within 500 m of shoreline although it is only 'moderately likely' to support nesting (Environment Canada 2014). Habitat suitability models were supplemented with audio-visual surveys and detailed habitat assessments to refine the prediction of potential effects on marbled murrelet habitat. Baseline data was used to determine evidence of breeding (i.e., marbled murrelets seen or heard landing, perching, or flying through or out of the forest canopy) and to refine habitat attributes within preferred or identified critical habitat polygons (see Section 5.7.2 of Appendix J for details). To reduce potential effects on marbled murrelet nesting habitat, Aurora LNG will retain a marine riparian disturbance buffer. The riparian buffer will be a minimum of 30 m wide, but may extend beyond 30 m in some areas on the east side of Digby Island (see Figure 4.7-7). Given the proximity of these habitats to salt water, they are only "moderately likely" to support nesting habitat under existing conditions but given the width of the riparian buffer on the east side of Digby Island, they are expected to retain habitat function during construction and operation by reducing noise and light transmission to interior forested habitats remaining. To further address direct loss of nesting habitat, Aurora LNG has committed to developing a Marbled Murrelet Management Plan that will outline avoidance, reduction, mitigation, and monitoring measures to effects from Project construction and operation activities. Based on the information provided in the recovery strategy and the potential effects on marbled murrelet terrestrial nesting habitat, marbled murrelet use of the local assessment area is not expected to change as a result of the Project. The Project's residual effects and its contribution to cumulative effects on marbled murrelet are not expected to influence the long-term viability of regional murrelet populations and are therefore considered not significant. With respect to bats, the riparian buffer will be a minimum of 30 m wide, but extend beyond 30 m in some areas on the east side of Digby Island resulting in greater retention of mature and old-growth forest habitat to support roosting opportunities for local bat species. Given the width of the riparian buffer on the east side of Digby Island, this area is expected to retain habitat function during Project construction and operation. Aurora LNG has also committed to developing a Bat Management Plan that will outline avoidance, reduction, mitigation, and monitoring measures to effects from change in habitat or mortality risk for bats from Project construction and operation activities. References: Environment Canada. 2014. Recovery Strategy for the Marbled Murrelet (Brachyramphus marmoratus) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 49 pp.
2245.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	There has been absolutely no mention of white-nose syndrome in bats in this assessment. This is a major oversight, as bat populations in BC are on the verge of a potential devastating collapse. Please revise assessment to include cumulative impacts of white-nose syndrome.	The assessment for wildlife resources recognizes that little brown myotis is a species designated as Endangered on Schedule 1 of SARA, due in part to rapid declines in eastern populations as a result of the spread of white-nose syndrome (WNS; Environment Canada 2015). Although there have been no confirmed records of white-nose syndrome (WNS) in British Columbia, Aurora LNG is aware that the Washington State Department of Fish and Wildlife confirmed that WNS was identified in a single little brown myotis in March 2016. Recovery objectives for populations of little brown myotis in non-affected areas of western Canada are to maintain current population levels (Environment Canada 2015). Accordingly, Aurora LNG has committed to several bat-specific mitigation measures, including the development of a Bat Management Plan, which will outline measures to avoid, reduce, and mitigate for potential effects from Project infrastructure and activities. Mitigation measures applicable to little brown myotis (and other bat species) are listed in Table 4.7-17. Collectively, these measures are expected to limit the Project's contribution to cumulative effects on little brown myotis and supports the current objective to maintain current population levels in western Canada. Reference: Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.
2246.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	How will anthropogenic structures within the PDA influence bats and bat mortality? Little brown myotis are known to use anthropogenic structures, and may be drawn to the PDA with the loss of forest habitat. As such, this may increase the likelihood of accidental mortality (collisions, flaring, etc.).	Species of bats with potential to occur in the PDA may use anthropogenic structures to various degrees for roosting and foraging. The extent to which bats may attempt to roost in buildings within the PDA is unknown, but is expected to be low given that building maintenance will limit access opportunities, and presence of operational noise and light will decrease the suitability of roosting structures. Section 4.7.5.3 of the Application describes the influence of anthropogenic light on disruptions to roosting and foraging behaviour, and the associated mortality risk. Facility staff will document and report bat injuries or fatalities related to Project activities, alongside birds (as per Mitigation 4.7.14).
2247.1	round 1	Gitxaala Nation	4.7.6.4	Wildlife Resources (Terrestrial)	Please see comments on Vegetation and Wetland Resources regarding soil acidification. Given that amphibians are particularly sensitive to changes in pH, what are the calculated impacts on western toad?	Acidification and eutrophication could reduce survival and reproductive success of amphibians in the RAA. Section 4.7 of the Application acknowledges that there is some uncertainty in the response of freshwater systems and, in turn, the health of aquatic wildlife, as a result of acidification and eutrophication that may occur due to Project emissions. To address this uncertainty, Aurora LNG has committed to developing an Acidification and Eutrophication Follow-up Program in consultation with BC MOE (see Section 15: Summary of Follow-up Programs and Compliance Reporting). The follow-up program will include freshwater, soil, and vegetation monitoring that will together provide a measure of change in wetland functions, such as the ability of wetlands to support amphibian breeding.

2248.1	round 1	Gitxaala Nation	4.7	Wildlife Resources (Terrestrial)	This assessment of wildlife resources (terrestrial) is incomplete. As such, a result of non-significant adverse effects has been determined. We disagree with this conclusion. See comments above for additional discussions required to complete the assessment. Currently, the assessment's conclusion of non-significant effects is inappropriate given the loss of critical habitat and high suitability habitat for marbled murrelet and little brown myotis. In addition, FNs interests have not been considered in the impacts, therefore impacts to harvestable species have not been addressed.	Aurora LNG acknowledges the comment from Gitxaala Nation. The assessment of wildlife resources (terrestrial) was completed following the framework outlined in the Project's Application Information Requirements and Valued Components Selection document. Significance thresholds for wildlife resources (terrestrial) present the limits of an acceptable change in a measurable parameter or state of regional wildlife populations and are based on applicable legislation, regulatory guidance documents, or other management standards (including cultural use). Where thresholds are not set by legislation, policy, and regulatory guidance documents, a threshold has been developed based on scientific literature and professional judgement, and with the incorporation of available traditional ecological knowledge. Significance thresholds vary between species or species groups and potential effects. As described in Section 4.7.2.8 of the Application, a residual effect is considered significant if it affects the viability of local or regional terrestrial wildlife populations. The viability of species can be affected by several factors, including reproduction, mortality, immigration, emigration, and habitat availability, where viability was defined in the Application as the long-term maintenance in abundance, diversity, or distribution of wildlife through natural recruitment. Viability is inclusive of maintaining sustainable wildlife populations from both a conservation status and cultural use perspective. Aurora LNG has determined that residual effects of the Project on preferred and critical habitat for marbled murrelet is not significant, based on it's evaluation of the extent of effects in combination with proposed mitigation measures (including the Marbled Murrelet Management Plan). Mitigation measures applicable to marbled murrelet are listed in Table 4.7-17. Please see responses to responses to comments #2236.1 and #2244.1 for further information. Residual effects of the Project on preferred habitat for little brown myotis is also expected to be not significant. As with marbled murrelet, Aurora LNG has committed to several bat-specific mitigation measures, including the development of a Bat Management Plan, which will outline measures to avoid, reduce, and mitigate for potential effects from Project infrastructure and activities. Mitigation measures applicable to little brown myotis (and other bat species) are listed in Table 4.7-17. Collectively, these measures are expected to limit the Project's contribution to cumulative effects on little brown myotis. Aurora LNG's proposed mitigation measures for change in habitat have incorporated federal and provincial regulations and guidelines as well as measures that have been recommended or proven effective on similar projects within the RAA with associated marine terminals. With the implementation of mitigation measures, the partial loss of habitats expected to support breeding or roosting by marbled murrelet and little brown myotis (respectively), will be offset for the Project and will reduce the net effect of change in habitat removed by construction of the LNG facility and associated infrastructure. Information on harvested species presented in traditional ecological knowledge studies from Aboriginal groups informed the assessment and characterization of residual Project effects, and is described in Section 4.7.2.2 and 4.7.2.3.
2249.1	round 1	Gitxaala Nation	4.8	Freshwater Fish and Fish Habitat	Please include benthic and macro invertebrates in the assessment of freshwater fish and fish habitat. How will water quality affect the benthic and macro invertebrates? How will this in turn affect food sources for fish? How will removal of instream habitat affect recruitment of benthic and macro invertebrates. How will this be monitored? This assessment is incomplete without the inclusion of this information.	Freshwater benthic and macro invertebrates were not included in the baseline surveys of Freshwater Fish and Fish Habitat for the Project as the assessment of Freshwater Fish and Fish Habitat focusses on CRA fisheries, as defined in the Fisheries Act. By identifying important fish that might be affected by the Project (CRA fish species) and developing mitigation measures to protect these resources, which includes protecting their habitat and the fish and invertebrate communities that live in it, the overall effects on the ecological function of the aquatic ecosystems can be reduced or avoided. Invertebrates and other aquatic life in the freshwater environment are considered as part of the freshwater habitat ecosystem and are not defined individually in the assessment. There are no predicted residual effects to water quality in watercourses retained within and around the project footprint, and therefore no predicted effects on the benthic invertebrate communities within those watercourses.
2250.1	round 1	Gitxaala Nation	Appendix K	Freshwater Fish and Fish Habitat	Some watercourses that were investigated for fish presence were only assessed during summer months. How did low seasonal water levels affect fish habitat sampling and assessment? Some watercourses may only provide habitat for overwintering, and thus would not have had CRA fish present in the summer.	Watercourse reaches identified as not fish-bearing (i.e., reaches above a known permanent barrier to fish passage) were sampled for fish presence in two or three seasons to confirm fish presence/absence. If all sections of a watercourse above a known barrier were determined to be dry or not have the minimum water depths to support fish at the same time, the reaches above the barrier were designated as not fish-bearing. Reaches where only one season of sampling occurred, but no barrier was present, were conservatively identified as suspected fish-bearing even though no fish were caught during sampling. A second season of sampling should be completed to confirm fish presence/absence. The majority of these watercourses are outside of the PDA, and will not be removed or modified due to Project construction (J watercourse system).
2251.1	round 1	Gitxaala Nation	Appendix K	Freshwater Fish and Fish Habitat	What was the criteria for selecting the 60 watercourse reaches, of 106 within or connected to the PDA? What assumption has been made about the 46 watercourse reaches not surveyed? Is it assumed that these watercourses do not have CRA fish species present? Or no fish at all present?	A desktop review was completed for Digby Island and identified 106 reaches on the island. Fish presence and habitat surveys were conducted in the watercourse reaches that are within, or directly connected to the PDA, including the reference reaches. This totalled 60 reaches. Sampling locations were systematically selected to provide adequate representation of the freshwater communities within, and in the vicinity of, the Project area. Data from fish presence and habitat surveys were used to complement and verify results of the desktop review.
2252.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	Please confirm whether the 32,752m2 of fish habitat identified within 39,356m2 of instream area includes all 106 watercourses or just the 60 watercourses investigated.	The 32,752 m2 of fish habitat identified in the environmental assessment is part of the 39,356 m2of instream area represents the watercourses located in, or connected to the PDA. The 106 watercourse reaches represent all watercourse reaches on Digby island, only 60 of which connect directly to, or are within, the PDA. It is these 60 watercourse reaches that were surveyed for fish presence and habitat, and from these area calculations were generated.
2253.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	"Instream and riparian areas of watercourses determined to be non-fish-bearing are not considered fish habitat". Please explain this statement given that suspected non-classified drainages (NCDs) connected upstream of some of the most valuable fish habitat (J1.1.1, J2.1.2L and J2.1.1.1L) would fall into this category. These reaches provide food and nutrients, and contribute to water quality and water quantity in the downstream fish-bearing reaches.	Instream and riparian areas of watercourses determined to be not fish-bearing are not considered fish habitat for the purposes of habitat loss calculations in the assessment and fish habitat offsetting plan. While these areas support and maintain the quality of existing fish habitat through the contributions of water, food, and nutrients, they do not represent direct loss of instream habitat utilized by CRA fish. The final agreed to gain-to-loss ratio will provide, at a minimum, enough habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the project as required by the Fisheries Protection Policy Statement..
2254.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	If only 60 watercourses were surveyed, please explain how 97 watercourse reaches were assigned a fish bearing status, and how 70 watercourse reaches were found to be CRA fish-bearing.	A desktop review was completed for all 106 reaches identified on Digby Island. Sample locations (60) were identified in the known or suspected fish-bearing reaches and suspected not fish-bearing reaches within or connected to the PDA. These sample locations were selected to characterize the freshwater fish communities within, and in the vicinity of, the Project area. Data from the ground surveys were used to complement or verify results of the desktop review. Fish-bearing reaches were proven by the capture of fish in the field or assumed based on information found in the desk-top review. Fish-bearing reaches supporting CRA fish species were similarly proven by the capture of salmon, trout, or charr or assumed based on access to this habitat by these species (i.e., no barriers to fish migrations). Fish-bearing reaches not supporting CRA fish species were those where no salmon, trout, or charr were captured in the field and where barriers to fish migrations existed or where habitat conditions (e.g., low pH) were unsuitable for CRA fish. Those unsurveyed reaches outside of the PDA where no barriers were known to exist, or those reaches connected to known fish bearing reaches were considered fish-bearing by default. Of the 106 reaches that were mapped on Digby Island, 97 are thought to be fish bearing and/or a classified stream. There are a total of 24 streams that are thought to be fish bearing, including those in the reference stream (S), and these 24 streams have 70 reaches. The total of 97 fish-bearing reaches included those that were confirmed fish bearing, and those that were connected to fish-bearing watercourses and by default were classified as streams and considered fish bearing. This includes reaches inside, and outside of the PDA.
2255.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	Why was dissolved oxygen only measured for 23 of the watercourse reaches?	In situ dissolved oxygen (DO) was measured at a sub-sample of fish-bearing reaches where water depths and conditions were sufficient to do so. While in situ DO was not measured at all sampling locations, it should be noted that at locations where it was measured, the value represents an isolated, single snapshot in time of DO levels within any given section of stream, and the value was not used to infer the fish-bearing status of sampled stream reaches.
2256.1	round 1	Gitxaala Nation	4.8.3.2	Freshwater Fish and Fish Habitat	Where were instances of turbidity that were not low? Why was turbidity not measured but only visually assessed? Were background metals sampled? If so, please provide results.	Turbidity was assessed as a qualitative visual estimate, as an indication of what stream conditions were like at the time of sampling. Measurements of turbidity (NTUs) were not taken at the time of habitat surveys, as each measurement would represent only an isolated, single event, snapshot in time of turbidity levels at the time of sampling. Specific measurements of turbidity will be used during construction monitoring to maintain levels of suspended sediments within guidelines for the protection of aquatic life. For streams in BC, section 4.2.5.7 of the Reconnaissance (1:20 000) Fish and Fish Habitat Inventory Standards and Procedures(as were used during the baseline data collection - see Appendix K), only requires the visual estimation of turbidity. Background metals were not sampled as there are no predicted effects on metal levels resulting from the project.
2257.1	round 1	Gitxaala Nation	4.8.3.3	Vegetation and Wetland Resources	"There are 60 watercourse reaches within, or adjacent to the PDA, and from these 60 reaches, 54 were sampled for fish." This statement is inconsistent with the information provided above.	Aurora LNG acknowledges that this is an error. The statement in Section 4.8.3.2 which reads "Of the 106 freshwater watercourse reaches within, or adjacent to, the PDA, 60 watercourse reaches were surveyed for fish presence. " should be changed to "Of the 106 freshwater watercourse reaches within, or adjacent to, the PDA, 60 watercourse reaches were surveyed for fish or fish habitat." Fish habitat assessments were completed in 60 reaches and fish sampling was conducted at 54 of the 60 reaches. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
2258.1	round 1	Gitxaala Nation	4.8.3.3	Freshwater Fish and Fish Habitat	"There are no known traditional use sites, or harvest locations, of freshwater fish within the PDA." However, discussion mentions importance of Pacific salmon, trout and char to FNs. Given the anadromous nature of these species, the freshwater environment is of importance to FNs whether they specifically harvested at the freshwater locations within the PDA, or not.	Aurora LNG acknowledges and agrees with the comment. While there are no specific harvest locations or traditional use sites identified in the freshwater areas within the PDA, it is recognized that the fish that inhabit or temporarily make use of these areas are fish that may be important to First Nations at locations outside of the PDA.
2259.1	round 1	Gitxaala Nation	4.8.4	Freshwater Fish and Fish Habitat	Please describe how waste management will not interact with change in fish habitat, but will interact with fish mortality and health and fish abundance. Please describe whether LNG production will require the transportation of materials over any watercourses.	Waste management is not expected to interact with change in fish habitat during the decommissioning phase of the project (as indicated in Table 4.8-9), as the fish habitat in areas near the infrastructure will have already been removed. As part of the facility construction, bridges are expected to be built over the retained watercourses to facilitate transportation of personnel, vehicles, and materials throughout the site. The potential for interaction with change in fish health and fish abundance exists through all phases of the Project as transportation of waste materials within and away from the site will occur in construction through operations and decommissioning.
2260.1	round 1	Gitxaala Nation	4.8.5	Freshwater Fish and Fish Habitat	"All watercourses in the LAA were assumed to be fish-bearing, unless proven otherwise by field assessment." Please explain how this was determined based on a few field surveys? What about watercourse reaches not sampled? How was fish status confirmed in those reaches? How much sampling effort was required to "prove" no fish present? Was seasonal habitat use taken into consideration?	Watercourse reaches were identified as not fish-bearing if they were located upstream of a known permanent barrier to fish passage and no fish were captured during sampling over two or three seasons to confirm fish presence/absence. Reaches above a known barrier for which only one season of sampling was completed were identified as "suspected" not fish-bearing, acknowledging that a second season of sampling should be completed to confirm fish presence/absence. Once a second season of sampling was completed, reaches were designated as fish-bearing or not fish-bearing according to results of the surveys. All assessed reaches were eventually given one of the following designations: "fish-bearing", "suspected fish-bearing", or "not fish-bearing". All fish-bearing and suspected fish-bearing reaches were considered fish habitat for the purposes of the assessment. If all sections of a watercourse above a known barrier were determined to be dry or not have the minimum water depths to support fish at the same time, the reaches above the barrier were designated as not fish-bearing. Seasonal habitat use was considered, as baseline sampling occurred throughout the year.
2261.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Table 4.8-10 Potential effects on fish habitat should include change in food and nutrients supplies/concentrations for grading and use of industrial equipment under construction, and waste management under operations. Vehicle traffic and Organic debris management should include change in food availability and nutrients.	Potential changes in food and nutrient supply are assessed under vegetation clearing during the construction phase of the project (Section 4.8.5.2) as the majority of allochthonous food and nutrient inputs in project area watercourses are afforded by insect and leaf litter drop from stream side vegetation.
2262.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Table 4.8-11: Exclusion fencing is to be installed - how far from habitat will fencing be installed? Please describe which BMPs will be used. Will there be the creation of a Construction Environmental Management Plan? Who is responsible for this? What permits will be required? How has water quality been included in the mitigation measures to avoid or reduce change in fish habitat? How will water quality be monitored and measured, and what parameters? Metals, oil & grease, PAHs, pH, temperature, dissolved oxygen? Where will water be discharged from and where will it be discharged to?	Further details on construction and operations monitoring, mitigation measures, best management practices, erosion and sediment control, wastewater management, and compliance monitoring, etc. will be provided in the Marine and Freshwater Resources Management Plan (equivalent to the construction environmental management plan) developed for the project. The plan will be developed prior to the phase of the Project for which is required. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan. Storm or wastewater will not be discharged from the site until it has been tested and confirmed that it meets regulatory requirements.
2263.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Please explain the difference between "important spawning habitat" and "spawning habitat".	For the purpose of this section of the assessment, spawning habitat refers to instream areas of project area watercourses where conditions (e.g., substrates, depths, water velocity) are sufficient to provide the potential for spawning activity to occur, whereas important spawning habitat refers to instream areas with ideal spawning habitat characteristics (e.g,. redds, observed spawners)for a species observed using, or known to use, the specific location for spawning activity.
2264.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Please describe how the non-CRA fish bearing watercourses in the PDA contribute to food, nutrients, water quality and water quantity in the downstream fish-bearing reaches. The removal of all the non-CRA fish bearing watercourse reaches within the PDA represents an impact on fish habitat downstream, and potentially fish abundance.	Watercourses in the PDA that are being retained will have an intact 30 m vegetated riparian buffer, and their upstream watershed will remain intact. Aurora LNG is aware of the hydrological conditions associated with the PDA and surrounding area and recognizes that upstream areas of fish-bearing waters support and maintain the quality of existing fish habitat through the contributions of water, food, and nutrients; as such there will be detailed water management, erosion and sediment control plans in place and approved by regulators in advance of Project construction.
2265.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Quantification of fish habitat loss only includes fish-bearing watercourses. The loss of suspected non-fish bearing watercourses equals a degradation of fish habitat downstream. Impacts to food, nutrients, water quality and quantity.	Instream and riparian areas of watercourses determined to be not fish-bearing are not considered fish habitat for the purposes of habitat loss calculations in the assessment and fish habitat offsetting plan. While these areas support and maintain the quality existing fish habitat through the contributions of water, food, and nutrients, they do not represent direct loss of instream habitat utilized by CRA fish. The final agreed to gain-to-loss ratio for offsets will provide, at a minimum, enough habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the project as required by the Fisheries Protection Policy Statement and therefore overall productivity of the fishery will be maintained.

2266.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	Why has the Riparian Reserve Zone (RRZ) been used in the calculation of riparian losses when the text says the losses are based on the Riparian Management Area (RMA)? Please show RRZ widths used for the watercourse calculations.	The sentence referenced in the Application states: "Riparian losses are based on the RMA, which consists of the Riparian Management Zone and the Riparian Reserve Zone (RRZ) (BC MOF 1995; BC OGC 2016). The potentially affected riparian area is based on the width of the RRZ for the application of the watercourse classification (S1 – S6)." The first sentence is meant to be an introduction to the components of the RMA (two components, RRZ and RMZ) and the second sentence defines which component is being used to calculate riparian losses. The RRZ is chosen as the width to be used in calculating riparian losses, as this is the riparian buffer that should be retained in all cases (except where watercourses are crossed by a linear development) according to the OGC's Environmental Protection and Management Regulation. The RRZ used for calculating riparian habitat losses varies between 0 and 30 m within the PDA, depending upon the riparian class of the stream. Aurora LNG used a conservative approach and assumed a minimum 15 m RRZ on all riparian stream classes, including non-fish bearing (S5-6). Streams that were fish bearing had a RRZ of between 20 and 30 m on each side of the watercourse.
2267.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	"The five most important watercourse reaches (J5, J1.1, TT1, K2 and J2) with the most observed fish habitat…" Why have TT1 and K2 not been discussed until this point? K2 is also shown on the maps as a suspected non-fish bearing (CRA) watercourse. Does this mean K2 may contain other fish species other than CRA species? Why is K2 considered one of the most important? "Four of these reaches will retained, or will remain accessible after Project completion." Which four? J1.1, J5 and J2 will be retained, so between K2 and TT1, which one will remain accessible? By Project completion, does this mean construction phase or after decommissioning?	The statement "five most important watercourse reaches" was determined by the area available for fish, and J5, J2, J1.1, TT1 and K2 provided the most area of fish habitat. Of these five watercourse reaches, J5, J1.1, TT1, and J2, will remain accessible after Project construction and during operations. Watercourse TT1, in the northern part of the PDA, will not be removed, but will have a culvert or bridge installed that will maintain fish access and passage through that area. All applicable provincial and federal permitting will be completed prior to instream works in TT1. After the baseline study was completed, watercourse reach K2 was suspected to be non-fish bearing; access may currently be limited by a cascade barrier at the downstream end of the reach. No fish were captured in this reach during the baseline studies (see Appendix K - Technical Report); however, the reach was observed to contain habitat that would be suitable for spawning and rearing salmonids, if accessible. The description of the K2 fish habitat will be updated. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. "By Project completion" was meant to indicate the completion of Project construction and the start of operation of the facility.
2268.1	round 1	Gitxaala Nation	4.8.5.2	Freshwater Fish and Fish Habitat	How is a loss of 10,000m2 of instream habitat and 218,000m2 of riparian habitat considered a moderate magnitude residual effect, but with offsetting these are considered negligible? Compensation habitat is only being considered for fish-bearing watercourses that are to be lost, not the other 6,600m2 instream and 140,300m2 riparian habitat. In adition, habitat offsetting is not equivalent to retaining existing habitat. It can take generations for fish habitat to function as intended or equivalently to existing habitat. Furthermore, offsetting habitat must be in place and functioning before the loss of existing habitat, otherwise there is most certainly a negative impact on fish habitat.	Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates that all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the net residual effect to fisheries productivity will be negligible. Instream and riparian areas of watercourses determined to be not fish-bearing are not considered fish habitat for the purposes of habitat loss calculations in the assessment and fish habitat offsetting plan. While these areas support and maintain the quality of existing fish habitat through the contributions of water, food, and nutrients, they do not represent direct loss of instream habitat utilized by CRA fish. Within the detailed offset plan for the project, any time lags in the function of offset habitats will be considered in habitat balance calculations. Ratios of offset habitat to impacted habitat will be established that will account for any time lags.
2269.1	round 1	Gitxaala Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Table 4.8-14: See comments to Table 4.8-10.	Potential changes in food and nutrient supply are assessed under vegetation clearing during the construction phase of the project (Section 4.8.5.2) because this is the Project phase and activity during which the majority, if not all, of the allochthonous food and nutrient inputs provided by riparian vegetation to project area watercourses will be altered. Once this riparian vegetation is removed during construction, no additional effect from changes in food and nutrient concentrations are expected during subsequent phases.
2270.1	round 1	Gitxaala Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Structures or materials placed in water may also reduce complexity and cover if surfaces are smooth, such as a culvert or bridge abutment.	Aurora LNG agrees with the comment. Potential effects of structures or materials placed below the high water mark of a stream has been considered in the assessment.
2271.1	round 1	Gitxaala Nation	4.8	Freshwater Fish and Fish Habitat	How has change in water quantity/base flows due to infilling of watercourse reaches upstream of fish habitat been considered? This needs to be modelled. How will these changes be monitored? This assessment is not complete without the inclusion of effects of changes to water flows.	No effect on water quantity/base flows is expected as flows will be maintained within watercourses that will remain in the PDA (J1-5 and J1.1). Runoff from areas within the PDA will be collected, diverted around project infrastructure, and returned to the same drainage downstream, if possible; otherwise it will be directed through a storm water system and released into the marine environment. Storm water or wastewater from the site will be tested and treated, if required, to meet regulatory requirements prior to being discharged.
2272.1	round 1	Gitxaala Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Table 4.8-15: See comments to Table 4.8-11. Mitigation No 4.8.9 mentions a concrete wastewater plan. Who is responsible for this? Mitigation No 4.8.10 should include the preparation of a Construction Environmental Management Plan, training for employees, and a spill response plan. Responsible parties should also be identified. Mitigation measures should also include water quality monitoring during operations, fish sampling and monitoring plans, fish offsetting monitoring, fish tissues for contaminants if water quality is an issue, water flow monitoring and an adaptive management plan.	Details on measures pertaining to fish and fish habitat such as construction monitoring, additional construction mitigation measures, best management practices, wastewater treatment, erosion and sediment control, and compliance monitoring will be provided in the Marine and Freshwater Resources Management Plan developed for the project. Requirements for both effectiveness and compliance monitoring for project related fish habitat offsets will be described in the Fish Habitat Offsetting Plan for the project.
2273.1	round 1	Gitxaala Nation	4.8.5.3	Freshwater Fish and Fish Habitat	Acidification and Eutrophication: "Acidification is not expected in 92% of lakes and streams in the LAA assessed for three of the four case scenarios…" Which three scenarios? And what happens in the fourth? "Overall, no changes in pH above the biological limit are anticipated, and no fish mortality is anticipated as a result of acidification." What about pH below the lower threshold of 6.5? This is acidification, and many watercourses are already well below this. J7 is expected to receive above the critical threshold for Nitrogen. While no CRA fish species were present (three spine stickleback were), what will this do to the stickleback, and the downstream CRA fish-bearing watercourse reaches including J5 and associated reaches?	The four emissions cases that were modelled are the Base case, Application case, Project case and Cumulative effects assessment (CEA) case. Under the Base case, three lakes (ADSW9, LAK12, LAK13) show a predicted critical load exceedance indicating that at baseline conditions these lakes are acid sensitive. Zero depositional input would result in a modelled critical load exceedance for these lakes due to low acid neutralizing capacity, low pH and alkalinity. Therefore, for the Project and Application case (which incorporate estimated deposition from project and background emissions) these three lakes also indicate a modelled exceedance to the critical load. For the CEA case, (which incorporates estimated deposition from project, background and future regional industrial emissions) two additional lakes (NC309 and NC366) show a predicted critical load exceedance. For the CEA case, three streams have also been predicted to have a pH change above 0.3 units (conservative biological threshold). The model used to predict pH changes relates pH to acid neutralizing capacity which was based on lake systems as there isn't an applicable stream system. The model may overestimate effects to streams as streams have higher rates of water renewal due to water flow. Cumulative emissions can be considered conservative as they incorporate some regional projects that are not expected to be implemented. In addition, a more conservative threshold of 0.3 was chosen to align with previous regional studies, however pH changes of up to 0.4 are still considered protective of aquatic biota. Modelled pH changes for these three streams are at or below the 0.4 threshold. It is anticipated that lakes and streams that indicate predicted exceedances will be incorporated into the followup monitoring program for acidification and eutrophication.
2274.1	round 1	Gitxaala Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Table 4.8-16: See comments from Table 4.8-10	Potential changes in food and nutrient supply are assessed in Section 4.8.5.2 under vegetation clearing during the construction phase of the project as the majority of allochthonous food and nutrient inputs in project area watercourses are afforded by insect and leaf litter drop from stream side vegetation.
2275.1	round 1	Gitxaala Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Excavation: "Lower flows may limit access to upper reaches of watercourses, as well as cause increased water temperatures, changing the use of existing habitat." How will this be predicted (modelled?), monitored or mitigated?	No effect on water quantity/base flows is expected as flows will be maintained within watercourses that will remain in the PDA (J1-5 and J1.1). Runoff from areas within the PDA will be collected, diverted around project infrastructure, and returned to the same drainage downstream, if possible; otherwise it will be directed through a storm water system and released into the marine environment Delusion Bay. Storm water or wastewater from the site will be tested and treated, if required, to meet regulatory requirements prior to being discharged.
2276.1	round 1	Gitxaala Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Avoidance: "Mitigation of serious harm to CRA fish under the Fisheries Act, through the loss of freshwater habitat, will be through the development and implementation of the fish and fish habitat offsetting plan, with the goal to achieve an overall no-net loss of the productive capacity of the freshwater environment on Digby Island." Productive capacity must include food, nutrients, water quality and quantity. Loss of upstream habitat will impact downstream reaches that are being retained, thus a decreasing productive capacity with changes in food, nutrients, water flows, temperature and other potential water quality parameters. In addition, offsetting habitat must be in place and functioning as intended prior to impacts for a "no-net loss".	There are no measurable changes to habitat productivity expected in the retained watercourses (J1.1 and J5). All offset habitat created for the project will be of similar or better quality to the habitat lost through project development, and therefore overall productivity of the fishery will be maintained. Within the detailed offset plan for the project, any time lags between loss of the original habitat and confirmed functionality of the offset habitats will be considered in habitat balance calculations, and additional offsets or mitigation measures may be required to account for these time lags.
2277.1	round 1	Gitxaala Nation	4.8.5.4	Freshwater Fish and Fish Habitat	CRA Fish Species Distribution and Abundance: Catch per unit effort measurements shown are only applicable for seine netting, and do not represent the fish sampling program as a whole.	The catch per unit effort (CPUE) results referenced in section 4.8.5.4 include electrofishing effort and seining. The range provided was to demonstrate that a wide range of fish densities were present in the project areas, but overall number of captured fish, per unit of effort, were not high. Additional details on CPUE are provided in Section 4.8.3.2 and in the technical report in Appendix K.
2278.1	round 1	Gitxaala Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Summary: Negligible to low magnitude effects are only manageable if offsetting habitat is functioning as intended prior to impacts. See comment above regarding avoidance and productive capacity. Will lost habitat be re-opened during decommissioning?	Aurora LNG will conduct effectiveness monitoring on all offset habitat constructed. The effectiveness monitoring will assess the offset habitat against specific parameters to confirm that the habitat functions as proposed. In the event that offset habitat does not function as intended, Aurora LNG will be required to implement additional mitigation measures or create additional habitat so that there is no detrimental effect to the productivity of the local fisheries. Aurora LNG will revegetate the site and restore drainage patterns, where possible, as part of the decommissioning phase of the Project which will reconnect upstream habitats to downstream habitats. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Decommissioning and Abandonment Plans.
2279.1	round 1	Gitxaala Nation	4.8.5.4	Freshwater Fish and Fish Habitat	Likelihood of Residual Effects We disagree with the residual effects assessment. Only 60/106 watercourse reaches sampled. Loss of food, nutrients, and water flow. And loss of potential fish habitat - just because fish are not present currently (or not sampled), this does not mean the watercourse does not have the potential to have fish in the future.	While only a subsample of watercourse reaches identified on Digby Island were sampled (57%), the selected watercourse reaches included watercourse reaches that may be affected by the Project. The subsample was selected to provide a representation of the freshwater communities within, and in the vicinity of, the Project area. Data from ground surveys were used to complement and verify results of the desktop review. As the watercourses being retained within the PDA will have undisturbed riparian buffers and mostly undisturbed upstream areas there are no measurable changes to habitat productivity due to loss of food, nutrients, or flow expected in these watercourses.
2280.1	round 1	Gitxaala Nation	4.8.6.1	Freshwater Fish and Fish Habitat	Please describe how a loss of 1/3 of the available fish habitat in the LAA is considered a "relatively small area of the available fish habitat".	The description of the loss of fish habitat was meant only as a frame of reference to the scale of habitat available in the LAA; the loss of approximately 33% of the available habitat within the LAA means that 67% of the habitat would be retained. These losses would be mitigated by offsetting such that the productivity of the local fishery would be maintained or potentially improved. The loss of habitat is smaller when compared to the remaining habitat within a 10 km radius of the PDA (i.e., within the RAA) which also contributed to the productivity of the fishery.
2281.1	round 1	Gitxaala Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Cumulative Effects Mechanisms: "Important habitats within fish-bearing watercourses in the LAA that are permanently altered or destroyed by Project activities, that overlap spatially and temporally with effects from other projects, can affect overall productivity of the fishery before disturbed habitats can recover or offset habitats become fully functional." Offset habitat must be functional before impacts take place.	The detailed offset plan will consider time lags in the function of offset habitats when calculating the Project's offsetting habitat balance. Typically, additional offsets or mitigation measures may be required to account for an increased time lag between habitat changes and offsetting. Offsetting requirements will be determined during the permitting phase of the Project.
2282.1	round 1	Gitxaala Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Cumulative Effects Mitigation: "With the application of mitigation identified in Section 4.8.5.2, along with the offsetting measures described in the Project specific CFHOP, the losses of fish habitat productivity, due to Project construction and operational activities, will be effectively counterbalanced." We disagree with this statement. Effects have not fully been described or considered and productivity will most certainly be affected.	Aurora LNG acknowledges the comment from Gitxaala Nation. Fish habitat impacts resulting in serious harm to fish (which includes both permanent alteration of habitat and the death of fish) associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity increases associated with offset measures, and the net residual effect to fisheries productivity will be negligible.
2283.1	round 1	Gitxaala Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Residual Cumulative Effects: "The area of instream fish habitat affected by the Project represents 33% of the available fish habitat in the PDA/LAA." The PDA and the LAA are not the same. Please fix. What is the fate of the watercourse reaches not surveyed? "No loss of spawning habitat is predicted due to the development of the Project." This statement is simply not true. J2.1, J3.1 are reaches that contain spawning habitat that will not be retained.	Agreed, the LAA and the PDA do not represent the same area. This should have been written as only the PDA ("The area of instream fish habitat affected by the Project represents 33% of the available fish habitat in the PDA"). An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. Watercourse reaches that have not been surveyed for fish presence or habitat are outside of the PDA, and do not have a direction connection to the PDA. These watercoursesand will be retained and no habitat removal or clearing will occur in these areas; therefore, not all watercourse were ground-truthed in these areas. All watercourses within the PDA that will be removed for project development have been surveyed for fish presence or habitat, with the exception of those streams that were identified by LiDAR only and could not be ground-truthed (identified by a 'L' at the end of the watercourse identifier). Additionally, watercourse reaches or are upstream of a known not fish-bearing reach, with a confirmed barrier to fish passage, were not all sampled for fish presence. The basis of the serious harm for fish habitat accounted for all fish habitat within the PDA to be infilled with the exception of J5 and J1.1. Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates that all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the net residual effect to fisheries productivity will be negligible.
2284.1	round 1	Gitxaala Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Residual Cumulative Effects: Consistent argument that the Project effects represent a "relatively small area" of the available fish habitat. This is meaningless argument unless it can be backed up with numbers and facts stating this loss is not significant. "…the fish habitat offsetting plan will be designed to achieve an overall net gain in fish productivity, and there is no predicted population-level effects to anadromous fish species in the RAA." This is the first mention of the offsetting plan having a "net gain". Why has this only been mentioned at this point in the assessment?	Use of the term "relatively small area" was used as a frame of reference to indicate that the area of loss (10,857 m2 or 33% of the total available habitat) was relatively small in comparison to the amount of available fish habitat in the LAA (32,752 m2) and the amount of fish habitat that would remain in the LAA (21,895 m2 or 67% of the total available habitat). The final offset plan (as approved by DFO) will provide more habitat and/or higher quality habitat than will be lost due to construction of the project. The offset ratio will take in to account any uncertainties in fish production and any time lags that may result. The final agreed to gain-to-loss ratio will provide, at a minimum, enough habitat creation, enhancement, or restoration to offset the CRA fish production lost due to habitat losses caused by the project as required by the Fisheries Protection Policy Statement.
2285.1	round 1	Gitxaala Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Summary: "This cumulative effect is anticipated to be reversible immediately after reclamation of the site." This statement is simply false. Restoring filled in watercourses that have been buried for approximately 30 years will take time to become functional. How long will reclamation take? How long until the watercourses are functional?	There will be no net cumulative effect on change in fish habitat as all adverse effects on fish habitat will be offset as legislated under the federal Fisheries Act. If there is a time lag between the time habitat is adversely affected and the time created offset habitat is completed and functional, there will be a temporal effect that will be reversed once offset habitats are functional. Any temporary loss of productivity will be accounted for in the habitat balance specified in the detailed habitat offset plan developed for the project. Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the likelihood of a net residual effect is low. The statement in Section 4.8.6.3 will be revised to read: Residual effects are anticipated to be reversible once offset habitats are functional and consequently there are no predicted cumulative effects. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.

2286.1	round 1	Gitxaala Nation	4.8.6.3	Freshwater Fish and Fish Habitat	Likelihood of residual cumulative effects: Likelihood has been considered low. We disagree based on the arguments addressed above.	Fish habitat losses associated with the project will be counterbalanced by offset measures that will be determined in a detailed fish habitat offset plan for the project. The plan will be part of an authorization application under the Fisheries Act, which stipulates all "serious harm" to fish (which includes both permanent alteration of habitat and the death of fish), which cannot be mitigated or avoided, must be counterbalanced by appropriate offset measures. As effective offsetting is federally legislated, by law, any losses of productivity to fisheries will be balanced by productivity associated with offset measures, and the likelihood of a net residual effect is low. There will be no net cumulative effect on change in fish habitat as all adverse effects on fish habitat will be offset as legislated under the federal Fisheries Act. If there is a time lag between the time fish habitat is adversely affected and the time when created offset habitat is completed and functional, there will be a temporal effect which will be reversed once offset habitats are functional. Any temporary loss of productivity will be accounted for in the habitat balance specified in the detailed fish habitat offset plan developed for the project. A correction will be made to Section 4.8.6.3 so that the statement reads: Residual effects are anticipated to be reversible once offset habitats are functional and consequently there are no predicted cumulative effects. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
2287.1	round 1	Gitxaala Nation	4.8.6.4	Freshwater Fish and Fish Habitat	Concerns re: acidification: Please explain how five lakes anticipated to exceed critical loads for acidification for the CEA case are not expected to have concerns for acidification. Please show, do not just reference. What about J7? This waterbody has not been mentioned in this section. Section also references the LAA, which should be the RAA for cumulative effects."Additional studies may be needed to determine the accuracy of the predictions and the potential effects of acidification on fish health on the Project area." Please indicate when these studies will be undertaken and when results will be incorporated.	The four emissions cases that were modelled are the Base case, Application case, Project case and Cumulative effects assessment (CEA) case. Under the Base case three lakes (ADSW9, LAK12, LAK13) (see Section 4.5) show a predicted critical load exceedance, indicating that at baseline conditions these lakes are acid sensitive. Zero depositional input would result in a modelled critical load exceedance for these lakes due to low acid neutralizing capacity, low pH and alkalinity. Therefore, for the Project and Application case (which incorporate estimated deposition from project and background emissions) these three lakes also indicate a modelled exceedance to the critical load. For the CEA case, (which incorporates estimated deposition from project, background and future regional industrial emissions) two additional lakes (NC309 and NC366) show a predicted critical load exceedance. For the CEA case, three watercourses (TT1, J6 and J1/2) have also been predicted to have a pH change above 0.3 units (conservative biological threshold). Watercourse J7 is not predicted to have this change. It is anticipated that lakes and streams that indicate predicted exceedances will be incorporated into future monitoring programs to monitor pH changes. Details of the proposed follow-up program on acidification and eutrophication (noted in Table 15-1 of the Application) will be determined in coordination with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Note that this program would be to monitor any changes that may occur during facility operations. LAA references are to provide details on the location of the modelled effects, the RAA is specifically indicated in the discussion on cumulative and residual effects in section 4.8.6.4.
2288.1	round 1	Gitxaala Nation	4.8.6.5	Freshwater Fish and Fish Habitat	CPUE numbers are only for seining results. Not representative of fish populations as a whole for the study.	The CPUE results referenced in section 4.8.6.5 include electrofishing effort and seining. The range provided was to demonstrate that a wide range of fish densities was present in the project areas, but overall number of captured fish, per unit of effort, was not high. Additional details on CPUE are provided in section 4.8.3.2 and in the technical report in Appendix K.
2289.1	round 1	Gitxaala Nation	4.8.6.5	Freshwater Fish and Fish Habitat	Assumption that the LAA supports only a small population of fish for a "portion of their life cycle" as justification for impacts is inappropriate. The portion of the life cycle within the LAA for CRA species is highly important. Overwintering habitat is generally considered a limiting factor for salmonid populations, and spawning habitat is critical.	The assumption will be revised as follows: The majority of watercourses in the LAA support a small population of CRA fish species for a portion of their life cycle. The project design has been modified to retain watercourses in which CRA populations carry out one or more critical life-stages. These watercourses include J1-5 and J1.1, which contain the highest quality, deep channel habitat in the LAA, and which provides fish opportunities to carry out critical stages in their life-cycle (e.g., spawning. overwintering). An errata document has been created that captures these corrections and it will be filed with the BC EAO.
2290.1	round 1	Gitxaala Nation	4.8.9	Freshwater Fish and Fish Habitat	Follow-up monitoring is absolutely necessary. Monitoring should include water quality, water/flow levels, fish abundance and distribution, benthic or macro invertebrates, and must include monitoring of the offsetting habitat. This is important to determine if impacts to watercourses are indeed negligible, or require further mitigation or adaptive management.	Compliance monitoring will occur to verify implementation of Project mitigation measures and adherence to regulatory requirements of permits, authorizations and EAC conditions (see Section 15.3 of the Application). Requirements for both effectiveness and compliance monitoring for project related habitat offsets will be described in the Project fish habitat offset plan, which will follow the Fisheries Productivity Investment Policy: A proponent's Guide to Offsetting, as required by DFO to meet the requirements for permitting and offsetting under the Fisheries Act.
2291.1	round 1	Gitxaala Nation	4.9.4	Marine Fish and Fish Habitat	During screening, the proponent responded to our comment (screening IR #112) with the answer found in column g (proponent response). We believe that there is still outstanding information and require the additional question(s) posed in column h be responded to. See screening comment #112: Information regarding potential effects of cooling tower effluent have not been identified Working Group Determination of Status column : Please indicate the size and extent of the mixing zone and the fisheries exclusions zone surrounding the outfall	Modelling will be conducted as part of Project design to determine the size and extent of the outfall effluent mixing zone and the results will inform the Project permitting stage. No fishery exclusions zones around the cooling water outfall are anticipated because there are no health or safety concerns associated with the effluent. See the "Discharge to the Marine Environment" technical memo for more details. The technical memo will be filed with the BC EAO.
2292.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	During screening, the proponent responded to our comment (screening IR #116) with the answer found in column g (proponent response). We believe that there is still outstanding information and require the additional question(s) posed in column h be responded to. For as Gitxaala's excel of their IR comments: Screening comment IR 116 -In some cases, mitigation measures are not described in sufficient detail to evaluate their efficacy. This will be addressed further at review stage. Proponent Response - The mitigation measures identified in the Marine Fish and Fish Habitat VC are based on an understanding of existing conditions, expected construction methods and timing, professional experience with similar projects in the Pacific North Coast of BC, and industry-accepted best management practices. In most cases, mitigation measures proposed for marine fish and fish habitat are standard and have been proven to be effective. As per the Application Information Requirements, each mitigation measure was described in terms of how it will mitigate potential effects on marine fish and fish habitat (i.e., the mechanism), why it was chosen (i.e., rationale), its expected success, potential risks and uncertainties associated with the measure (if any), the time required for it to become effective, and the Project phase during which the measure will be implemented. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan. WG determination status of Proponent Response column - The proponent indicates a methodology (mechanism, rationale, expected success, risks, uncertainties) in the response provided. It is Gitxaala's position that the details regarding mitigation (the "how") are insufficient to be able to evaluate the success of the measures proposed. In the absence of details regarding implementation, it is not possible for external reviewers to test the hypothesis that the mitigation will be sufficiently successful to justify a determination of "no significant effect following mitigation." Gitxaala therefore reiterates its request for a description of detailed mitigation measures that include, among other things, thresholds for adaptive management.	An understanding of the effectiveness of mitigation measures can be taken from their application on other projects. These past examples serve as 'field tests' of "the hypothesis" that the mitigation is effective. This consideration was given to all mitigation measures and is implicit in the development of best-management practices, which Aurora LNG has adopted wherever applicable. With regards to effectiveness of mitigation measures on the present Project specifically, the EA process accommodates for the fact that the only absolutely certain way to "test the hypothesis that the mitigation will be sufficiently successful to justify a determination of no significant effect following mitigation" is to monitor Project effects during and after construction. As such, Aurora LNG has committed to compliance monitoring and to a series of follow-up programs, while recognizing that additional follow-up programs may be identified through consultation and engagement. Finally, it is standard EA practice to provide the level of detail included in the present application regarding mitigation measures. Further details are refined and described in management plans and monitoring programs once Project design is completely finalized. To this end, Aurora LNG has committed to develop a suite of Environmental and Operational Management Plans. Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2293.1	round 1	Gitxaala Nation	4.8.2.2 and Table 4.9-2	Freshwater Fish and Fish Habitat	Note that vessel wake is also a concern as it may affect safety of harvesters on shore or while fishing. Study designs need to consider this in order for the conclusions to be meaningful when carried forward to Part C.	The assessment of potential project effects on intertidal harvesters working on shore conservatively assumed that the harvesters are using both low tide periods in a day (this is unlikely, as the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping is temporally restricted on a daily basis; for approximately 83% of each day, wake from Project-related shipping cannot interact with intertidal harvesters The potential for Project-related ship wake to interact with fishing vessels on the water is also temporally limited. Please refer to the "Effects of Lost Fishing Time" technical memo for a description of conditions that must be met for a fisher-LNG carrier interaction to occur. The rationale outlined in that memo also applies to wake effects. The technical memo will be filed with the BC EAO. Section 6.5.4.2 states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches the shoreline or a fishing vessel is expected to be lower than the original wake height at the source vessel, and within the natural wave height range currently experienced by shoreline harvesters and fishing vessels. Moreover, Project-related traffic will travel along the existing and established shipping route currently used by other marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to access the Port of Prince Rupert. The predicted wake-related wave height 300 m from the centreline of travel of a large loaded LNG carrier traveling at 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by fishing vessels and shoreline harvesters, relating to natural weather patterns and existing shipping. Consequently, no significant effects from Project generated wake are predicted. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
2294.1	round 1	Gitxaala Nation	4.9.2.8	Marine Fish and Fish Habitat	The significance threshold is noted as an effect "that threatens the long-term persistence of a marine fish population." Please provide a definition of "persistence" as it relates to population numbers or percentage of population affected and the relationship to viability. Please also indicate whether salmon species have been assessed by river of origin as some populations may be disproportionately affected by impacts. This is relevant to First Nations harvesting, as harvest locations may be determined by cultural rules rather than by presence of alternative harvesting opportunities.	Population-level inference was determined based on existing information relating to (a) environmental and regulatory guidelines, and (b) the ecology of those species likely to be affected. Specifically, for (b), we focused on issues such as their use and dependency on the area being affected, the life stage affected, availability of similar habitat elsewhere, and the potential for that effect to interrupt a life process on a scale that could cause harm at the population level. This inference considers the biology and ecology of the taxa affected, such as (but not limited to) life-history, reproductive rate, feeding ecology, larval ecology (pelagic dispersal and resulting connectivity), and migratory behaviour. It also considers known information on environmental perturbations that those species are exposed to, and their resilience to those perturbations given their biology and ecology. With regards to the river of origin, it stands to reason that salmon from all salmon-bearing tributaries within the Skeena River must migrate through the river's mouth in order to reach the ocean or from the ocean to reach spawning tributaries. Since the Project lies within the Skeena estuary, Aurora LNG assumed that salmon from all salmon-bearing tributaries of the Skeena would be present within the area, and could therefore interact with the Project. Aurora LNG also assumed that salmon from other (non-Skeena) local and regional watersheds would be present in the marine area. Note that Aurora LNG will offset any residual serious harm to salmon resulting from changes to fish habitat or fish mortality resulting from the project.
2295.1	round 1	Gitxaala Nation	4.9.4	Marine Fish and Fish Habitat	The Application states that effects of plant operation "Are anticipated to primarily interact with the terrestrial environment…Therefore, potential effects associated with natural gas treatment and natural gas liquids extraction activities are not included in this assessment." This is an inappropriate approach to EA: cooling water from operations will be discharged to the marine environment so a potential pathway of effects exists. A defensible rationale for exclusion of this pathway of effects must be provided or the effect must be assessed. Please provide a rationale for the choice to exclude an effects assessment of cooling water release or assess this effect.	Potential effects to fish and fish habitat resulting from waste discharges to the marine environment are assessed in the Marine Fish and Fish Habitat assessment under Project Mechanisms for Change in Health, Section 4.9.5 of the Application. This section details the mechanisms for change in fish health due to waste discharges during construction, operation, and decommissioning. The assessment identifies waste discharges during construction and operations, including power generation cooling water and treated sanitary wastewater (which may include chlorine content). Mitigation 4.5.8 in Table 4.9-20 covers waste discharges to the marine environment. Potential residual effects are assessed in the Characterization of Residual Effects for Change in Fish Health, under Construction – Waste Management, and Operations – Waste Management. The fish and fish habitat assessment did not assess waste discharge characteristics (e.g. temperature, chlorine concentration) individually. Instead, the potential for all waste discharges to affect fish health was assessed. Waste discharges, regardless of make up, are managed in the same manner; permit conditions limit the quality and quantity of the waste discharged and impose monitoring requirements. Aurora LNG is legally-obliged to abide by permit conditions, which are designed to protect marine life. Therefore, waste discharge effects to fish and fish habitat were considered not significant. The assessment of potential effects to fish and fish habitat resulting from waste discharges is supported by information from the Marine Water Quality assessment (Section 4.5.11 of the Application). A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota. The marine water quality assessment therefore covers changes in water quality that may significantly affect fish and fish habitat. Table 4.5-19 in the Marine Water Quality section lists Project-related wastewater inputs to the marine environment as a project effect mechanism, and potential effects of this mechanism are assessed in Section 4.5.15. Mitigations 4.5.8 and 4.8.9 in Table 4.5-26 cover waste discharges to the marine environment. Potential residual effects to marine water quality related to waste management are characterized in the Characterization of Residual Effects component of Section 4.5.15.3. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2296.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	The Application notes that maintenance dredging may be required approximately once per decade. This represents and operational effect that must be considered. Please assess the effects of maintenance dredging.	The marine fish and fish habitat assessment considered potential effects associated with maintenance dredging under the 'change in habitat' effect (Section 4.9.5.2) and the 'change in mortality risk' effect (Section 4.9.5.4).
2297.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	Were residual effects of sediment disposal on glass sponges and cold water sponges known to be present at the disposal location (ROV study results, PNLWLNG) assessed? Please indicate the sections in the relevant TDRs that include this discussion.	Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea" which will be filed with the BC EAO.

2298.1	round 1	Gitxaala Nation	4.9.5	Marine Fish and Fish Habitat	A pathway of potential effects exists between liquid effluent and fish/fish habitat. A discussion of potential effects from cooling water release and/or release of residual chlorine in treated wastewater appears to be absent. Please indicate where these potential effects are discussed or provide a rationale for their exclusion.	Potential effects to fish and fish habitat resulting from waste discharges to the marine environment are assessed in the Marine Fish and Fish Habitat assessment under Project Mechanisms for Change in Health, Section 4.9.5 of the Application. This section details the mechanisms for change in fish health due to waste discharges during construction, operation, and decommissioning. The assessment identifies waste discharges during construction and operations, including power generation cooling water and treated sanitary wastewater (which may include chlorine content). Mitigation 4.5.8 in Table 4.9-20 covers waste discharges to the marine environment. Potential residual effects are assessed in the Characterization of Residual Effects for Change in Fish Health, under Construction – Waste Management, and Operations – Waste Management. The fish and fish habitat assessment did not assess waste discharge characteristics (e.g. temperature, chlorine concentration) individually. Instead, the potential for all waste discharges to affect fish health was assessed. Waste discharges, regardless of make up, are managed in the same manner; permit conditions limit the quality and quantity of the waste discharged and impose monitoring requirements. Aurora LNG is legally-obliged to abide by permit conditions, which are designed to protect marine life. Therefore, waste discharge effects to fish and fish habitat were considered not significant. The assessment of potential effects to fish and fish habitat resulting from waste discharges is supported by information from the Marine Water Quality assessment (Section 4.5.11 of the Application). A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota. The marine water quality assessment therefore covers changes in water quality that may significantly affect fish and fish habitat. Table 4.5-19 in the Marine Water Quality section lists Project-related wastewater inputs to the marine environment as a project effect mechanism, and potential effects of this mechanism are assessed in Section 4.5.15. Mitigations 4.5.8 and 4.8.9 in Table 4.5-26 cover waste discharges to the marine environment. Potential residual effects to marine water quality related to waste management are characterized in the Characterization of Residual Effects component of Section 4.5.15.3. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2299.1	round 1	Gitxaala Nation	Table 4.9-11	Marine Fish and Fish Habitat	Please note that Mitigation respecting last risk window timing for blasting, dredging, and disposal needs to be added.	The intent of Table 4.9-11 was to identify mitigation measures that will be implemented during construction, operations, and decommissioning activities to avoid or reduce potential changes in habitat. Potential changes in habitat are not expected to be influenced by the timing of dredging, disposal at sea, and underwater blasting activities, and as a result, mitigation measures in 4.9.8 (related to restricting dredging and disposal at sea to the least risk timing window) and 4.9.9 (related to restricting underwater blasting to the least risk timing window) were not included in Table 4.9-11. Aurora LNG is committed to conducting dredging, disposal at sea, and underwater blasting activities within the least risk timing window (November 30 - February 15), unless otherwise approved by DFO.
2300.1	round 1	Gitxaala Nation	Table 4.9-11	Marine Fish and Fish Habitat	No mitigation is present to address potential temperature and chemistry effects (Cl) of cooling water release.	Cooling tower blowdown water will meet CCME and BC water quality guidelines for temperature, outside of the mixing zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The exact size of the mixing zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the mixing zone, cannot be acutely toxic to fish. The effect of cooling tower blowdown waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2301.1	round 1	Gitxaala Nation	page 4.9-48	Marine Fish and Fish Habitat	Typo. The area requiring offsetting should be in square metres (not metres).	Aurora LNG acknowledges the typing error. The reference to the amount of marine fish habitat that may require offsetting should have been expressed in metres squared (m2) and not in metres (m). An errata document is being compiled that captures these corrections and it will be filed with the BC EAO.
2302.1	round 1	Gitxaala Nation	page 4.9-49	Marine Fish and Fish Habitat	Please confirm that the regulatory guideline being used is the 24-hour guideline (5mg/L)	The regulatory guideline referred to in the following sentence "Given the expected requirement for offsetting, permanent alteration to substrate as a result of dredging is considered to exceed regulatory guidelines..." refers to the Fisheries Act which prohibits any work, undertaking, or activity that results in serious harm to fish.Aurora LNG will need to offset for any work that results in serious harm to fish. Serious harm to fish is defined by DFO (2013) as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carr out one or more of their life processes; or c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Although it is not relevant to the paragraph referenced, which discusses thresholds for serious harm to fish, elsewhere in the application the 24 hour (5 mg/L) threshold is used for purposes of water quality monitoring (e.g. 4.9.5.5, in particular page 4.9-103 "ANTICIPATED TSS LEVELS DURING DISPOSAL AT SEA"). Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
2303.1	round 1	Gitxaala Nation	page 4.9-52	Marine Fish and Fish Habitat	Please indicate the expected seasons/months in which the 4 referenced disposal periods will occur. Please also indicate the number of disposal events in each disposal period.	A sediment transport model was used to predict sediment dispersion and deposition associated with disposal at sea activities (Appendix H, Technical Memorandum – Aurora LNG: Disposal at Sea Modelling). The model assumed that dredged material destined for disposal at sea would be disposed of during the DFO least risk timing window (i.e., November 30-February 15) over the course of two years. Dredgeate removed from the MOF, Berth 1 North, and Berth 1 South would be disposed of in year 1, while dredgeate removed from Berth 2 would be disposed of in year 2. Each of the four dredge pockets is associated with a disposal period that is identified in the following tables in Appendix H: Table 4-1 (MOF), Table 4-2 (Berth 1 North), Table 4-3 (Berth 1 South) and Table 4-4 (Berth 2). These tables also indicate the total number of disposal events (or 'trips') within each disposal period.
2304.1	round 1	Gitxaala Nation	page 4.9-52	Marine Fish and Fish Habitat	The Application states that "communities in this area have been previously exposed to sediment deposition and are anticipated to recover to these baseline conditions within one to five years". Glas sponges and cold water corals are present in the disposal area. Recovery rates of these species are unknown but are likely to be longer given sensitivity to sediments and slow growth rates. Please indicate for the presence of sensitive, slow-growing species in the characterization of residual effect.	Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea"which will be filed with the BC EAO.
2305.1	round 1	Gitxaala Nation	page 4.9-70	Marine Fish and Fish Habitat	The application notes literature that identifies 95dB as the threshold above which salmonids respond to sound and also that impulsive sound causes greater response than continuous sound. To better understand project effects, it would be useful to see a figure derived from modelling which identifies the 95dB contour for dredging. Please provide this figure to enable a better understanding of the geographic scope of potential behavioral disturbance to salmonids.	As stated in the Application, Section 4.9, pp. 4.9-69 to 4.9-70, lower frequency (< 380 Hz) underwater sounds with sound pressure levels above 95 dB are expected to be within the audible range of Pacific salmon. The cited literature (Feist et al. 1996; citing Hawkings and Johnstone 1978) does not, however, identify 95 dB as a threshold above which salmon respond to underwater sound. A figure showing the expected spatial extent of audible detection of a sound source by salmonids is therefore not considered a suitable proxy for the spatial extent of their potential behavioural disturbance. Reference Feist, B. E., J. J. Anderson and R. Miyamoto. 1996. Potential impacts of pile driving on juvenile pink (Oncorhynchus gorbuscha) and chum (O. keta) salmon behaviour and distribution. Fisheries Research Institute, School of Fisheries, University of Washington. FRI-UW-9603. pp. 58.
2306.1	round 1	Gitxaala Nation	page 4.9-76 AND	Marine Fish and Fish Habitat	The Application notes that herring are noted to reorient in response to vessel noise at a distance of up to 1000 m from the vessel in a 40-degree arc around the bow. What is the rationale for using a distance threshold of 400m as the distance from vessels within which fish will be disturbed rather than the more conservative value of 1000m?	Herring are able to detect underwater sounds over a broader frequency range than the majority of fish species and have the ability to determine the location of a sound source within a distance of at least 400 m (Schwarz and Greer 1984). As stated in the Application (Section 4.9 p. 4.9-77), although Misund et al. (1996) report individuals reorienting themselves to the path of approaching vessels at distances between 25 m and 1,000 m, the majority of individuals responded at a distance that aligned with the 400 m distance identified by Schwarz and Greer (1984). References: Misund, O.A., J.T. Øvredal and M.T. Hafsteinsson. 1996. Reactions of herring schools to the sound field of a survey vessel. Aquatic Living Resources 9: 5-11. Schwarz, A. L. and G. L. Greer. 1984. Responses of Pacific herring, Clupea harengus pallasi, to some underwater sounds. Canadian Journal of Fisheries and Aquatic Sciences 41: 1183-1192.
2307.1	round 1	Gitxaala Nation	Table 4.9-19	Marine Fish and Fish Habitat	The maximum distance at which injury threshold for type-3 fish is indicated to be 1,800m from the MOF. This is wider than the channel between Kaien and Digby Islands at the MOF location and therefore represents a complete sonic barrier to fish movement which will either require bahavioural change (avoidance) or lead to death. What is the rationale for characterizing this sound level effect on behaviour (as opposed to mortality) as low magnitude and assessing it as "not significant"?	The 1,800 m radius reported in Table 4.9-19 does not represent a 'sonic barrier', nor does it represent a zone of permanent injury or mortality. Rather, the 1,800 m radius is the maximum distance from impact pile driving at the MOF where type 2 and 3 fish (i.e., fish with swim bladders) may experience recoverable (i.e., non-lethal) injury. It is important to note that all thresholds reported in Table 4.9-19 are based on physiological effects to fish - not behavioural responses. Broadly applicable thresholds for behavioural response have not been established because different fish species and life stages vary in their response (e.g., avoidance response, startle response, no response) to various sound sources, intensities and frequencies (Popper et al. 2014). Furthermore, the duration of impact pile driving at the MOF and LNG Jetty will not be continuous (i.e., will consist of multiple regular events over the medium term). With the implementation of mitigation measures, residual adverse effects for change in behaviour during all Project phases are not expected to threaten the long-term persistence of a marine fish population and are, therefore, predicted to be not significant. Reference: Popper, A. N., A. D. Hawkins, R.R. Fay, D. A. Mann, S. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P. H. Roger, B. L. Southall, D. G. Zeddies, and W.N. Tavolga. 2014. Sound Exposure Guidelines for Fishes and Sea Turtles. A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Published by the Acoustical Society of America.
2308.1	round 1	Gitxaala Nation	4.10.3 (from screening)	Marine Wildlife - Marine Mammals	During screening, the proponent responded to our comment (found in column f which is screening IR #133) with the answer found in column g (proponent response). We believe that there is still outstanding information and require the additional question(s) posed in column h be responded to. As stated in the Gitxaala IR excel tracking submission table: Screening comment IR#133 -It is not clear that critical habitat areas, such as upwelling areas important for feeding, have been adequately identified or that the effect of increased shipping on marine mammal use of these areas has been addressed. This will be discussed further at review stage. Proponent Response -There is currently no designated critical habitat for marine mammals in the RAA. Identified DFO Important Areas for marine mammals were considered in the assessment of potential Project residual and cumulative effects. Both designated critical habitat and DFO Important Areas are referred to under Administrative Boundaries (Section 4.10-2-5) and, where applicable, are shown in Figure 4.10-2. Working Group Determination of Status -Upwelling areas are understood to be important as feeding areas for baleen whales. The area around Triple Islands is understood to be an upwelling area and grey whales have been identified feeding in this area. Has the proponent done any baseline work to undestand the value of the area around Triple Island as an upwelling/feeding area relative to other areas in the region? Has the proponent assessed the effect to baleen whale feeding/health of increased vessel traffic leading to reduced access or avoidance of this area?	The LAA is based on a 6 km buffer around the marine terminal and a 6 km buffer extending on either side of the shipping route, which extends from the marine terminal to the Triple Island pilot boarding station. The RAA extends from the marine terminal to west of the Triple Island pilot boarding station and encompasses Prince Rupert Harbour and most of Chatham Sound. Triple Island is therefore considered within both spatial boundaries used in the assessment of marine mammals (see Figure 4.10-1). The waters around Triple Island were surveyed as part of the marine mammal survey programs for the Aurora LNG Project (see Marine Mammals Technical Data Report - Appendix N of the Application), the PNW LNG project (Stantec 2016), and the LNG Canada project (LNG Canada 2014), results of all three of which were considered in the Aurora LNG assessment. Maps showing predictions of hotspots of high marine mammal density, as referenced in Section 4.10.7.1, are presented in Stantec (2016), which is available at the link below. The assessment of change in behaviour (including potential for adverse effects to foraging patterns and foraging success) considered the potential residual and cumulative effects of LNG shipping throughout the RAA (including at Triple Island). The marine mammal assessment was also informed by potential changes in the distribution or availability of prey resources as a result of Project-related activities, as identified in the marine fish and fish habitat assessment (see Section 4.9 of the Application). LNG Canada. 2014. LNG Canada Export Terminal. Marine Resources Technical Data Report. 236 pp + Appendices. Stantec Consulting Ltd. (Stantec). 2016. Pacific NorthWest LNG Project Marine Mammal Program Final Report. Prepared for Pacific NorthWest LNG Limited Partnership. Burnaby, BC. 154 pp. Available at: http://www.pacificnorthwestlng.com/media/Marine%20Mammal%20Final.pdf.
2309.1	round 1	Gitxaala Nation	4.10.5	Marine Wildlife - Marine Mammals	During screening, the proponent responded to our comment (found in column f which is screening IR#135) with the answer found in column g (which is proponent response). We believe that there is still outstanding information and require the additional question(s) posed in column h be responded to. As per Gitxaala's IR submission excel table Screening Comment 135: In some cases, mitigation measures are not described in sufficient detail to evaluate their efficacy. This will be addresssed further at review stage. Proponent Respones - The mitigation measures identified in the Marine Mammal VC are based on an understanding of existing conditions, expected construction methods and timing, professional experience with similar projects on the Pacific North Coast of BC, and industry-accepted best management practices. As per the AIR, each mitigation measure was described in terms of how it will mitigate potential effects on marine mammals (i.e., the mechanism), why it was chosen (i.e., rationale), its expected success, potential risks and uncertainties associated with the measure (if any), the time required for it to become effective, and the Project phase during which the measure will be implemented. Aurora LNG is of the opinion that this level of information is sufficient to support the assessment of Project residual effects on marine mammals. Additional details on the mitigation measures will be provided in the Marine and Freshwater Resources Management Plan. As noted in the Application, where uncertainty remains over the exact nature of these mitigation measures, this was accounted for in the assessment's prediction confidence and in the determination of significance. Aurora LNG looks forward to further discussing Gitxaala Nation's comment, Aurora LNG's response and the related proposed mitigation measures during the Application-review phase consultation activities that will be conducted under the Aboriginal Consultation Itinerary (which will be submitted on day 30). Working Group Determination of Status - See WG determination as stated in screening comment IR #116 which states "The proponent indicates a methodology (mechanism, rationale, expected success, risks, uncertainties) in the response provided. It is Gitxaala's position that the details regarding mitigation (the "how") are insufficient to be able to evaluate the success of the measures proposed. In the absence of details regarding implementation, it is not possible for external reviewers to test the hypothesis that the mitigation will be sufficiently successful to justify a determination of "no significant effect following mitigation." Gitxaala therefore reiterates its request for a description of detailed mitigation measures that include, among other things, thresholds for adaptive management".	It is difficult for Aurora LNG to provide additional details concerning the proposed mitigation measures without greater clarity from Gitxaala Nation concerning explicitly which mitigation measures and what details are considered lacking. Mitigation measures proposed for the Project are in keeping with industry standards and BMPs for reducing potential adverse effects of marine construction projects on marine mammals in Canadian waters. The Marine and Freshwater Resources Management Plan will be developed through engagement with regulators (i.e., DFO, the BC Oil and Gas Commission) and Schedule B Aboriginal Groups. This plan will further describe measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse Project effects on marine mammals. The plan will include details on the following:Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2310.1	round 1	Gitxaala Nation	Table 4.10-1	Marine Wildlife - Marine Mammals	This table suggests that the 160dB isopleth lies 100m away from LNG vessels travelling at 16kts (approx. 30kph). Please confirm this is correct.	Table 4.10-1 correctly outlines that the acoustic modelling showed that the 160 dB rms re 1 µPa isopleth was reached at a maximum distance of 0.1 km (100 m) from LNG vessels travelling at 16 knots during transiting.

2311.1	round 1	Gitxaala Nation	Table 4.10-2	Marine Wildlife - Marine Mammals	Please indicate whether the term "health" includes "reproductive success"? This question is raised because noise, avoidance behaviours, stress, and reliance on less preferred food sources or locations are known to reduce mating and gestational success.	It is recognized that there is potential for overlap between the issues addressed under 'change in health' and 'change in behaviour'. Similarly, increased potential for vessel strikes (assessed under 'change in mortality risk') might have been discussed under 'change in health' as sub-lethal effects from strikes are also possible. For the purposes of the Application, 'change in health' focussed on potential physical injury resulting from underwater noise or in-water blasting. Increased levels of stress, which may in turn cause physiological responses such as diminished reproductive effort, avoidance behaviour, and effects on foraging patterns and foraging success were considered in the assessment of change in behaviour in marine mammals (see Section 4.10.5.3).
2312.1	round 1	Gitxaala Nation	Table 4.10-3	Marine Wildlife - Marine Mammals	Triple Island is believed to be an upwelling zone preferred as a foraging location by grey whales. Please indicate the way in which increased vessel activity associated with boarding PPA pilots and cumulative effects of triple island as a necessary waypoint have been assessed for effects? Specifically, how have cumulative vessel presence and noise been accounted for?	The LAA is based on a 6 km buffer around the marine terminal and a 6 km buffer extending on either side of the shipping route, which extends from the marine terminal to the Triple Island pilot boarding station. The RAA extends from the marine terminal to west of the Triple Island pilot boarding station and encompasses Prince Rupert Harbour and most of Chatham Sound. Triple Island is therefore considered within both spatial boundaries used in the assessment of marine mammals (see Figure 4.10-1). Additionally, the waters around Triple Island were surveyed as part of the marine mammal survey programs for the Aurora LNG Project (see Marine Mammals Technical Data Report - Appendix N), the PNW LNG project (Stantec 2016), and the LNG Canada project (LNG Canada 2014), results of all three of which were considered in the assessment. Acoustic monitoring was conducted for 113 days near Triple Island and recordings were analyzed for current ambient noise conditions (including vessel traffic) and marine mammal vocalizations (see Prince Rupert – Aurora LNG Acoustic Monitoring Study, Appendix O). The cumulative effects assessment for marine mammals (see Section 4.10-6) considered the potential adverse effects of vessel traffic from Kitimat and Prince Rupert that overlaps with the RAA (including in the area around Triple Island) and is associated with past, present and reasonably foreseeable future projects. LNG Canada. 2014. LNG Canada Export Terminal. Marine Resources Technical Data Report. 236 pp + Appendices. Stantec Consulting Ltd. (Stantec). 2016. Pacific NorthWest LNG Project Marine Mammal Program Final Report. Prepared for Pacific NorthWest LNG Limited Partnership. Burnaby, BC. 154 pp. Available at: http://www.pacificnorthwestlng.com/media/Marine%20Mammal%20Final.pdf.
2313.1	round 1	Gitxaala Nation	Table 4.2-10	Marine Wildlife - Marine Mammals	Exclusion from preferred forage locations is a health effect that may result from a change in behaviour (noise avoidance). How was this assessed? Please indicate the locations in the Application and TDRs in which this was discussed.	The assessment of potential residual effects of change in behaviour on marine mammals considers avoidance behaviours and effects to foraging patterns and foraging success (see Section 4.10.5.3 of the Application).
2314.1	round 1	Gitxaala Nation	4.10.2.5	Marine Wildlife - Marine Mammals	The Application notes (p.4.10-9) that "it is also understood that for the assessment of underwater noise on marine mammals, some behavioural effects will extend beyond the LAA into the RAA. These effects are considered in this assessment." The area in which effects are expected is, by definition in the methodology section, the LAA. Defining an LAA for marine mammals that does not encompass all effects is therefore contrary to appropriate EA methodology. Please provide a rationale for this choice or modify the LAA appropriately, to encompass the entire area in which noise effects are expected to modify behaviour. Please also provide a figure identifying the spatial extent of potential behavioural change by marine mammal group (toothed whales; baleen whales, pinnipeds)	The extents of the LAA were originally defined prior to the completion of the underwater acoustic modelling and was determined by applying a 6 km buffer around the LNG jetty and MOF and on either side of the shipping route. During review of the AIR, DFO advised that: "The LAA should encompass the area where any project activity (construction, operations, decommissioning) will exceed 160 dB" (BC EAO 2015). Results of underwater noise modeling work confirm that the original 6 km buffer captures the area over which both the predicted Rmax and R95% sound pressure levels exceed the 160 dB re 1 µPa rms thresholds during Project-related activities. Since it is recognized that Project-related sounds will be detectable to marine mammals beyond the 160 dB behavioural disturbance threshold (and thus beyond the boundaries of the LAA), the assessment of potential residuals effects of change in behaviour for marine mammals includes underwater noise that extends into the RAA, providing a complete assessment of Project-related potential residual effects. Maps showing the extents of underwater noise in exceedance of the interim NOAA disruption thresholds (for pulse and non-pulse noise) and the species-specific behavioural thresholds are available in Appendix N: Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting. British Columbia Environmental Assessment Office (BC EAO). 2015. Tracking Table for Working Group Comments on dAIR. BC EAO Project Information Centre (e-PIC). Accessed August 2016. Available at: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_416_39606.html
2315.1	round 1	Gitxaala Nation	Table 4.10-4	Marine Wildlife - Marine Mammals	Short-term effects are defined as measurable for a few hours to a few months. Seasonality is a factor in determining overall significance of effects. For instance, noise during courting/mating season may have a greater adverse effect than during winter. How has this been accounted for in characterization efforts?	The term 'duration' in the characterization of residual effects tables refers to a length of time, but not the timing of occurrence of a residual effect. Timing, including assessment of seasonal fluctuations (where relevant), is characterized within the assessment of individual effects. See for example the section on 'Timing' under the 'Characterization of Residual Effects for Change in Health' for 'In-water Blasting' (p.4.10-45).
2316.1	round 1	Gitxaala Nation	4.10.3.1	Marine Wildlife - Marine Mammals	Acoustic monitoring in the vicinity of Triple Island occurred from July 11 to October 31 (3.5 months) and was used to identify mammals present. This does not represent a full year of acoustic data. Critically, it does not provide information in the spring, a period of high orca, and possibly grey whale, activity. What is the rationale for conducting the EA without a full year of acoustic data?	While the data collected during the acoustic monitoring program (Appendix O) was analyzed for marine mammal vocalizations, detection of marine mammals was not the primary objective of this program. The primary objective of the acoustic monitoring program was to document the baseline noise conditions near the proposed Project site so as to provide a statistical noise distribution of the pre-Project development conditions. The timing and duration of the program were therefore developed primarily in consideration of the desire to characterize the existing ambient sound levels and existing vessel traffic, both of which are adequately captured in the selected 3.5 month period that spans periods of lower and higher expected vessel traffic in the region.
2317.1	round 1	Gitxaala Nation	4.10.5.1	Marine Wildlife - Marine Mammals	Please indicate the new NOAA SPL and SEL24 (p.4.10-33) in the Application (as opposed to just the TDR).	As discussed on p.4.10-33/34 of the Application, the 2016 NOAA peak SPL and SEL24h thresholds (which are only applicable to assessment of auditory injury) were not available at the time of modelling. As such, the Application focuses on the three approaches that were considered in the acoustic modelling and assessment of injury. The methods used by Southall et al. (2007) and Wood et al. (2012) differ somewhat from the new NOAA guidance (NMFS 2016) in terms of how the peak SPL and SEL24h metrics are weighted for different marine mammal hearing groups, and are thus not directly comparable. It is therefore considered misleading to include further discussion of the 2016 NOAA guidance within the Application itself. Further details on the different thresholds, including discussion of 2016 NOAA guidance, is presented in the Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting, Appendix P of the Application). [NMFS] National Marine Fisheries Service. 2016. Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Threshold Levels for Onset Permanent and Temporary Threshold Shifts. U.S. Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-55. 178 pp. http://www.nmfs.noaa.gov/pr/acoustics/Acoustic%20Guidance%20Files/opr-55_acoustic_guidance_tech_memo.pdf. Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene, Jr., D. Kastak, D.R. Ketten, J.H. Miller, et al. 2007. Marine mammal noise exposure criteria: Initial scientific recommendations. Aquatic Mammals 33(4): 411-521. Wood, J., B.L. Southall, and D.J. Tollit. 2012. PG&E offshore 3 D Seismic Survey Project EIR-Marine Mammal Technical Draft Report. SMRU Ltd.
2318.1	round 1	Gitxaala Nation	4.10.5.1 (p.4.10-34)	Marine Wildlife - Marine Mammals	Reference is made to zones of audibility identifying the "maximum zone over which project noise might be detectable) for killer and humpback whales, harbour seals, and harbour porpoises. Please provide a figure identifying these zones by species.	Maps of thresholds and zones of audibility are available in Appendix P (Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting) of the application.
2319.1	round 1	Gitxaala Nation	Table 4.10-8	Marine Wildlife - Marine Mammals	The text of the application indicates that blasting will be restricted to least-risk-windows. Please ensure that this mitigation is added to this table.	As noted in the IR, DFO's north coast least risk timing window for marine fish will be applied during blasting activities. As discussed in the first paragraph following Table 4.10-8 in the Application, timing windows were specifically designed by DFO to reduce potential harm to marine fish and are not optimized to benefit marine mammals. While there may be some collateral benefits for certain marine mammal species (see discussion under 'Characterization of Residual Effects for Change in Health for In-water Blasting' on page 4.10-45), it was considered misleading to include mention of this marine fish mitigation measure under the table of mitigation measures designed specifically to reduce adverse effects to marine mammals.
2320.1	round 1	Gitxaala Nation	4.10.5.2, p. 4.10-46	Marine Wildlife - Marine Mammals	The application notes that "Timing windows for marine fish will not be applied to pile installation". The Application further notes that it is "assumed that marine mammals will be present". How is the differential (greater) effect of ensonification during critical life-cycle stages (notably courting/mating) assessed and mitigated for?	As discussed in the Application, while timing of peak marine mammal occurrence in the RAA is likely to coincide with other peak periods of biological activity in the region (e.g., northern resident killer whales following the migration of the Skeena and Nass rivers Chinook salmon [Ford 2006; Ford and Ellis 2006]), this assessment is based on the assumption that marine mammals may be present in the LAA and RAA at any time of the year, and thus may interact with Project activities regardless of the construction schedule or timing of such activities.As a result, all marine mammal life-cycle stages are considered in the assessment of potential residual effects. Timing, including assessment of seasonal fluctuations (where relevant), is characterized within the assessment of individual effects. See for example the section on 'Timing' under the 'Characterization of Residual Effects for Change in Health' for 'In-water Blasting' (p.4.10-45). Ford, J.K.B. 2006. An Assessment of Critical Habitats of Resident Killer Whales in Waters off the Pacific Coast of Canada. Canadian Science Advisory Secretariat, Research Document. Nanaimo, BC. 1-34 pp. Ford, J.K.B. and G.M. Ellis. 2006. Selective foraging by fish-eating killer whales Orcinus orca in British Columbia. Marine Ecology Progress Series 316:185-199.
2321.1	round 1	Gitxaala Nation	4.10.5.2, p. 4.10-48	Marine Wildlife - Marine Mammals	Please provide figures that identify 160 dB isopleths for both SPL and SEL24 at both the MOF and the berthing jetty in order to facilitate a discussion regarding an appropriate exclusion zone during pile driving. There is some concern that this isopleth extends across the channel between Digby and Kaien Islands, effectively creating a sonic barrier to movement that will have behavioural and health effects (trapping marine mammals within, or excluding mammals from, the inner harbour during pile driving).	Maps showing the extents of underwater noise to the selected injury and behavioural thresholds for model scenarios are available in Appendix P: Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting. The extent of underwater noise above 160 dB SPL (rms) from pile driving activities at the MOF and the LNG jetty do extend between Digby and Kaien Islands. The Marine and Freshwater Resources Management Plan will be developed in consultation with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA
2322.1	round 1	Gitxaala Nation	4.10.5.2, p. 4.10-51	Marine Wildlife - Marine Mammals	Please provide acoustic information regarding disposal at sea and provide a figure that shows the 120 and 160dB isopleths associated with dredge disposal at Brown Passage. This is critical in order to understand the potential sonic limitations to marine mammal movement through Brown Pass to and from the open ocean.	As discussed on page 4.10-51 of the Application, and based on literature reported values (e.g., Todd et al. 2015), it is considered unlikely that the NOAA (n.d.) interim thresholds for behavioural disturbance (i.e., 120 and 160 dB re 1 µPa rms) will be exceeded during dredging and disposal at sea activities. As such, acoustic modelling of dredging and disposal at sea were not undertaken. This approach is in keeping with that taken on other recently-approved projects in northern BC. Aurora LNG maintains that the Application adequately characterizes potential residual effects of dredging and disposal at sea on marine mammals, and that additional quantitative modelling is unlikely to change the conclusions presented in the Application.
2323.1	round 1	Gitxaala Nation	Table 4.10-9	Marine Wildlife - Marine Mammals	The principles guiding the determination of exclusion zones (in consultation with DFO) must include the creation of a corridor in which sound levels are below 160dB. This may require significant reductions in vessel speed within narrow channels.	Acoustic modelling of Project-related vessels in transit predicted that sound levels would drop below 160 dB re 1 µPa rms within 0.1 km of the vessel propellers based on conservative assumptions. Modelling assumed that LNG carriers were accompanied by two tugs (which will not occur beyond the boundaries of the PRPA) and that vessels were travelling at the maximum speed of 16 knots (30 km/hr) (while the average speeds throughout the PRPA will be 12 knots [22 km/hr]). Further details on vessel scenarios and acoustic modelling results are provided in Appendix P.
2324.1	round 1	Gitxaala Nation	4.10.5.4	Marine Wildlife - Marine Mammals	The Application notes that the proposed upper-end LNG carrier transit speed within the RAA is 16kts. Literature from the US suggests that baleen whales have difficulty maintaining speeds over 10kt and may therefore have difficulty outrunning vessels travelling at top speed if startled or otherwise engaged in an activity (mating/foraging) that prevents early vessel detection. Speeds from triple island to the jetty should be maintained at no more than 10kts. This is expected to reduce behavioural changes associated with noise, as well, because noise from LNG carriers generally increases more than proportionally with increases in speed.	The relationship between vessel speed and strike risk was considered in the assessment (see Section 4.10.5.4) and the relationship between sound levels and vessel speeds is recognized. The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) process, conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects, and feedback through engagement with PRPA, DFO, Aboriginal Groups, and others. Project-related vessels will proceed at a safe speed and respect any regionally-defined or PRPA-specific speed profiles that are applicable at the time of operations, subject to navigational safety. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
2325.1	round 1	Gitxaala Nation	Appendix Q	Marine Wildlife - Marine Birds	Please explain the reasoning for the following methods: Why were there no shoreline stationary counts conducted on Tuck Island or the Kinahan Islands? Why were shoreline surveys only conducted for fall migration and summer, and only in one year? Why were vessel-based surveys conducted at different months for summer surveys (July 2014 vs. June 2015)? Why were vessel-based surveys only conducted once per season, with the exception of summer? Why were vessel-based surveys conducted to survey marine birds 300m on either side of the centreline? Standard is 300m total width, at 150m on either side of the centreline. Marbled murrelets are increasingly difficult to detect beyond 100m. Why were surveys conducted between 8am and 6pm? Marine birds are typically best to sample in the morning or dawn/dusk. Why were vessel-based surveys so concentrated in Chatham Sound, outside the RAA? More effort should have been taken to survey within the RAA. This was not explained. Why were results not shown by habitat type? Please show more information about the results of the survey and describe the importance/significance of the results. Why were vessel-based surveys conducted in a different pattern (continuous straight lines) during the February 2015 survey? Why were some habitat types not sampled during the July 2014, June 2015 and November 2014 vessel-based surveys?	Methods for shoreline stationary counts and vessel-based surveys are described in Section 4.1.2 and 4.2.2 of Appendix Q. Field studies for marine birds were completed to provide a record of occurrence and patterns in habitat use within the LAA and RAA. The scope and timing of field studies were consistent with recommendations within applicable sampling protocols referenced in Appendix Q. Shoreline stationary counts and vessel-based surveys were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use during overwintering, migration, and breeding periods. Although surveys were generally completed once per season, survey effort was replicated across and within habitat types in LAA and RAA. Surveys were completed in July 2014 and June 2015 to provide additional information about patterns in marine bird use of the LAA and RAA across the summer breeding period. To provide greater regional context, results of field studies were evaluated in consideration of regional datasets and information sources (see Appendix Q). Shoreline stationary counts were located to maximize survey coverage in habitats within the LAA. Specific placement of individual points was intended to survey across various nearshore environments within the LAA, targeting unique marine features. A shoreline stationary count was located on Spire Island (MBDI20) and included Tuck Island in its radius of detection (see Figure 2 of Appendix Q). Although no shoreline stationary counts were located on Kinahan Islands, vessel-based surveys included survey effort in adjacent marine habitats. Vessel transects were stratified across four primary habitat guilds to account for potential differences in marine bird habitat use. Transects were distributed throughout the RAA but also Chatham Sound more broadly, to account for regional patterns in seasonal richness, abundance, and distribution. Transects placement was random within each guild to provide an indiscriminate sample of species presence, richness, abundance, and distribution. As noted in Appendix Q, the number and placement of transects completed in each season (including distribution across habitat guilds) varied based on constraints in weather and sea conditions. A complete summary of marine bird detections by habitat guild is provided in Appendix 3 and discussed in Section 4.2.3 of Appendix Q. Vessel-based survey methods (e.g., RIC 1997; Gjerdrum et al. 2012) recommend that observers scan out to 300 m ahead and to one side of the vessel. This can result in an underestimate of difficult to detect species (e.g., alcids) if surveying under challenging weather conditions, however a 300 m transect width better accounts for species that avoid transiting vessels that would also be underestimated using a narrower transect width (e.g., loons, diving ducks; RIC 1997, Gjerdrum et al. 2012). Detection of smaller species beyond 150 m is optimized by surveying during conditions were visibility is not compromised and through the use of skilled observers (see Appendix Q for details). References: Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) Standardized Protocol for Pelagic Seabird Surveys from Moving and Stationary Platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. Resource Inventory Committee (RIC). 1997. Inventory Methods for Seabirds: cormorants, gulls, murres, storm-petrels, Ancient Murrelet, auks, puffins, and Pigeon Guillemot. Victoria, BC.

2326.1	round 1	Gitxaala Nation	Appendix Q	Marine Wildlife - Marine Birds	Survey methodology was not well described. Nor were there justifications for locations chosen for surveys. Please elaborate on the methodology and provide justifications.	Methods for shore and vessel-based surveys are described in Section 4.1.2 and 4.2.2 of Appendix Q and are consistent with the level of information required based on the survey protocol standards referenced within each section. Shore-based points were located to maximize survey coverage in habitats within the LAA while preventing overlap of the observation radius of individual points to avoid duplication in survey effort. Specific placement of individual points were intended to survey across various nearshore environments within the LAA, targeting unique marine features (e.g., Delusion Bay, Casey Cove, surrounding islands and islets). Vessel transects were stratified across four primary habitat guilds to account for potential differences ir marine bird habitat use. Transects placement was random within each guild to provide an indiscriminate sample of species presence, richness, and abundance.
2327.1	round 1	Gitxaala Nation	Appendix Q	Marine Wildlife - Marine Birds	Were shoreline surveys conducted within 2hrs of high tide at each survey location? Methodology only states that surveys were conducted between 8am and 4pm.	Consistent with sampling protocols referenced in Appendix Q, shore and vessel-based surveys were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use. Stationary shoreline points situated around mudflats (e.g., Delusion Bay, Casey Cove) were surveyed at mid- or high-tide, to optimize detection of shorebirds and dabbling ducks, as well as to facilitate access to survey locations.
2328.1	round 1	Gitxaala Nation	Appendix Q	Marine Wildlife - Marine Birds	Were shoreline surveys conducted with spotting scopes and binoculars? 300m is a long distance to see with just binoculars and many species including marbled murrelet may be missed. Please provide more information, including the number of observers.	Shoreline surveys were completed using a combination of a spotting scope and binoculars to support species identification (including for species that are more difficult to detect at greater distances, such as marbled murrelet).
2329.1	round 1	Gitxaala Nation	4.11.2.5	Marine Wildlife - Marine Birds	Please explain why Dodge Cove was not included in the LAA? This area looks to be within 1km of the MOF, thus should be included.	The LAA for marine birds includes a 1 km buffer around the proposed marine terminal, including the MOF. Dodge Cove is located just outside of this 1 km buffer (see Figure 4.11-1 in Section 4.11); however, Project studies included three shoreline stationary counts in Dodge Cove to understand marine bird presence, abundance, and distribution in this area. Given its proximity to the LAA, potential effects to marine birds using habitats in Dodge Cove are expected to be similar to those characterized for other areas within the LAA. A discussion of potential effects to nesting herons in Dodge Cove is also considered in Section 4.7 of the Application.
2330.1	round 1	Gitxaala Nation	1.2	Proposed Project Overview	Please show the infrastructure for the natural gas delivery on the site maps. This context is important for determining the constructed layout and allows for a broader picture of the end product.	As noted in section 1.2.7.1 of the Application, natural gas will be delivered to the Project via a third party-owned pipeline, which is yet to be determined, and not in the scope of this Project. The feed gas pipeline will enter the PDA via a dedicated pipeline delivery station. It is expected that the marine-based feed gas pipeline would approach Digby Island from the south to avoid further disturbance to areas on Digby Island outside of the PDA. However, the exact location for landfall is subject to change since the pipeline supplier has not been selected.
2331.1	round 1	Gitxaala Nation	4.11.3.1 and Table 4.11-7	Marine Wildlife - Marine Birds	Despite scoping in section 4.11.2 that lists Bird Conservation Region 5 and First Nations interests (section 4.11.3.2) as part of the scope, these species of interest have not been carried forward in the assessment. Please explain why priority species for BCR5 and harvestable marine birds of value to FNs have not been included in the assessment.	Sections 4.11.2.2 and 4.11.2.3 of the Application describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds and is described in more detail in Appendix Q of the Application. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies, and scientific literature to determine the appropriate extent of spatial boundaries, characterize residual Project and cumulative effects, and to assign significance determinations. Species of cultural importance are discussed throughout Section 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure. Additional details on the timing and location of marine bird harvesting practices are provided in Appendix S.2. Information on harvesting practices was used to support Section 4.11, Section 11, and Part C of the Application. The assessment also integrated information from the Bird Conservation Region 5 (BCR 5) Strategy (Environment Canada 2013), recognizing that the BCR 5 extends from the western Gulf of Alaska to northern California. The Application draws information on conservation objectives outlined in the Strategy that is relevant to marine bird species present, and habitats available, within the LAA and RAA. Priority species identified in the Strategy align with those presented in Section 4.11.3.2 and Appendix Q of the Application. Supporting field studies were developed in consideration of habitat requirements for priority species / species of management concern. The key threats identified for priority species in the Strategy are considered in the Application, where the Project has potential to contribute to residual effects (e.g., habitat change and alteration, mortality, and disturbance). Section 4.11.5.6 of the Application describes residual Project effects that have potential to interact cumulatively with other projects and activities within the RAA, including those identified in the Strategy (e.g., commercial fishing and by-catch, marine transportation). Environment Canada (2013) further outlines that BCR strategies are not intended to be highly prescriptive. Proponents are recommended to integrate local information, recommendations, and management practices. Accordingly, Aurora LNG incorporated information from regional data and information sources (e.g., land use plans, traditional ecological studies) into Section 4.11 of the Application. Mitigation measures are developed in consideration of other relevant provincial and federal regulations and best management practices. Reference: Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 5: Northern Pacific Rainforest. Canadian Wildlife Service, Environment Canada. Delta, British Columbia. 128 pp. + appendices.
2332.1	round 1	Gitxaala Nation	4.11.4	Marine Wildlife - Marine Birds	Why is marine construction not considered a mortality risk? Effect of blasting on diving birds includes concussive force and pressure. This effect should be included in the assessment. Why is discharge to the marine environment under commissioning and start-up not considered as a change in habitat? Hydro-testing will include fresh water plus impurities in the pipe, which gets discharged to the marine environment. This poses a risk to change in environment for marine birds. Why is LNG shipping not considered a mortality risk? There is a risk that marine birds disoriented by lights or avoiding ships are not able to make it to a rest area or suitable landing site. Why has LNG production not been considered a risk to change in behaviour of marine birds? Flaring and lighting may cause marine birds to avoid the area, or be disoriented by the lights, changing their behaviour.	Effects of underwater noise to marine birds is primarily expected to result in sensory disturbance that could influence change in habitat use or change in behaviour, and is discussed in Sections 4.11.5.2 and 4.11.5.4 of the Application, respectively. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations). Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.7.14, facility staff will document and report bird injuries or fatalities, including birds that would be potentially affected by underwater noise. Methods for waste discharge into the marine environment, and potential effects to the physical or chemical composition of marine waters is assessed in Section 4.5.15.3 of the Application. Changes in physical or chemical conditions, and resulting effects to marine bird prey, are considered as part of the assessment of change in habitat under Section 4.11.5.2 of the Application. Section 4.11.5.3 indicates that for marine birds, change in mortality risk for the Project is primarily associated with increased nighttime lighting at the LNG facility, marine terminal, and from berthed or transiting vessels (inclusive of LNG carriers). The assessment of change in mortality risk specifically addresses effects of disorientation that could result in stranding, injury, or mortality from all Project-related anthropogenic light sources. Section 4.11.5.4 further acknowledges that marine birds are also expected to adjust behaviour patterns, either through attraction to, or disorientation caused by, nighttime lighting at the marine terminal and at berthed or transiting vessels. However, because behaviour-related changes as a function of Project-related lighting can ultimately result in injury or mortality of marine birds, this mechanism for effect was assessed in Section 4.11.5.3.
2333.1	round 1	Gitxaala Nation	4.11.4	Marine Wildlife - Marine Birds	How will wastes be treated during waste management? Will there be any disposal or discharge to the marine environment?	Methods for waste storage, treatment, disposal, and discharge into the marine environment, and potential effects to the physical or chemical composition of marine waters are assessed in Section 4.5.15.3 of the Application. Changes in physical or chemical conditions, and resulting effects to marine bird prey, are considered under Section 4.11.5.2 of the Application. Details regarding Project waste sources, anticipated waste streams, and disposal options will be described in the Waste Disposal Management Plan (see Section 14.14 of the Application).
2334.1	round 1	Gitxaala Nation	4.11.5.2	Marine Wildlife - Marine Birds	A general assumption has been made that "most marine birds present in the LAA and RAA have secure populations and have access to other suitable marine habitats, marine birds are expected to demonstrate a moderate degree of resilience to change in habitat availability". However, 22 species of marine birds of management concern have been identified as potentially occurring in the LAA or RAA. These species do not have secure populations, or are at risk of having unsecure populations. In addition, species traditionally harvested by First Nations have not been included in the assessment (unless already of management concern). The inability to harvest traditionally harvested marine birds, either due to a decrease in availability, change in behaviour of the species, or because the added pressure of harvesting would be detrimental to the species, is in conflict with the rights of FNs to practice Aboriginal rights. Marine birds on the priority list for BCR5 (including species where an increase in population is desired) have also not been included. Please explain rationale for concluding that marine birds are expected to demonstrate a moderate degree of resilience.	Species of management concern and traditionally harvested species have been included in the assessment (see subsections within Section 4.11.3.2) and although there is some overlap, they are not necessarily representative of the same marine bird species or species groups. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies and scientific literature to characterize residual Project and cumulative effects, and to assign significance determinations. The assessment also integrated information from the Bird Conservation Region 5 (BCR 5) Strategy (Environment Canada 2013), drawing information on conservation objectives outlined in the Strategy that is relevant to marine bird species present, and habitats available, within the LAA and RAA (see response to comment 1988 for more information). As per Table 4.11-15, resilience was determined for marine bird species and species groups (including species of management concern and traditionally harvested species) based on the existing conditions, the potential for interaction with Project activities and infrastructure, the nature of that interaction, and the sensitivity of marine birds to respond. Given these criteria, marine birds were assessed to have moderate tolerance to change from existing conditions; the viability of local or regional populations was not expected to be affected by residual project effects. The prediction confidence is moderate or high (see Section 4.11.8) given some uncertainty over the degree to which some marine bird species may be affected by the Project. Information presented in Section 4.11 was carried forward to Section 11 (see Section 11.3.8.3 starting on page 11-123) and Part C (see Section 12.5.5.6) of the Application and considers the resilience of harvested species to residual Project and cumulative effects in combination with traditional harvesting practices. Reference: Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 5: Northern Pacific Rainforest. Canadian Wildlife Service, Environment Canada. Delta, British Columbia. 128 pp. + appendices.
2335.1	round 1	Gitxaala Nation	4.11.5.2	Marine Wildlife - Marine Birds	Please provide the lowest noise levels that cause disturbance to marine birds. This information is important in determining potential effects on birds. Please show isopleth lines on a map of the project area, along with marine bird concentrations. Please show attenuation distance of underwater noise and model used to determine this.	Scientific understanding and recognition of the potential effects of underwater noise (i.e., behavioural and injury thresholds) on marine mammals have increased dramatically in recent decades. However, for other marine taxa (e.g., marine birds) there remain substantial limitations in current scientific understanding of this potential stressor. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds, an acoustic model for marine birds was deemed inappropriate. The nature and extent of underwater noise effects are limited to species who spend a portion of their life cycle below the water surface (i.e., diving and pursuit foragers) that are likely to use marine habitats experiencing elevated noise levels. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations).
2336.1	round 1	Gitxaala Nation	4.11.5.2	Marine Wildlife - Marine Birds	What is the rationale for determining that adverse effects are not expected on marine birds given that noise produced by the Project vessels is expected to be 206dB re 1uPa for transiting tugs and pile driving is expected to reach 230dB re1uPa, yet an expose level of 202dB can caused injury to marbled murrelet? This is a clear exceedance, yet the assessment claims that the noise produced by ships in the shipping lane "are well below the threshold expected to cause injury in diving bird species". What threshold is this if not the 202dB for marbled murrelet? At what dB level does noise cause disturbance or change in behaviour for marbled murrelet?	Effects of underwater noise to marine birds was expected to result in sensory disturbance that could influence change in habitat use or change in behaviour, and was discussed in Sections 4.11.5.2 and 4.11.5.4 of the Application, respectively. The assessment did indicate that underwater noise would result in an adverse residual effect of displacement or disturbance within each section. Given available scientific evidence, the SAIC (2011) concluded that terrestrial and marine mammals represent reasonable surrogates for characterizing auditory injuries to marbled murrelets, while thresholds for fish are useful for estimating non-auditory injuries. Based on that species extrapolation, the SAIC (2011) estimated that a continuous 24-hour sound exposure level (SEL) greater than 202 dB dB re 1uPa could cause disturbance or injury to marbled murrelet. However, the SAIC (2011) recommends this as a guideline given that the SEL threshold represents a 24-hour cumulative exposure period (i.e., an individual remains submerged and its distance to the noise source remains constant for a continuous 24-hour exposure period) and has limitations in its application for species that are a) mobile, and b) spend only a proportion of its daily cycle below the surface of the water. Detailed technical information on the nature and extent of underwater noise effects continue to be limited for marine birds. Although Project-related activities may result in underwater noise production above 202 dB re 1uPa, marbled murrelets or other marine bird species are not expected to be exposed for a sufficient period to sustain injury. Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction; these plans will consider timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to noise reduction for blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Reference: Science Applications International Corporation (SAIC). 2011. Environmental science panel for marbled murrelet underwater noise injury threshold. Prepared for: US Navy, Bothell, WA. 34 pp.
2337.1	round 1	Gitxaala Nation	4.11.5.3	Marine Wildlife - Marine Birds	Table 4.11-10: Mitigation for marine construction/operations is incomplete. Suggested mitigation measures include: -bubble curtain to limit risk of marine birds (and fish) from getting too close to pile driving operations; surveys/monitoring for birds during construction and operations; timing of works to avoid sensitive periods, such as when young are present (likely more susceptible to noise effects); shielding of the flare to prevent accidental mortality	As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Section 1.2.5.1 describes the proposed flare system design and does not include a shielding mechanism, due to infrastructure constraints. However, maintenance flaring events will be scheduled during daylight hours to the extent practicable to reduce the potential of accidental mortality of marine birds (mitigation 4.7.20). Aurora LNG has further committed to limit exterior lighting, and use of directional or shielded lighting to reduce the risk of injury or mortality of marine birds during all Project phases (mitigation 4.7.9).
2338.1	round 1	Gitxaala Nation	4.11.5.2 & 4.11.5.3	Marine Wildlife - Marine Birds	Please describe in-air noise effects on marine birds. Include information on pressure and vibration changes associated with flaring and how these will affect birds (vibration cavity of birds differs from humans, and as such, human-centric thresholds are not applicable).	Effects of in-air noise on marine birds are described in Sections 4.11.5.2 and 4.11.5.4. While flaring will contribute to noise production during Project operations, it is not expected to generate substantial noise for marine bird receptors unless they are in the immediate vicinity of an active flare, in which case individuals are likely sufficiently close to the pilot flare to be at risk of injury or mortality from collision with the flare stack or flame (see Figure 11 of Appendix C). Changes in mortality risk from injury or collision with the flare system are discussed in Section 4.11.5.3. While effects from sudden pressure changes (e.g., barotrauma) are well documented among bats, the unique respiratory anatomy of birds is thought to make them less susceptible to changes in pressure and is not expected to be a potential effect for marine birds (Baerwald et al. 2008). Aurora LNG has committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injuries or mortalities related to Project activities; where possible, Project personnel will be required to describe the cause of mortality. Reference: Baerwald, E.F., D;Amours, G.H., Klug, B.J., and Barclay, R.M.R. 2008. Barotrauma is a significant cause of bat fatalities at wind turbines. Current Biology, 18(16): 695-696.

2339.1	round 1	Gitxaala Nation	4.11.5.3	Marine Wildlife - Marine Birds	Please describe how sudden pressure changes, sudden noise, burns and collisions related to flaring will affect marine birds.	Effects of flaring on marine birds are described in Section 4.11.5.3. While flaring will contribute to noise production during Project operations, it is not expected to generate substantial noise for marine bird receptors unless they are in the immediate vicinity of an active flare (see Figure 11 of Appendix C to see predicted noise levels of Project infrastructure within the PDA). If individuals are sufficiently close to the pilot flare to experience elevated noise levels, they're also likely sufficiently close to the pilot flare to be at risk of injury or mortality from collision with the flare stack or flame. While effects from sudden pressure changes (e.g., barotrauma) are well documented among bats, the unique respiratory anatomy of birds is thought to make them less susceptible to changes in pressure and is not expected to be a potential effect for marine birds (Baerwald et al. 2008). Aurora LNG has committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injuries or mortalities related to Project activities; where possible, Project personnel will be required to describe the cause of mortality. Reference: Baerwald, E.F., D;Amours, G.H., Klug, B.J., and Barclay, R.M.R. 2008. Barotrauma is a significant cause of bat fatalities at wind turbines. Current Biology, 18(16): 695-696.
2340.1	round 1	Gitxaala Nation	4.11.5.3	Marine Wildlife - Marine Birds	Discussion of residual effects for change in mortality fails to mention discussion of underwater noise, as in the previous section. As shown in above comment, underwater noise is expected to exceed thresholds for marbled murrelet (and likely other species). Please include underwater noise in this discussion.	Effects of underwater noise to marine birds is primarily expected to result in sensory disturbance that could influence change in habitat use or change in behaviour, and is discussed in Sections 4.11.5.2 and 4.11.5.4 of the Application, respectively. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction, and considers timing windows to reduce effects to key species (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Scientific understanding and recognition of the potential effects of underwater noise (i.e., behavioural and injury thresholds) on marine mammals have increased dramatically in recent decades. However, for other marine taxa (e.g., marine birds) there remain substantial limitations in current scientific understanding of this potential stressor. The nature and extent of underwater noise effects are limited to species who spend a portion of their life cycle below the water surface (i.e., diving and pursuit foragers) that are likely to use marine habitats experiencing elevated noise levels. Recognizing that the detailed technical information and effects thresholds necessary to assess effects of noise levels encountered by marine birds is currently limited, the Application incorporates best-available information in scientific literature to characterize potential effects of underwater noise on marine birds (see Section 4.11 for applicable citations). Marine birds are likely to avoid areas of elevated underwater noise during all Project phases through behavioural adaptation, which in turn is expected to reduce the risk of noise-induced injury or mortality. As per mitigation 4.7.14, facility staff will document and report bird injuries or fatalities, including birds that would be potentially affected by underwater noise.
2341.1	round 1	Gitxaala Nation	4.11.5.3	Marine Wildlife - Marine Birds	Table 4.11-11: Mitigation describes LNG carriers as having to maintain a distance of greater than 500m from known marine bird colonies, and 1km from Lucy Island. However, the existing shipping lane is 6km from Lucy Island. Limiting ships to >5km from Lucy Islands Conservancy would be more prudent.	Aurora LNG is committed to complying with available guidance provided by federal agencies, such as Environment and Climate Change Canada (ECCC). ECCC provides guidance to avoid disturbance to seabird and waterbird colonies in Canada and recommend that large vessels maintain a minimum distance of 500 m from marine bird colonies (ECCC 2016). Given the distance between the existing shipping lane and Lucy Island (approximately 6 km), LNG carriers for the Project are expected to exceed ECCC's recommendations and vessel-based disturbance to colonial breeding marine birds are expected to be low as a result of Project activities. Details of this mitigation measure will be provided in the Wildlife Management Plan (see Section 14.8 in Section 14). Reference: Environment and Climate Change Canada (ECCC). 2016. Guidelines to Avoid Disturbance to Seabird and Waterbird Colonies in Canada. Available at: https://www.ec.gc.ca/paomitmb/default.asp?lang=En&n=E3167D46-1. Accessed: March 2017.
2342.1	round 1	Gitxaala Nation	4.11.5.3	Marine Wildlife - Marine Birds	Please describe wake effect of LNG carriers on marine habitats, including nesting areas. How will wake be attenuated (show on map)? How will this affect marine bird colonies 500m from the shipping lane?	Section 6.5.4.2 of the Application provides details on wake from operational shipping traffic. Waves generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high at the source vessel and is within the size range of naturally occurring waves in the region. Historical data collected at weather buoys operated by Environment and Climate Change Canada indicate the average wave heights in Hecate Strait were 1.8 m. The Project's shipping route passes through unconfined waters in Chatham Sound towards Hecate Strait, which lends itself to larger distances between transiting carriers and shoreline habitats. This will allow wake waves to grow smaller (attenuate) as they travel over distance. As outlined in Section 4.11.5, Environment and Climate Change Canada recommends that large vessels maintain distances greater than 500 m from breeding colonies to reduce disturbance effects while transiting. Because the Project's shipping route is located more than 1 km from the nearest marine bird colony, the disturbance caused by LNG carriers for the Project are expected to attenuate to levels representative of average ambient wave conditions within the LAA and RAA. Maintaining distance from active marine bird colonies will reduce the potential for disturbance, including flushing of breeding adults from active nests.
2343.1	round 1	Gitxaala Nation	4.11.5.3	Marine Wildlife - Marine Birds	Please describe monitoring programs to determine whether construction, operations or decommissioning are having an impact on marine birds.	Aurora LNG has committed to implementing standard mitigation measures, guidelines, and practices to avoid or reduce potential adverse effects of Project activities on marine birds during construction, operations, and decommissioning. These mitigation measures are described in Tables 4.11-9 (to avoid or reduce change in habitat), 4.11-10 (to avoid or reduce change in mortality risk), and 4.11-11 (to avoid or reduce change in behaviour for marine birds). To monitor potential effects of lighting on bird and bat mortality, facility personnel will be required to document and report injuries or fatalities related to Project activities (mitigation 4.7.14). As per mitigation 4.7.16, light-induced stranding's of migratory birds (including marine bird species) at the LNG facility, marine terminal, supporting infrastructure and facilities, and on berthed vessels will also be documented and reported. Reporting the extent to which birds are susceptible to light-induced mortality allows for monitoring and adaptive management of lighting mitigation measures, as necessary, throughout Project operations. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Full details will be described in the Wildlife Management Plan (see Section 14.8 of the Application).
2344.1	round 1	Gitxaala Nation	4.11.6.3	Marine Wildlife - Marine Birds	Please describe resiliency of SAR to cumulative changes in habitat.	As per Table 4.11-5, resilience was determined for marine bird species and species groups (including species of management concern) based on the existing conditions, the potential for interaction with Project activities and infrastructure, the nature of that interaction, and the sensitivity of marine birds to respond to changes. Cumulative changes in habitat for marine bird species of management concern were assessed in Section 4.11.6.3. Given the criteria for resilience in Table 4.11-5, marine birds were assessed to have moderate tolerance to change from existing conditions; the viability of local or regional populations was not expected to be affected by residual Project and cumulative effects from change in habitat. The prediction confidence is high for residual Project and cumulative effects on change in marine bird habitat (see Section 4.11.8 of the Application), based on the availability of data used to characterize existing conditions in the LAA and RAA, the quality of available literature to understand the Project and cumulative effect mechanisms, the effectiveness of proposed mitigation measures, and professional judgement. The Project's residual effects, and its contribution to cumulative effects will be offset by implementation of the Fish Habitat Offsetting Plan. The Fish Habitat Offsetting Plan is expected to reduce regional changes to marine bird habitats, particularly in nearshore areas in the Prince Rupert region. Proposed mitigation measures for change in habitat have incorporated federal and provincial regulations and guidelines as well as measures that have been recommended or proven effective on similar projects in the RAA which will further reduce cumulative effects to marine bird habitats throughout the RAA.
2345.1	round 1	Gitxaala Nation	4.11.7.1	Marine Wildlife - Marine Birds	Please describe population thresholds for SAR populations. At what point will populations be unable to rebound from loss of habitat or incidental mortalities? What percentage of SAR populations are affected by the Project? What about cumulative effects from other projects?	Significance thresholds for marine birds present the limits of an acceptable change in a measurable parameter or state of regional marine bird populations and are based on applicable legislation, regulatory guidance documents, or other management standards (including cultural use). Where thresholds are not set by legislation, policy, and regulatory guidance documents, a threshold has been developed based on existing data and information, scientific literature and professional judgement, and with the incorporation of available traditional ecological knowledge. Significance thresholds vary between species or species groups and potential effects. As described in Section 4.11.2.8 of the Application, a residual effect is considered significant if it affects the viability of local or regional marine bird populations. The viability of species can be affected by several factors, including reproduction, mortality, immigration, emigration, and habitat availability, where viability was defined in the Application as the long-term maintenance in abundance, diversity, or distribution of marine birds through natural recruitment. Species of management concern with potential to occur in the LAA and RAA are described in Section 4.11.3 (see Table 4.11-7). A total of 22 species of management concern were identified as having potential to interact with Project activities and infrastructure, the effects of which may act cumulatively with other projects and activities within the RAA. Potential residual Project and cumulative effects are described in Section 4.11.5 and 4.11.6, respectively. Species listed on Schedule 1 of the Species at Risk Act that are expected to interact with the Project, including mitigation measures for each, are listed in Table 4.11-13 of the Application. The number of affected species cannot be reported as a percentage, because regional populations for each of these species has potential to experience effects, however the degree will vary based on species presence, abundance, and distribution within the RAA and mechanisms for interaction with the Project.
2346.1	round 1	Gitxaala Nation	4.11.7 & 4.11.8	Marine Wildlife - Marine Birds	Given the lack of discussion on in-air noise and dismissal of effects of underwater noise on marine birds, lack of discussion of marine birds of interest to FNs, lack of inclusion of priority birds for BCR5, and lack of fully comprehensive mitigation plans, we disagree in the significance and confidence predictions.	Effects of in-air and underwater noise on marine birds are described in Sections 4.11.5.2 and 4.11.5.4 of the Application. The assessment for marine birds considered results of acoustic models developed for the Project in combination with best-available information in scientific literature to characterize residual Project effects. As per mitigation 4.11.2, a Noise Management Plan and a Marine Activities Plan will be implemented to decrease the extent of in-air and underwater acoustic emissions during Project construction (see Section 14.5 and 14.11 for details). Additional procedures related to blasting, pile driving, and dredging will be outlined in the Marine and Freshwater Resources Management Plan. The Plan will include measures to reduce disturbance to marine fish, which will, by extension, benefit marine birds (see Section 14.9). Sections 4.11.2.2 and 4.11.2.3 describe the Aboriginal Groups from which traditional knowledge and traditional use information was gathered, and how information was incorporated into the assessment. Section 4.11.3.2 provides a summary of findings of traditional ecological knowledge for marine birds and is described in more detail in Appendix Q. Traditional ecological knowledge provided on traditionally harvested species, seasons, and locations are used in combination with Project and regional studies and scientific literature to inform the assessment. Species of cultural importance are discussed throughout Section 4.11.5 and 4.11.6 where there was an identified mechanism for interaction with Project activities and infrastructure. The assessment also integrated information from the Bird Conservation Region 5 (BCR 5) Strategy (Environment Canada 2013), recognizing that the BCR 5 extends from the western Gulf of Alaska to northern California. The Application draws information on conservation objectives outlined in the Strategy that is relevant to marine bird species present, and habitats available, within the LAA and RAA. Priority species identified in the Strategy align with those presented in Section 4.11.3.2 and Appendix Q of the Application and occur within the LAA and RAA. Supporting field studies were developed in consideration of habitat requirements for priority species / species of management concern. The key threats identified for priority species in the Strategy are considered in the Application, where the Project has potential to contribute to residual effects (e.g., habitat change and alteration, mortality, and disturbance). Section 4.11.5.6 of the Application describes residual Project effects that have potential to interact cumulatively with other projects and activities within the RAA, including those identified in the Strategy (e.g., commercial fishing and by-catch, marine transportation). As noted in Section 4.11.7, the Project is not expected to adversely affect the long-term viability of local or regional marine bird populations and Project effects are considered to be not significant. The prediction confidence was considered moderate or high given some uncertainty over the degree to which some marine bird species may be affected by Project activities or infrastructure. Reference: Environment Canada. 2013. Bird Conservation Strategy for Bird Conservation Region 5: Northern Pacific Rainforest. Canadian Wildlife Service, Environment Canada. Delta, British Columbia. 128 pp. + appendices.
2347.1	round 1	Gitxaala Nation	4.11.9	Marine Wildlife - Marine Birds	Follow-up monitoring is an important part of large industry projects. Follow-up monitoring is recommended to confirm that Project related impacts are not causing significant impacts on marine birds, ensuring that mitigation measures are being followed, and allows for issues to be addressed in a timely matter. As such, a monitoring program and an adaptive management plan should be developed.	The criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program as outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011). The criteria included a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the VC assessment. In cases where the criteria are met, the proposed follow-up program will be used to verify the accuracy of assessment predictions. For VC assessments that concluded moderate to high prediction confidence, these will be managed through the development of Environmental and Operational Management Plans (Section 14) designed to verify compliance of the Project with commitments in the Application and conditions in an Environmental Assessment Certificate.
2348.1	round 1	Gitxaala Nation	6.5.2.5	Marine Use and Navigable Waters	A figure identifying alternate routes has not been provided. It is inappropriate to exclude alternate routes from assessment without identifying their locations and quantifying what "infrequent" use means as part of an overall rationale for exclusion. This is particularly important if alternate routes used in inclement conditions will bring vessels into areas with high harvesting intensity or closer to conservancies where accidents or malfunctions may have greater adverse consequences.	The assessment of Marine Use and Navigable Waters was done using the primary shipping route. This choice was conservative because it represents the route that most large shipping traffic will use and therefore has the greatest potential for adverse effects to marine navigation and fisheries. As described in Section 6.5.2 of the Application, while alternative shipping routes exist, LNG carriers would only ever deviate from the prescribed route under extraneous circumstances (e.g., such as under the direction of the LNG carrier captain or marine pilot to avoid a collision or other emergency). As a result, the assessment focused on the primary shipping route.
2349.1	round 1	Gitxaala Nation	6.5.2.8	Marine Use and Navigable Waters	please define "widely" in the threshold definition ("where the proposed project will create a change or disruption that *widely* restricts or degrades present marine use…[emphasis added to identify word requiring greater definition])	A determination of significant residual effects for Marine Use and Navigable Waters is one where the proposed Project activities are not compatible with established marine use plans or policies, or where the Project will create a change or disruption that widely restricts or degrades present marine uses to a point where the activities cannot continue at current levels and for which this change cannot be mitigated (see Section 6.5.2.8 of the Application). Key elements of this threshold are explained further:"Not compatible" indicates that the Project completely eliminates the option to practice a present marine activity."change or disruption that widely restricts or degrades present marine use" indicates that the potential Project effect has a large geographical extent or severely reduces the ability to practice a marine activity relative to the existing conditions."Cannot continue at current levels and for which this cannot be mitigated" indicates that the current marine practices cannot continue even with mitigation.

2350.1	round 1	Gitxaala Nation	6.5.3	Marine Use and Navigable Waters	It is inappropriate to suggest that "most invertebrate harvesting locations do not appear to overlap with the shipping route (mainly because they are harvested during low tide in the intertidal zone." In fact, harvesters working on foot in the intertidal zone have repeatedly expressed concern that vessel wake in specific local areas may cause a danger to harvesters. Since wave patterns are extremely difficult to predict, a robust monitoring and adaptive management program is required to identify any locations where wake appears to be a problem during operations and to develop additional mitigations.	If it is conservatively assumed that intertidal harvesters on foot are using both low tide periods in a day (this is unlikely, because the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping is temporally restricted on a daily basis; for approximately 83% of each day, wake from Project-related shipping cannot interact with intertidal harvesters Section 6.5.4.2 states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height at the shoreline is expected to be lower than the wake height at the source vessel, and within the natural wave height range currently experienced by intertidal harvesters. Project-related traffic will travel along the existing and established shipping route currently used by marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by intertidal harvesters, relating to natural weather patterns and existing shipping. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
2351.1	round 1	Gitxaala Nation	6.5.3	Marine Use and Navigable Waters	See comment above.	It is not clear what this comment refers to.
2352.1	round 1	Gitxaala Nation	Figure 6.5-15	Marine Use and Navigable Waters	There appears to be an error in the legend: IUCN Category IV is identified twice. Please correct or clarify.	An errata document is being created that will capture the correction and it will be filed with the BC EAO.
2353.1	round 1	Gitxaala Nation	Table 6.5-12	Marine Use and Navigable Waters	First Nations have consistently indicated concern about the effects of dredge disposal traffic on marine fisheries and other uses. Please provide a rationale for its exclusion from consideration and assessment.	Dredging and disposal at sea activities will be limited to the DFO least risk timing window (November 30 to February 15) and is planned to take place over two years. See Appendix G (Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling) and Appendix H (Technical Memorandum - Aurora LNG: Disposal at Sea Modelling) for additional dredge timing information. Table 6.5-12 indicates that dredging was identified as a construction-related physical activity that could affect marine use and navigable waters. In the context of the operational life of the Project, dredging will occur over a relatively short period during the construction phase, barges will be located outside of major navigation routes during loading, and barges will travel at relatively slow speeds while under way. For these reasons, the effects of dredge-related traffic was not assessed further (see rationale provided in Section 6.5.4.1). However, see the "Effects of Additional Project-related Traffic" technical memo for additional information on dredge-related marine traffic. The technical memo will be filed with the BC EAO.
2354.1	round 1	Gitxaala Nation	6.5.4.1	Marine Use and Navigable Waters	The Application states that smaller vessels associated with construction "were not carried forward in the assessment of marine use and navigable waters because this vessel traffic does not represent the worst case scenario for potential adverse effects." Failure to include these vessels significantly underrepresents effects to efficiency of movement, access to berthing, and potential for vessel accidents due to vessel congestion between Digby and Kaien Island. To adequately assess effects; both vessel types need to be included in the assessment; numbers, however, should be disaggregated to identify increases in number of small vessels. This is of particular interest and relevance to harvesters in smaller vessels.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
2355.1	round 1	Gitxaala Nation	6.5.4.1	Marine Use and Navigable Waters	Please provide duration (weeks or months) for disposal, season, and number of seasons, and use this information to provide a robust rationale for the decision not to assess the potential adverse effects of dredging traffic on marine use.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
2356.1	round 1	Gitxaala Nation	6.5.4.2	Marine Use and Navigable Waters	please see comment associated with section 6.5.3, above. Rather than stating that "no further assessment of vessel wake is warranted", it is appropriate to state that the complexities of modelling suggest uncertainty regarding effects; an adaptive management program is therefore required.	Aurora LNG disagrees with the statement that "complexities of modelling suggest uncertainty regarding (wake) effects; an adaptive management program is therefore required." Wake modelling has demonstrated that wake waves from LNG carriers are within the range of naturally occurring waves in the assessment area. Section 6.5.4.2 of the Application states that the mean monthly average natural wave height in the Project area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m produced by LNG carriers and escort vessels at 12 knots is within the range of anticipated mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches the shoreline or a fishing vessel is expected to be lower than the original wake height at the source vessel, and within the natural wave height range currently experienced by shoreline harvesters and fishing vessels. Project-related traffic will travel along the existing and established shipping route currently used by other marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to access the Port of Prince Rupert. The predicted wake-related wave height 300 m from the centreline of travel of a large loaded LNG carrier traveling at 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by fishing vessels and shoreline harvesters, relating to natural weather patterns and existing shipping. Consequently, no significant effects from Project generated wake are predicted. Reference Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
2357.1	round 1	Gitxaala Nation	6.5.4.3	Marine Use and Navigable Waters	See comment associated with section 6.5.2.5	It is not clear what this comment specifically refers to.
2358.1	round 1	Gitxaala Nation	6.5.5.1	Marine Use and Navigable Waters	Please define the term "frequent enough" with respect to different fisheries (where the Application states that 'shipping traffic could reduce access if traffic is frequent enough such that a site can no longer be used.)	No quantitative definition is given to the term in question. Instead, the sentence is meant to highlight the mechanism by which a potential adverse effect might manifest. Further explanation of the qualitative language used to describe the residual effects in Section 6.5 of the Application is provided below: Residual effects are described using multiple characterizations (e.g., magnitude, geographical extent, frequency, etc.) with either quantitative (e.g., an area, distance, or count) or qualitative (e.g., low, medium, high) measures for each characterization. Wherever possible and reasonable, quantitative measures are preferred to promote understanding of the potential environmental effects. However, where quantitative federal or provincial standards, or industry guidelines are lacking, qualitative descriptions must be used to describe potential effects. The characterizations, descriptions, and definitions used for Marine Use and Navigable Waters are provided in Table 6.5-5. The intent of Table 6.5-5 is to provide a simplified understanding of each characterization and how each one was defined in the effects assessment.
2359.1	round 1	Gitxaala Nation	6.5.5.1	Marine Use and Navigable Waters	See comment associated with section 6.5.4.1. Effects of carriers and small vessels must each be assessed; data on each should be disaggregated to understand individual effects by vessel size class ("large size" versus "other")	Please see the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
2360.1	round 1	Gitxaala Nation	Table 6.5-13	Marine Use and Navigable Waters	All of these mitigations assume smaller vessels must give way to larger (LNG) vessels. While this is appropriate mariner behaviour, it does not address the fact that changing behaviour to accommodate LNG vessels requires may require a deviation from preferred routing or activities. This represents an adverse effect on the exercise of traditional rights and must be addressed in Part C of the application.	Aurora LNG acknowledges that in some cases the collision regulations would stipulate that other vessels give way to LNG carriers. Notwithstanding, with implementation of the proposed mitigation measures, Aurora LNG is confident that the potential effects on Marine Use and Navigable Water will not be significant. Issues related specifically to traditional harvest are covered in Section 12.5.6 of the Application, and determined that the ability to exercise this right will be maintained.
2361.1	round 1	Gitxaala Nation	6.5.5.2	Marine Use and Navigable Waters	The Application notes that 17% of the small vessel corridor will be alienated. The Application does not, however, indicate how many more small vessels will be using this corridor during the 5-year construction period. It is not possible, therefore, to fully assess the effects of the project on marine use. Vessel congestion in the reduced small vessel corridor may be considerable and needs to be quantified before it can be dismissed from consideration.	See the "Small Craft Assessment" technical memo which will be filed with the BC EAO.
2362.1	round 1	Gitxaala Nation	6.5.5.3	Marine Use and Navigable Waters	The Application notes that "a fisher may lose a total of one hour of fishing per day). This is a misleading statement because it implies fishing occurs year round. Harvesting windows for many species are considerably smaller and weather conditions further limit fishing opportunity, thus a one-hour limitation may be more significant than implied. To be adequately calculated, the hours lost should be represented as a percentage of the total number of hours available for the fishery and the average number of days during that window in which winds are too strong to harvest.	See the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
2363.1	round 1	Gitxaala Nation	Table 6.5-15	Marine Use and Navigable Waters	Given the exclusion of small construction vessels from assessment, the determination of magnitude of residual effects of construction is suspect.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
2364.1	round 1	Gitxaala Nation	6.5.6.3	Marine Use and Navigable Waters	See comment above.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
2365.1	round 1	Gitxaala Nation	6.5.6.5	Marine Use and Navigable Waters	See comments above.	See the "Effects of Additional Project-Related Traffic" technical memo which will be filed with the BC EAO.
2366.1	round 1	Gitxaala Nation	Application, 8.2.3.2.3	Human Health	Consumptions rates of Dungeness crabs and horse clams were taken from a First Nations Food Nutrition & Environment Study (Chan et al., 2011). The study solicited information from First Nation communities across the province, including some along the BC coast. Please confirm/verify that the consumption rates taken from this study are relevant and applicable to the Gitxaala FN.	Refer to the document titled, "Supplemental Information for Traditional Marine Foods", which will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2367.1	round 1	Gitxaala Nation	Application, 8.2.3.2.3	Human Health	The recommended maximum weekly intake value was estimated for each food type for a toddler and adult. Consumption of a food type up to this value consistently throughout the year is assumed to be safe (i.e. without a health concern). Please provide a sample calculation with the values for each input parameter, with justification for each value. Is it considered safe for an individual to consume up to the RMWI for multiple food types?	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

2368.1	round 1	Gitxaala Nation	Application, 8.2.5.1.2	Human Health	The Application notes that a key assumption related to air emissions is that the operations phase at full build-out has the greatest emission rates and emission volumes of airborne COPCs among all Project Phases. During construction and decommissioning, the site activities are quite different than during operations (movement of fill, paving, construction of facilities, installation of utilities, etc.); subsequently, the emission sources and airborne COPCs could be significantly different than during operations. Verify this assumption is correct given the different types of equipment, site activities, and potential for different airborne COPCs as a result of construction/decommissioning specific activities. Additionally, during construction, there would be days where emissions would be higher than others. An evaluation of the emissions should include average and peak emission days.	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) shows the relative emissions of sulphur dioxide, nitrous oxides, PM10 and PM2.5 for the construction and operations phases. Emissions of sulphur dioxide and nitrous oxides are substantially greater in the operations phase. The average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of substances belonging to the class of chemicals known as volatile organic compounds (VOC), which includes acrolein, benzene, 1,3-butadiene...etc..., refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2369.1	round 1	Gitxaala Nation	Application, 8.2.5.2.1	Human Health	The Application indicates construction activities include the use of heavy equipment and vehicles during site clearing and grading, construction of new roads, and mobilization of materials to Digby Island. US EPA mobile source air toxics considers the following national and regional scale cancer risk drivers: acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. These substances should be included in the HHRA or a rationale provided as to why it is suitable to exclude these as airborne COPCs?	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of substances belonging to the class of chemicals known as volatile organic compounds (VOC), which includes acrolein, benzene, 1,3-butadiene...etc..., refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2370.1	round 1	Gitxaala Nation	Application, 8.2.3.2.1	Human Health	The Application indicates 29 gridpoints were selected to represent human receptor locations. Do any of these correspond to the maximum points of impingement (highest air concentration predicted to occur over land and over water)? The MPOI may be important considerations for short-term exposures to airborne contaminants.	Among the 1,905 land-based gridpoints identified in the human health chapter, the sub-set of 29 gridpoints representing human receptor locations (i.e., populated areas) do not correspond to the maximum point of impingement (MPOI). The location of the MPOI for a criteria air contaminant is a function of its proximity toan emission source. Therefore, the MPOI for any given criteria air contaminant will likely be located immediately adjacent to the Aurora LNG fenceline, or another project within the Prince Rupert and Port Edward area. The location of the MPOI is not a human receptor location for one or both of the following reasons: 1. The location is over water. 2. The location is not populated, or may be zoned for non-residential land use (e.g., industrial land use). As part of the April 19, 2017 working group meeting, Aurora LNG has agreed to provide the map locations of the MPOI for 1-hour NO2. Refer to the document titled, "Maximum Points of Impingement for 1-hour Nitrogen Dioxide Concentrations", which will be filed with the BC EAO.
2371.1	round 1	Gitxaala Nation	Application, 8.2.5.2.3	Human Health	The Application indicates the potential effects to human health from changes to air quality during construction and decommissioning phases of the Project would be substantially lower than the operations phase. Please verify this is correct since the emission sources during construction/decommissioning may be significantly different than during operations.	The information in the Application regarding changes to air quality between the three Project phases is correct. The emissions during the construction phase are primarily associated with diesel-powered equipment, but the emission volumes are deemed to be highly unlikely to change the ambient air quality of the airshed, and therefore, are not identified in the Application Information Requirements for the Human Health VC. The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project fenceline (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of substances belonging to the class of chemicals known as volatile organic compounds (VOC), which includes acrolein, benzene, 1,3-butadiene...etc..., refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2372.1	round 1	Gitxaala Nation	8.2.2.5.1 & Table 8.2-3	Human Health	The spatial boundaries established for air quality and harvested food quality are based on models used to assess air quality and sediment plume dispersion. For the assessment of human health from harvested food quality, were these boundaries used for the cumulative effects assessment? If yes, is this appropriate since marine food harvesting could occur throughout the region, thus exposure would occur from a number of locations.	The assessment of human health from marine harvested food quality applies the same spatial boundary established for air quality and harvested food quality based on models used to assess air quality and sediment plume dispersion including for the cumulative effects assessment. If an individual also harvests from multiple locations outside of the RAA (area within which the potential for cumulative effects are considered), exposure to chemical substances in those foods are considered to be independent and not affected by the Project on a cumulative basis.
2373.1	round 1	Gitxaala Nation	Application, Table 8.2-11	Human Health	The Application indicates interactions between Project residual effects and residual effects of other projects are not expected. Please explain how the potential for an individual to harvest food from a number of sites, including at/near this Project then at other Project sites, was assessed taking into consideration the areal extent of traditional food harvesting areas.	A cumulative effects assessment evaluates project interactions that overlap (spatially and or temporally) with those of other known or proposed projects. In the case of marine harvested foods, no other past, present or reasonably foreseeable future projects were identified in the vicinity of the proposed Project dredge footprint and surrounding sediment plume area that would overlap spatially or temporally (i.e., no other dredging or similar activities were identified in the area of the predicted plume or within the same time period). If there are no spatial or temporal overlaps of activities from other projects that could affect marine food quality, the effects would be assessed independently for each project because the effects are not cumulative.
2374.1	round 1	Gitxaala Nation	HH TDR, 4.1.2	Human Health	The TDR states that CCME ISQGs were used for screening purposes to select COPCs in lieu of environmental quality guidelines applicable to seafood quality for the protection of human health. Is this appropriate and protective of human health? There are instances where something is not toxic to sediment/aquatic life but would be toxic to human health (e.g. red tides).	As noted, there are no sediment quality guidelines for the protection of human health from any provincial, federal or international regulatory agency. Screening for chemicals is not intended to be protective of human health, since the purpose of screening is only to identify chemicals of potential concern. The risk assessment evaluates the level of exposure to chemicals of potential concern to determine the health risk. There are many substances that exhibit varying degrees of toxicity (or no toxicity) to animals and plants, which is why there are environmental guidelines specific to the protection of various forms of life (e.g., marine aquatic life, freshwater aquatic life, humans).
2375.1	round 1	Gitxaala Nation	HH TDR, 5.1 and Table 2	Human Health	The TDR states health-based BC MOE AAQOs were used in this risk assessment. Air quality objectives are used to guide air-management decisions and may not be suitable to use in a human health risk assessment. TRVs used in most human health risk assessments typically consider "toxicity-based" and "persistence and bioaccumulation-based" criteria. Please provide a rationale for the use of each screening criteria in this risk assessment.	The BC Ministry of Environment indicates that "Air quality objectives are limits on the acceptable presence of contaminants in the atmosphere, established by government agencies to protect human health and the environment." http://www.bcairquality.ca/regulatory/air-objectives-standards.html Further guidance on the application of provincial air quality objectives for sulphur dioxide indicate that, "A provincial interim ambient air quality objective of 75 ppb (1-hour) was adopted in 2014 to provide a health-based tool". http://www.bcairquality.ca/pdf/so2_aqo-implementation_guide.pdf The use of the BC MOE AAQOs as guides for air management decisions does not exclude its application in health-based assessments.
2376.1	round 1	Gitxaala Nation	HH TDR, 6.2.4, 6.3.2.1 and 6.3.2.2	Human Health	Please provide a sample calculation for the estimated daily intakes, non-carcinogenic and carcinogenic risk estimates, showing site-specific and assumed input values.	The "Supplemental Information for Traditional Marine Foods" technical memo has been created that includes responses to this comment and it will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2377.1	round 1	Gitxaala Nation	9.0	Accidents or Malfunctions	Gitxaala is concerned that the addition of significant infrastructure at the entrance to Prince Rupert will increase the severity of tsunami, surge, or seiche events. Gitxaala requests that a full tsunami risk assessment be completed for the Prince Rupert Harbout, in light of the infrastructure being proposed. To be covered will be the effect of debris from Nexen infrastructure and vessels on the harbour.	The Project infrastructure installed on Digby Island are not expected to increase the severity of tsunami, surge or seiche events in the Prince Rupert Harbour. The Project will be designed to withstand extreme environmental events as outlined in Section 10 of the Application. The LNG plant and marine terminal will be designed to accommodate tsunamis according to the design standards of Canadian Standards Association EXP276.1-2015 express document (CSA 2015b). Additional assessment details are provided in the Tsunami Hazard Assessment report (ITR 2015).
2378.1	round 1	Gitxaala Nation	9.0	Accidents or Malfunctions	Gitxaala is concerned that the addition of significant infrastructure at the entrance to Prince Rupert will increase the severity of tsunami, surge, or seiche events. In the event that a maximum credible surge occurs, will ships at anchor be affected (dragged on anchor)?	Section 10.2.6 of the Application considers the effects of potential tsunami and seiche events on the proposed Project. The potential for tsunamis, surge, or seiche events to affect vessels at anchor would depend on various factors specific to such events (e.g., the magnitude of the physical event, the location of the event relative to the anchored vessel, the location of the vessel at anchor, the tide conditions at the time of the event, the water depth of the vessel, the level of coastal sheltering, and the warning time following event detection).
2379.1	round 1	Gitxaala Nation	9.2	Accidents or Malfunctions	The application notes that "Hypothetical events or interactions were identified for each scenario and were selected if they were recognized as a likely accident***and*** had a potential consequence of concern [emphasis added]". This is incorrect methodology for accidents which, by definition, are unplanned. This statement must be revised to read "...were selected if they were recognized as a likely accident ***or*** had a potential consequence of concern." and re-assessed accordingly.	Aurora LNG agrees that there is a wording error. An erratum to correct the wording in the sentence quoted in the comment, by replacing 'and' with 'or', will be submitted. This is a wording error only and its correction will not affect the methodology, scenarios or the characterization of effects in the assessment. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2380.1	round 1	Gitxaala Nation	Table 9.3-1	Accidents or Malfunctions	Please add an interaction between Vessel grounding/collision and Archaeological/Heritage resources: a marine accident resulting in a release of LNG or fuel (diesel or bunker) may affect the perceived quality of the environment and therefore affect traditional use assessed in Part C.	A screening of potential interactions with each VC against the VCs specific characterization of residual effects criteria was done in section 9.3.1. Based on the criteria for Archaeological and Heritage Resources, there isn't expected to be a potential effect of concern resulting from vessel grounding or collision. Accidents and malfunctions as they relate to Aboriginal Interests are addressed in Section 12.6.
2381.1	round 1	Gitxaala Nation	9.4.1	Accidents or Malfunctions	It is an overstatement to say that there are no interactions associated with VCs from motor vehicle collisions. Revise to indicate that interactions may occur but the residual effect is not expected to be significant.	The potential interactions between a motor vehicle collision and VCs could arise if the collision resulted in an on-shore fire/explosion or an on-shore spill. Potential interactions between an on-shore fire/explosion and on-shore spill on VCs are described in Section 9.6 and Section 9.8, respectively.Please reference these sections for VC interactions and the overall significance determination.

2382.1	round 1	Gitxaala Nation	9.5.2	Accidents or Malfunctions	Please indicate the way in which First Nations communities will be integrated into response planning.	As stated in Section 12.6 of the Application, 'Aurora LNG looks forward to continuing to consult with Aboriginal Groups about safety and emergency response strategies'. Aurora LNG is hopeful that such discussions will help identify meaningful ways in which Aboriginal Groups such as the Gitxaala Nation may be integrated into Project-related response planning and preparedness.
2383.1	round 1	Gitxaala Nation	9.7.3	Accidents or Malfunctions	Given the presence of SARA listed species and the potential for interactions with flare events, population effects may occur. A flare screen or other exclusion device should be added to project mitigation.	The assessment of an LNG Plant Malfunction on wildlife determined that potential residual effects on terrestrial wildlife (including SARA species) are not expected to have a population level effect and are predicted to be not significant. The mitigation measures that Aurora LNG have planned are intended to protect all terrestrial wildlife species, including those that are SARA listed. As such, Aurora LNG believes that no additional mitigation is warranted to protect SARA listed species from emergency flaring. Aurora LNG will continue to consult with Metlakatla First Nation on various aspects of the Project including the development of environmental management plans.
2384.1	round 1	Gitxaala Nation	10.2.1.2	Effects of the Environment on the Project	The application notes that vessel icing is an issue but preventative and response measure to manage this potential effect are not provided. Please indicate how vessel and berth icing and effects on weight, stability, seaworthiness, and berthing will be managed.	Potential structural icing on an LNG processing facility, marine terminal, or on LNG carriers or associated support vessels is addressed through facility design and by implementing a de-icing program where required during operations. The program would be developed during detailed design.
2385.1	round 1	Gitxaala Nation	10.2.2.1	Effects of the Environment on the Project	The curve used to predict a 1:100-year flood is an historical record from the PRPA. It is generally recognized, in light of climate change, that the past is not a reliable predictor of the future and, in the case of rainfall events, a plus/minus 20% change is considered plausible. Please ensure that the facility design will accommodate a rainfall event equivalent to 1:100 value plus 20%. (165.6mm + 33.12 = 198.72mm) or provide a rationale for why this is not appropriate/necessary.	Climate change effects on precipitation during the life of the Project will be considered during final Project design. As stated in Section 10.2.2.1 of the Application, the intensity-duration-frequency curve does not consider potential changes to rainfall patterns associated with climate change. Section 10.2.2.2 of the Application also states that a Stormwater Management Plan will be developed that will be designed to account for extreme weather events and will incorporate climate change factors over the life of the project.
2386.1	round 1	Gitxaala Nation	10.2.3.2	Effects of the Environment on the Project	Please indicate how the deck heights for the MOF and marine terminal platforms (9m and 12m respectively) were derived. If an extreme event at low tide plus storm surge generated an extreme water level of 8.06m (application p.10-8), how is a MOF deck height of 9 m sufficient to accommodate a similar storm at high tide accompanied by increased sea levels associated with climate change.	Aurora LNG notes that the wording in Section 10.2.3.1, p. 10-8 would benefit from additional clarification. The surge peaked at low tide; however, the peak total water level was attained six hours later (around high tide). As an erratum, Aurora LNG will revise the third from last sentence in the first paragraph on p. 10-8 to 'Abeysirigunawardena and Walker (2008) showed that an intense storm during the winter of 2003 generated a maximum surge of 73 cm at low tide, which produced an extreme water level of 8.06 m above Chart Datum six hours after low tide.' An errata document is being created that will capture this correction and it will be filed with the BC EAO.
2387.1	round 1	Gitxaala Nation	10.2.6	Effects of the Environment on the Project	The Application has not considered tsunamis to pose a risk to the Project. Community members are nevertheless concerned by the damaging effect of or on project infrastructure by material put in motion by a tsunami.	Aurora LNG acknowledges Gitxaala Nation's concerns regarding risks associated with tsunamis. The Application provides an assessment of the effect of tsunami on the proposed Project in Section 10.2.6. As stated in Section 10.2.6.4 'By adhering to the relevant codes and recommendations from the tsunami hazard assessment, the potential effects of tsunamis will be prevented, avoided, or reduced through design, construction and operational standards.'
2388.1	round 1	Gitxaala Nation	14	Environmental and Operational Management Plans	The EMPs are deficient in detail per requirements in the AIR, which states that "The Application will provide a list and **comprehensive description** of the Environmental Management and Operational Plans for construction and operations of the proposed Project which will be refined during the Assessment of each VC." (bold underline added for emphasis). The Application, however, does not provide "comprehensive descriptions" of the EMPs. The brief descriptions largely identify information that is required for a "comprehensive description" without actually providing the description that the AIR demands. Further, as the Application states, "The EMPs describe the protection measures implemented onsite to avoid or reduce potential adverse effects." Since the EMPs are not provided - even in a preliminary form - we are therefore being asked to conclude on the significance of residual effects without the protection measures described in the EMPs. The brief descriptions and references to the list of relevant mitigation measures is not sufficient to determine adequacy for the purpose of this assessment. A key importance of an EMP is for reviewers to understand how the mitigation measures will be implemented and how they may collectively prevent significant harm to the sustainability of the VC. The EMP should also be very clear as how specific potential effects will be mitigated, including additional mitigation options and risk management procedures. The current descriptions don't explain how the EMPs relate to the results of the effects assessments (apart from simply listing related effects in a table). In the absence of comprehensive EMPs to review, the Working Group and decision makers are not able to determine whether the impacts are going to be reasonably addressed with what has been provided.	Section 14 of the Application provides a comprehensive list of proposed management plans to be developed as Project design details become available and the conditions of an approval are presented to the proponent. The proposed contents of these plans are substantively presented in the form of the many mitigation measures that have been developed for each VC and are summarized in Section 16. These mitigation measures, as well as design mitigation presented in the Project Overview, form the basis of the assessment of residual effects that is, in general, highly confident. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs.
2389.1	round 1	Gitxaala Nation	14	Environmental and Operational Management Plans	Please provide clarity as to when an appropriate level of detail will be provided and that sufficient time be provided for the Working Group to review and comment by the end of the assessment.	Details of the Environmental Management Plans will be developed prior to commencement of the Project phase to which they apply, consistent with any requirements outlined in Environmental Assessment Certificate Conditions.
2390.1	round 1	Gitxaala Nation	15.2.1	Follow-up Programs and Compliance Reporting	A complete follow up program is not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the follow up program to be provided in the future is not sufficient for this assessment (per the AIR). Please provide a complete proposed follow up program for the heron rookery.	Aurora LNG is committing to maintaining setbacks to decrease the extent of sensory disturbance in the vicinity of active nesting sites for great blue heron and to reduce the potential for flushing during the nesting and rearing period. Aurora LNG acknowledges that Develop with Care recommends as a best management practice that excessive noises should not occur within 1,000 m of a great blue heron colony during the nesting window (BC MOE 2014). As per mitigation 4.7.4, high-disturbance Project-related activities (e.g., blasting, pile driving) will be avoided where practicable during the breeding window (i.e., January 15 through September 15) within 500 m of the great blue heron rookery at Dodge Cove. To address the uncertainty over the degree to which high disturbance activities occurring within 1,000 m of the heron rookery may result in disturbance displays by nesting herons (as per provincial guidelines), Aurora LNG is committing to monitoring for changes in breeding activity at the rookery if high disturbance activities for Project construction occur within 1,000 m of the rookery during the breeding window (January 15 to September 15 for great blue heron). Given the geography of the area and the fact that there is a ridge of land that visually separates the rookery from proposed road corridor it is unlikely that road construction activities will cause a change in breeding activity. Monitoring protocols will follow the Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies (Vennesland and Norman 2006). Monitoring and adaptive approaches will be described in detail in the Wildlife Management Plan. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding development of the Wildlife Management Plan. Reference: British Columbia Ministry of Environment (BC MOE). 2014. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: April 2016. Vennesland, R. G. and D. M. Norman, 2006. Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies. The Heron Working Group.
2391.1	round 1	Gitxaala Nation	15.2.2	Follow-up Programs and Compliance Reporting	A complete follow up program is not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the follow up program to be provided in the future is not sufficient for this assessment (per the AIR). Please provide a complete proposed follow up program for Acidification and Eutrophication.	The acidification and eutrophication follow-up and monitoring programs are expected to be developed on a regional level and the plan is to consult with Aboriginal Groups, MOE and other local industry to finalize those programs. It is expected that Aboriginal Groups will be involved in the implementation of those programs. Please see the "Additional Information about Eutrophication and Acidification in Freshwater" technical memo for additional details on future monitoring programs. The "Additional Information about Eutrophication and Acidification in Freshwater" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Nutrient Nitrogen in Lakes." The memo was updated as a result of the discussion during the Working Group meeting.
2392.1	round 1	Gitxaala Nation	15.2.3	Follow-up Programs and Compliance Reporting	A complete follow up program is not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the follow up program to be provided in the future is not sufficient for this assessment (per the AIR). Please provide a complete proposed follow up program for the Marine Sediment Deposition.	Aurora LNG is committed to developing and implementing a Marine Water Quality Monitoring Program to monitor turbidity and total suspended solids associated with dredging activities, to characterize water quality parameters in effluent discharges as per permitting requirements, and to monitor the implementation and effectiveness of mitigation measures. The plan will include water quality thresholds, monitoring frequency, and specific monitoring locations. This plan, as well as details specific to monitoring potential sediment deposition, will be developed in accordance with industry best management practices and standards, applicable regulations, and conditions of the Environmental Assessment Certificate and relevant permits. The plan will be developed through engagement with applicable regulators, Schedule B Aboriginal Groups, and specific stakeholders.It is standard practice for these management plans to include (at least) the following information: background on the need for the program or planregulatory context consultation and engagementobjectivesmonitoring and field methodsreporting requirements adaptive management framework. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2393.1	round 1	Gitxaala Nation	15.3	Follow-up Programs and Compliance Reporting	Complete monitoring programs are not provided, as required by the AIR: "*The Application will provide a description of the proposed monitoring and follow-up programs, including the activities, objectives, and reporting,* ***in sufficient detail to reliably verify predicted effects (or absence of them) and to confirm both the assumptions and the effectiveness of mitigation***." (bold underline added for emphasis). The brief general description of the contents of the monitoring programs to be provided in the future is not sufficient for this assessment. This is a deficiency per the AIR. Please provide complete proposed monitoring programs at a sufficient level of detail.	As outlined in Section 14.2 of the Application, each Environmental Management Plan (EMP) will include requirements for monitoring (e.g., compliance and/or effectiveness) and reporting. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs. The implementation of EMPs will be overseen by environmental professionals to confirm compliance with monitoring and reporting requirements. EMPs, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2394.1	round 1	Gitxaala Nation	15.3	Follow-up Programs and Compliance Reporting	The six topics for monitoring programs (still to be provided) do not cover some components that should be expected to include compliance monitoring and reporting, such as noise, wildlife (marbled murrelet and bats), marine mammals, freshwater & marine fish habitat (not just monitoring of the offsetting plan), social values, and archaeology. All these components warranted EMPs to mitigate impacts, so some form of compliance monitoring and reporting should be expected. When complete monitoring programs are provided, they should include proposed monitoring related to all EMPs.	As outlined in Section 14.2 of the Application., each EMP will include requirements for monitoring (e.g., compliance and/or effectiveness) and reporting.Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the EMPs. The implementation of EMPs will be overseen by environmental professionals to confirm compliance with monitoring and reporting requirements.
2395.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 1 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 1 of the Marine Mammals TDR (Appendix N of the Application) was erroneously omitted from the original final Application submission. This missing figure was included in the update to the Marine Mammals TDR. There were no specific changes made to any figures.
2396.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 2 when the appendice was updated in early February.	Adraft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 2 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2397.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 3 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 3 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2398.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 4 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 4 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2399.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 5 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 5 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2400.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 6 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 6 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.

2401.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 7 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 7 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2402.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 8 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 8 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2403.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 9 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 9 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2404.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 10 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 10 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2405.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 11 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 11 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2406.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 12 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 12 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2407.1	round 1	FLNRO, RMD	4.7.2.6	Wildlife Resources (Terrestrial)	Comment. No response required. For EAO's information. Table 4.7-5. The application presents a very simplistic description of Context. A binary description (resilient, not resilient) misses a great deal of the contextual nuance usually captured in this part of the residual impact description.	Comment noted. The characterization of residual effects criteria used to describe the "Context" for Wildlife Resources (Terrestrial) is consistent with the description provided in Section 3.6.4 of the Application Information Requirements and the Guideline for the Section of Valued Components and Assessment of Potential Effects guidance document provided by the Environmental Assessment Office.
2408.1	round 1	FLNRO, RMD	4.7.5.2	Wildlife Resources (Terrestrial)	Comment. Table 4.7-10. The 30m marine buffer is a key component to mitigate impacts (e.g.: wildlife, marine, visual quality, etc.). Risk and uncertainty are characterized as low. The success of this mitigation depends on its persistence in the face of strong coastal storm winds. There has been no attempt to assess this buffer for wind firmness, which is a key consideration that could lead to the complete failure. In addition, the Project Development Area (PDA) delineates an excessively large clearing area. Along the eastern edge of the project, clearing is shown to extend 150-500m away from the project infrastructure. This appears to be excessive and not justified in the Application. Recommendation for EA certificate condition: Prior to issuance of a permit to construct, the proponent should submit a management plan that would include a fulsome assessment of the structure and function of the marine buffer, and outline strategies and measures to achieve and maximize its intended mitigation functions. As assessment of wind firmness and an examination of options to maximize buffer width would be part of this management plan.	A description of the coastal forest communities that comprise the marine riparian buffer is found in Appendix I of the Application. Shoreline forest units border Digby Island and are generally characterized by mature and old-growth western redcedar, western hemlock, and sitka spruce. Trees within shoreline forests on Digby Island have developed under a coastal environmental regime; their stunted growth pattern is partially a result of their ability to withstand strong coastal weather conditions (Zielke et al. 2010). Characteristic of many coastal islands within the RAA, shoreline forests on Digby Island naturally transition to open wetlands or shrub-dominated bogs. The currently proposed boundaries of the PDA, as presented in the Application, are the maximum extent of areas expected to be cleared and disturbed by Project construction and operations. These PDA areas include some variable amount of setback from vegetation for safety (e.g., fire) or other management reasons. During facility design and into site construction, opportunities may be identified to avoid certain areas and or reduce the extent of clearing or disturbance in select areas. The PDA boundaries will follow, to some extent, the contours of these transitional areas. Accordingly, the marine riparian buffer is expected to be sustained for the duration of Project operations and is not expected to require a stand-alone management plan. However, please also note the forested marine riparian buffer will be subject to Mitigation 4.6.8 which states that "Windthrow management (e.g., edge stabilization techniques) in forested areas will be implemented following BC windthrow management guidelines". Aurora LNG will consider whether development of a management plan for the riparian areas might help to consolidate these various measures.
2409.1	round 1	FLNRO, RMD	4.7.5.2	Wildlife Resources (Terrestrial)	Comment. Tables 4.7-10, 14, 15. There are numerous references here to mitigation actions that will be undertaken "where practicable", "to the extent practicable", "to increase awareness", and management plans that will provide "guidelines" for avoiding impacts. The lack of commitment in these statement erodes the certainty of the effectiveness of the associated mitigation measures.	Aurora LNG is committed to following a mitigation hierarchy to avoid, limit, and mitigate for potential effects to wildlife resources and will implement options that result in avoiding or reducing effects to wildlife resources. Some Project activities (e.g., vegetation clearing within the PDA) will result in direct and indirect loss of habitat, however, these activities will be scheduled to occur outside of restricted activity periods to avoid effects on wildlife (as per mitigation 4.7.17). In cases where Project activities or infrastructure cannot avoid effects to wildlife resources, Aurora LNG has proposed alternative mitigation measures to reduce and mitigate those effects. For example, if vegetation clearing is required during breeding bird and amphibian periods, pre-clearing surveys will be completed (as per mitigation measures 4.7.18 and 4.7.19). Applicable management plans will provide detail on timelines for implementing Project mitigation measures, and will describe monitoring and reporting requirements, as appropriate, to support compliance monitoring.
2410.1	round 1	FLNRO, RMD	4.7.3.2	Wildlife Resources (Terrestrial)	Seeking clarification of information in application. Figure 4.7-7 shows the location of the great blue heron rookery. The Breeding season buffer should be 500m (as noted in table 4.7-14) but appears to be less than that on this map according to the scale. In addition, clearing will occur within the 500m buffer in order to allow for a 150m clearing on the east side of the road. There is no rational presented for this large of a road side clearing. I would suggest that much less road side clearing could occur, resulting in no clearing within 500m of the rookery, with no material impact on the project.	The breeding season buffer for the heron rookery is intended to illustrate a 500 m buffer, and is not shown to scale on Figure 4.7-7. The 500 m buffer is intended to limit effects caused by high-disturbance activities, as described in Section 4.7 of the Application (e.g., blasting, helicopter flights, etc.). Aurora LNG anticipates that the road right-of-way will be approximately 75 m wide and occur within the PDA boundaries, as shown in Figure 4.7-7. The revised road alignment is located further west within the right-of-way and will occur outside of the 500 m setback around the heron rookery.Clearing for construction of the road will be minimized within the setback area. As per Mitigation 4.7.17, Aurora LNG will avoid clearing within restricted activity periods, including portions of the road that intersect the breeding season buffer, to limit sensory disturbance effects at the rookery. Aurora LNG is further committed to monitoring the rookery for changes in breeding activity if vegetation clearing for Project construction overlaps with the breeding window for great blue heron. An errata document is being compiled that captures these corrections, including a revised figure, and it will be filed with the BC EAO.
2411.1	round 1	FLNRO, RMD	4.7.5.3	Wildlife Resources (Terrestrial)	Seeking clarification of information in application. Table 4.7-14 (mitigation 4.7.22) is the first mention of fencing around the project (it is not mentioned in section 4.7.5.4 Assessment of change in movement), and should be described in more detail. Is it going to be an electric bear/wolf exclusion fence? Will it be located adjacent to project infrastructure or closer to the clearing boundary which is often several hundred meters away? Will it include the access road corridor? It is a significant feature, and may interrupt natural movement patterns and should therefor be presented in more detail.	Aurora LNG is proposing to install fencing around the LNG facility to support security requirements and to reduce the potential for negative interaction between Project personnel and wildlife (e.g., bears, wolves). The entire PDA will not be fenced; first priority will be to fence the camp during construction phase. The core LNG facility (administration buildings, utilities and trains) would be fenced later in construction phase or during operations. There will be, at minimum, two discrete fenced areas allowing wildlife passage to be maintained between these areas. Expected fence style will be metal chainlink although final design will be determined during FEED. Currently there is no plan to electrify the fence.
2412.1	round 1	FLNRO, RMD	4.7.5.5	Wildlife Resources (Terrestrial)	Comment. No response required. For EAO's information. Note that several of the residual effects that are characterised as reversible in table 4.7-16 depend on forest regeneration after site reclamation. This will be on the scale of tens to hundreds of years for full "reversibility".	Comment noted. Aurora LNG recognizes that the timelines for reversibility of effects to Wildlife Resources depends, in part, on the the rate of vegetation regeneration for some habitat communities following site reclamation.
2413.1	round 1	FLNRO, RMD	4.7.5.5	Wildlife Resources (Terrestrial)	Request for additional information: Table 4.7-17 notes no impact on change in movement to western toad. Given the project's proximity to toad habitat and the roads, laydown areas, soil stockpiles, and large structures, I would have thought an effect on toad movement to be likely. Please explain the rational for no effects here; I did not find one in section 4.7.5.4.	Table 4.7-17 should identify that western toads may experience effects on movement as a result of Project activities and infrastructure. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. Section 4.7.5.4 provides a discussion of potential effects to toad movements in consideration of seasonal dispersal patterns and Project infrastructure. The mitigation measures listed in Table 4.7-17 are intended to reduce the potential for effects to western toad movement. Inclusion of change in movement for western toad in Table 4.7-17 does not change the overall conclusions on residual Project effects for this species.
2414.1	round 1	FLNRO, RMD	Appendix J 5.4.3.2	Wildlife Resources (Terrestrial)	Comment. RISC standards for northern goshawk call playback surveys recommend a spacing of 400m between call playback locations, or less in dense coastal forests. This implies a maximum effective range of 200m for a call playback location. Northern goshawk habitat was not modeled, but generally has a high overlap with marbled murrelet habitat. The 8 diurnal raptor call playback locations cover some of these areas, but the coverage is far from complete. It would appear that surveys for northern goshawk were incomplete, and the findings therefor inconclusive. Northern goshawk (laingi subspecies) is red listed in BC and is known to occur around Digby Island. As such, we would expect a fulsome effort at examining project effects on this species.	Diurnal raptor call-playback stations were located in habitats expected to support target species and included survey effort in contiguous stands of mature or old-growth forest. Site selection was expected to target habitats within the PDA and LAA most likely to support breeding by northern goshawk. Although there was no detection of northern goshawk during field studies, the assessment of wildlife resources also considers how change in habitat will potentially affect the species through the wildlife habitat community model (see Section 4.1.3 of Appendix J and Section 4.7.5.2 of the Application). Table 4.7-17 outlines mitigation measures that Aurora LNG has developed, in part, to avoid, reduce, or mitigate potential effects from Project activities or infrastructure on northern goshawk. To improve prediction confidence of potential Project effects to northern goshawk, additional information on species presence has been prepared as a technical memo entitled "Wildlife Passive Acoustic Monitoring Program" and it will be filed with the BC EAO.
2415.1	round 1	FLNRO, RMD	Appendix J 5.8.3.1	Wildlife Resources (Terrestrial)	Request for additional information: Are there any indications that a bat hibernaculum may be present in the PDA or LAA? Karst geology, rocky outcrops, etc.? Have these features been surveyed?	Opportunities for winter hibernaculum in rocky outcrops or underground caverns or caves within the PDA or LAA were not identified during field studies. Wildlife habitat community models, supported by ground-truthed vegetation and wildlife habitat assessments, did not classify any portions of the PDA or LAA as a primarily rock-based community type (see Section 4.1 of Appendix J). Additional field studies for wildlife resources did not identify winter hibernacula features. It is expected that habitats within the PDA and LAA primarily support summer roosting and foraging habitat for bats. Additional information on seasonal activity patterns for bats has been prepared as a technical memo, entitled "Aurora LNG Project Bat Monitoring Program" and it will be filed with the BC EAO.
2416.1	round 1	FLNRO, RMD	4.8.3.3	Freshwater Fish and Fish Habitat	Comment. The riparian management zone and riparian management areas around J1-5 and J1.1 are subject to windthrow and should be assessed for wind firmness prior to reliance on these mitigations as effective options.	Comment noted. As part of the delineation of the riparian zones around creeks J1-5 and J1.1 during pre-construction works, vegetation stability and windthrow assessments will be completed.
2417.1	round 1	FLNRO, RMD	4.8.9	Freshwater Fish and Fish Habitat	Comment. Resource Management Division of FLNRO manages fish populations for coastal cutthroat trout and Dolly Varden. We should also be consulted on the Fish Habitat Offsetting Plan.	Aurora LNG acknowledges the comment and will consult with appropriate regulatory agencies including FLNRO in development of the Fish Habitat Offsetting Plan.
2418.1	round 1	FLNRO, RMD	Appendix U	Vegetation and Wetland Resources	Comment. No response required. For EAO's information. The Conceptual Wetland Compensation Plan serves largely to outline the loss of wetland structure and function caused by the project. There is very little reviewable content with respect to an actual compensation plan. Candidate site(s) have not been identified, and very few strategies have been proposed. This is one of the least developed conceptual compensation plans I have seen as part of an EAO Application.	Comment noted.
2419.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 13 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 13 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2420.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 14 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 14 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2421.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 15 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 15 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2422.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 16 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 16 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2423.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 17 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 17 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.
2424.1	round 1	Gitxaala Nation	Appendix N	Marine Wildlife - Marine Mammals	Please indicate exactly what changes were made to Figure 18 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 18 of the Marine Mammals TDR (Appendix N) was included in the update to the Marine Mammals TDR, as it was erroneously omitted from the original submission. No specific changes were made to any figures.

2425.1	round 1	Gitxaala Nation	Appendix T	Marine Fish and Fish Habitat	Please indicate exactly what changes were made to Figure 1 when the appendice was updated in early February.	A draft version of this Appendix was incorrectly posted on e-PIC at the start of Application Review. This error was corrected when the final version of the Appendix was uploaded on February 3, 2017. Figure 1 of the Hydrology TDR (Appendix T of the Application) was erroneously omitted from the original final Application submission. This missing figure was included in the update to the Hydrology TDR. There were no specific changes made to any figures.
2426.1	round 1	Gitxaala Nation	Appendix I	Vegetation and Wetland Resources	Please indicate exactly what changes were made to the appenice when it was revised in early February.	The following species were added to Table 13 in Appendix I of the Application in February 2016 after receiving additional traditional use studies:green alder (Alnus viridis) lady fern (Athyrium filix-femina) false Solomon's-seal (Maianthemum racemosum) clasping twistedstalk (Streptopus amplexifolius)
2427.1	round 1	Gitxaala Nation	Air Quality Technical Data Report	Air Quality	"Emissions of VOC's are not modelled as Canada and BC have not established objectives for total VOC's...are not considered further in this assessment." This statement is partially correct in that there are currently no ambient air quality objectives for specific VOCs like benzene in BC or nationally; however, it is quite common to model VOC's and in both national and provincial Environmental Assessments (EA's) to adopt suitable values from other representative jurisdictions. For example, the TransMountain Expansion Project which recently was approved by the NEB, and the Canadian and BC governments (EAC Certificate was issued) and TransMountain agreed to adopt ambient air quality objectives from regulators outside of BC. In addition, TransMountain agreed to comply with ambient objectives from Alberta for benzene, toluene, ethyl benzene and xylenes (BTEX), and H2S and mercaptans objectives and guidelines from Ontario. TransMountain incorporated these objectives into their engineering design process and dispersion modelling was conducted routinely to inform engineering design and site ambient air quality monitoring locations. In addition to adopting suitable ambient objectives and guidelines into the EA process, potential health effects from the Project and Cumulative Cases can be more rigourously examined in the Human Health Risk Assessment (HHRA). The natural gas or fuel gas being combusted by the compressor gas turbines (16), power generators (6), heaters (4), thermal oxidizers (4), flares (3) and camp site power generators (2) contains air toxics like BTEX and other contaminants and the combustion process will create other toxics like benzo (a) pyrene and formaldehyde. The Aurora project will comsume a huge daily volume of feed gas estimated to be 104 million cubic meters per day. Section 1.2.7.2 (Natural Gas Pre-treatment and Liquids Extraction, page 1-37) of the EAC Application indicates that C5+ and BTEX compounds will be removed from the feed gas before the liquefaction process but will not remove any contaminants from the feed gas for use in the on-site stationary combustion equipment listed above. Section 3.2 of the AQ TDR identifies the major fugitive and incomplete combustion sources and primary VOC emitters for the Project. There are several speciated VOC calculation tools and emission factors available from respected regulators such as CARB, US EPA, USAF, TCEQ and others which Stantec have previously referenced in similar air quality assessments for other oil sands and upgrader projects. Question: Will Aurora amend the air quality assessment to include: (1) predicted concentrations for all fugitive, combusted and non-combusted VOC, PAH and heavy metals in their assessment of Project effects and (2), include the same calculated emissions in combination with emission estimates from other proposed LNG projects in the RSA in the CALPUFF dispersion model for a Cumulative Case (as listed in Table 15 of the AQ TDR) to provide a more representative analysis of potential air quality/human health effects for the Application and CEA Cases?	Refer to the technical memorandum, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. Other substances (e.g., PAHs, heavy metals) were not identified by regulators and stakeholders during the development of the Application Information Requirements as health concerns associated with air quality. While the TransMountain project may have included PAHs (as benzo-a-pyrene) and heavy metals in the Screening Level Human Health Risk Assessment, the risk quotients and incremental lifetime cancer risk associated with inhalation of heavy metals and benzo-a-pyrene were 3 to 8 orders of magnitude (i.e, 1,000 to 100,000,000 times) below the levels that would constitute a significant health risk in a highly populated and industrialized region (i.e., Burrard Inlet and Metro Vancouver) for which the air quality is already affected by industry. These values do not support the need to evaluate heavy metals in the air.
2428.1	round 1	Gitxaala Nation	Air Quality Technical Data Report	Air Quality	Multiple references to "with consideration given" to other monitoring data. It is not clear exactly how measured CAC data from multiple stations is used to calculate Baseline values. This should be clarified.	With respect to the baseline air quality, the phrase 'with consideration given' means that the stations referred to were studied to determine if their data differed meaningfully from the data used to determine baseline. The baseline is determined entirely on the primary station cited, with the other stations merely being reviewed for consistency.
2429.1	round 1	Gitxaala Nation	Air Quality Technical Data Report	Air Quality	Baseline values given in this table do not all agree with those given in Detailed Model Plan (Appendix 1) submitted to MOE. For example, PM2.5 24-hour and Annual values are less than specified in Detailed Model Plan Table 2.	In the intervening time period between the approval of the Detailed Model Plan by the Ministry of Environment and completion of the assessment, better information on local air quality became available. Discussions with the Ministry of Environment resulted in three parameters having increased baseline values, and two parameters having reduced baseline values. These changes are small and did not result in any material changes to the results and the assessment or its conclusions.
2430.1	round 1	Gitxaala Nation	Air Quality Technical Data Report	Air Quality	End of second paragraph states "most effects to community receptors are attributed to future regional sources." As stated in the TDR, there are multiple future regional sources, and so it is not clear whether one of those sources or the Project itself is the largest contributor to effects on community receptors. All future regional sources are bunched into one group. We would like to know the relative importance of the Project relative to other individual projects.	The relative importance of the Project compared with other individual projects is described in detail in Section 7.4.2 of Appendix A (Air Quality TDR). The CEA Case Attribution section breaks down the contribution of the CEA case at eight locations by 1) the Base Case, 2) the Project Alone Case, and 3) Other Future Sources. Determining which future project is responsible at each receptor is a matter of reviewing the isopleth maps for the parameter in question and studying Table 15 (to determine which project was included in the modelling) and Figure 3 (to determine the included projects location). For example, studying Figure 5-49 shows the SO2 maxima for the CEA Case is at Fairview Terminal.
2431.1	round 1	Gitxaala Nation	Air Quality Technical Data Report	Air Quality	No frequency of exceedance plots. Only one reference to FOE values on page 42 of TDR. Statement on page 49 that characterizes exceedances of PM10 and NO2 as "short term in duration, infrequent" are not backed up by actual published values. In Appendix 1 page 22 is states that "frequency counts of hourly exceedance will be reported". This is not done in the TDR. On page 4.2-37 of EA FOE for PM10 and NO2 are mentioned in the text for CEA case and Application case only. There needs to be a more explicit discussion of frequency of exceedance.	The dispersion modelling indicated that there are predicted exceedances of PM10 and NO2 adjacent to, and primarily attributable to emissions from, facilities other than the Aurora LNG Project. Frequency of exceedance plots for PM10 for Base Case, Application Case and CEA Case have been provided as Figures 1, 2, and 3 of the "Air Quality Figures (#1270.1)" technical memo. The maximum PM10 concentrations for the Base Case, Application Case and CEA Case (i.e. where exceedances are shown to occur) are predicted adjacent to the Prince Rupert Grain Terminal. The maximum frequency of exceedance for the Base Case, Application Case and CEA Case is 7.5%, 7.6% and 7.8% of the time, respectively. A frequency of exceedance plot for 1-hour NO2 for the CEA Case has been provided as Figure 4 of the "Air Quality Figures (#1270.1)" technical memo. The maximum NO2 concentration for the CEA Case (i.e. where exceedances are shown to occur) is predicted adjacent to the Fairview Terminal. The maximum frequency of exceedance for the CEA Case is 7.9% of the time (28.7 days where the daily hourly maximum exceeds the AQO of 188 ug/m3). The "Air Quality Figures (#1270.1)" technical memo will be filed with the BC EAO.
2432.1	round 1	Gitxaala Nation	Air Quality Technical Data Report	Air Quality	The scale of the figures does not allow the reader to see isopleths close to the Project or close to CAC maxima. Would be helpful to see some zoomed in figures to see these areas more clearly.	The scale of the figures and the selected isopleth interval is chosen to balance the need for detail over a large area without cluttering the figure with unnecessary detail. There are 71 isopleth maps in the Air Quality Technical Data Report (Appendix A of the Application). If the Gitxaala Nationwould like to provide a list of figures and specific geographic areas of interest, some revised maps with a larger scale can be provided.
2433.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 1	Air Quality	This Table shows that precipitation values derived from WRF were low compared to normal precipitation. Appendix 3 Table 7-2 also shows that WRF precipitation is ~25-30% too low compared to actual precipitation over the modelled years. This will have effects on deposition rates and ambient concentrations. Why not use precipitation data from Prince Rupert Airport and convert daily values to hourly? What is the effect on calculated deposition rates that are used to assess acidification and eutrophication of using precipitation rates that are too low?	Table 7.2 shows that precipitation at Prince Rupert Airport and Prince Rupert Mont Circle are under-predicted by 25% and 30% respectively. Experience with like projects in a similar setting shows that this range of under/over prediction are common and expected. This information has no meaningful effect on the spatial pattern shown in Figure 7-9. The overall effect of this discrepancy on the effects assessment regarding acidic deposition is small. Prince Rupert Airport precipitation was not used as input to the CALMET model as the final approved Detailed Model Plan stated that precipitation from the WRF model would be used. The WRF precipitation data was determined to be representative and have the advantages of spatial variation and accounting for orographic effects (increased precipitation at high elevations).
2434.1	round 1	Gitxaala Nation	EA Certificate Application	Air Quality	A commitment by the proponent is made to participate and contribute to regional ambient air quality monitoring programs. In our opinion it is very important to have ongoing continuous monitoring of CACs considering the modelling suggests that exceedances of PM10 and NO2 are likely. The details of this monitoring need to be established.	Details of Aurora LNG's participation in regional ambient air quality monitoring programs will be established prior to the commencement of operation of the Project. It is expected that the program will be consistent with any requirements that may be outlined in potential EAC conditions and in the process of obtaining a Permit under the Environmental Management Act, Waste Discharge Regulation.
2435.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	Fugitive dust from construction activities are considerable from the handling and processing of materials, but was determined negligible based on precipitation data and peat moss composition of the materials moved. More clarification should be given on the precipitation in the area and its contribution to eliminating fugitive dust emissions. There is a potential for dust events during periods of no precipitation especially during the summer. As most emission factors for fugitive dust are based on moisture content and silt content, these parameters should be determined to support the exclusion of fugitive dust during construction.	Measures are proposed to reduce, avoid, or mitigate coarse fugitive particulate emissions from construction. They are contained in Table 4.2-10 of part 4.2 of the Application (Mitigation Measures Proposed to Avoid or Reduce Air Emissions). Measures are proposed such as limiting vehicle speed, and dust suppression. Coarse particulate matter emissions are easily managed in this setting, and are generally not an issue. Consistent with the final approved Detailed Model Plan (Appendix 1, Air Quality - TDR: Appendix A of the Application), the assessment focuses instead on fine particulate matter (PM2.5) from combustion sources.
2436.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	The load factor was described as the ratio of actual engine fuel consumption to maximum rated output. It is unclear how the load factor for each equipment was calculated based on the engine power in horsepower (hp) and fuel consumption in litres per hour per unit (L/hr/unit).	The load factor for each engine was calculated based upon the ratio of actual engine power output to maximum rated engine output. The average engine power output was calculated based upon the fuel consumed, energy content of the fuel, and thermodynamic efficiency of a typical engine, assumed to be 35%. Load Factor = (average power output / maximum power output) Average power output of the engine was calculated as: Average Power Output (bhp) = (L/h of diesel) * (1 USG/3.785 L) * (137,000 BTU/USG of diesel) * (0.000393 bhp-h/BTU) * (thermodynamic efficiency of 0.35)
2437.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	"The emission factor for NOx is 2.6 g/hp-hr for all diesel equipment in Table 3-2 and Table 3-5 of the TAR. While there was no clear indication on the origin of the emission factor, NOx emission factors for equipment with power rating from 100 hp to 750 hp appears to be consistent with Table A4. in the US EPA publication ""Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition, NR-009d"" and accounting for the Transient Adjustment Factors (TAFs) provided in Table A5 of the same document. However, equipment with power rating less than 100 hp would have a higher emission factor based on Table A4. The emission factor for CO is either 3.7 g/hp-hr or 2.6 g/hp-hr for all diesel equipment. It is not clear how the CO emission factors were derived as they are not comparable to CO emission factors provided in Table A4 and TAFs provided in Table A5. "	The emission factors that were used for estimating emissions from the construction equipment are obtained from the emission limits in The Off-Road Compression-Ignition Engine Emission Regulations (SOR/2011-261, SOR/2005-32). As more than 90% of diesel consumption (based upon total hp-hours) is associated with diesel equipment with engines larger than 100 hp, the emission calculations were simplified and only adopted emission standards for engines greater than 100 hp. Aurora LNG has not yet started detailed construction planning and the exact composition and engine size of the construction fleet has not yet been determined. Based upon the estimated construction period for the Project and the typical lifetime of heavy duty construction equipment, it is anticipated that the construction fleet would consist of primarily Tier 4 compliant construction vehicles (i.e. better than Tier 3 assumed for calculation purposes) but may also contain some Tier 3 or Tier 2 compliant engines for select specialized equipment. The actual emissions from the diesel construction equipment are anticipated to be less than the estimate presented in Appendix 2 of the Air Quality TDR (Appendix A of the Application).
2438.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	Manufacturer performance data was used to estimate NOx emissions from compressor gas turbine drivers. Although the accuracy of the data maybe higher, there is a potential for underestimating NOx emissions as manufacturer data maybe based on optimal operation of equipment. Emission factors are recommended to provide a more conservative estimate of emissions.	The manufacturer performance data are in fact performance guarantees warranted by the various turbine manufactures. The manufacturer guarantees are a conservative representation of NOx emissions from Project gas turbines as actual emissions are typically less than the guaranteed upper limit. Project NOx emission estimates from the proposed gas turbines are conservative as they are based upon the adoption of manufacturer guarantees and the assumption that all turbines operate continuously at 100% of their maximum rated capacity.
2439.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	The estimated emissions in tonnes per day of PM10 is less than PM2.5 in Table 4-8. How is this possible?	In Table 4-8, PM10 is listed as 0.004 t/d, and PM2.5 is listed as 0.0044 t/d. In fact, all PM emitted by gas turbines is <2.5 um in diameter, and therefore PM2.5 is equal to PM10. The discrepancy is owing to the PM10 emission number being rounded to three decimal places, and the PM2.5 being rounded to 4 decimal places.
2440.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	The text in section 4.7 indicated 206 Q-Flex LNG carriers will visit the terminal per year, which is contrary to 256 carrier visits indicated in Table 4-29. Clarification in which number was used in the calculation is required.	The correct number of Q-Flex LNG carriers that were assumed to visit the terminal per year is 256. The value of 206 noted in the text in section 4.7 of the Air Quality Technical Data Report is a typographic error. The calculations were correctly completed using 256 Q-Flex LNG carrier visits per year. An errata document is being prepared that will capture this correction and it will be filed with the BC EAO.
2441.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	The load factor was calculated based on actual speed and maximum speed rather than engine output. The calculation is likely not an accurate estimate of the vessels' load factor, and updating the calculation is recommended.	The required power output for the main engine of the vessel is a function of vessel speed. The calculated load factor for the main engine is correctly calculated as the ratio of actual speed to maximum speed to the power of 3. The equation is obtained from Section 2.5 (page 2-11) of ICF International (ICF) report titled "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report. April 2009.". Revised calculations are not required.
2442.1	round 1	Gitxaala Nation	Air Quality Technical Data Report, Appendix 2	Air Quality	The emission factors of NOx, SO2 and PM2.5 were recommended by the BC MOE. Clarification and reference should be included for these emission factors.	During consultation with the BC MOE, Aurora LNG were advised of the MOE's preference that Aurora LNG adopt the same emission factors for LNG vessel emissions as used in the Prince Rupert Airshed Study (PRAS). The emission factors presented in Table 4-30 of Appendix 2 (Air Quality TDR) were selected based upon MOE recommendations to ensure consistency with the PRAS.
2443.1	round 1	Gitga'at First Nation	4.2	Air Quality	The LAA is inaccurate and must be extended to include the shipping lane, and as such, Project effects must be assessed for the entire shipping lane.	The approved Application Information Requirements (Section 4.2.2) notes that air quality will be assessed through dispersion modeling to determine the effects of Project marine vessels and Project facility equipment on air quality for activities near the LNG facility. This includes the LNG and support vessels when maneuvering and at berth which is considered the worst case for marine vessel emissions. The study areas including the LAA and RAA are the same as those approved by the BC MOE in the final Detailed Model Plant (Appendix 1, Air Quality - TDR). The AIR and the Detailed Model plan excluded modelling of Project LNG vessels when underway. The request to revise the study areas and include Project marine vessels while underway is therefore not in the scope of this assessment.

2444.1	round 1	Gitga'at First Nation	4.2	Air Quality	Please provide rationale for excluding trace air contaminants (e.g., PAHs and metals).	The Application focused on criteria air contaminants that the Project could produce in sufficient amounts to reasonably pose a risk to human health. The scope of the assessment was determined in collaboration with federal and provincial regulators and other stakeholders. Polycyclic aromatic hydrocarbons, volatile organiccompounds and metals were not included in the Application Information Requirementsunder Section 8 for the assessment of human health. Volatile organic compounds in LNG are predominantly methane, ethane, propane and other short chained hydrocarbons which are not toxic when inhaled. Refer to the technical memo, "Volatile Organic Compounds and Human Health Assessment" which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. There is no pathway for the Project to contribute metals in the air. The assessment of metals in air are typical of mine projects, which produce mineralized dust.
2445.1	round 1	Gitga'at First Nation	4.2	Air Quality	Also see Air Quality comments submitted by TESA.	Aurora LNG acknowledges this comment from Gitga'at First Nation.
2446.1	round 1	Gitga'at First Nation	4.3	Greenhouse Gases	As it is clear that the Aurora LNG Project will not be in compliance with the provincial intensity benchmark of 0.16 tonnes of C02e/tonne of LNG, and may or may not reach within the intensity limits of 0.16-0.23 tonnes of C02e/tonne of LNG (for reduction in carbon tax levy), it is not clear how Nexen will offset the non-compliance. As with other VCs where offsetting is required these offsetting plans (even if preliminary) are presented in the assessment to understand how significant effects can be balanced. Although a Condition of the potential EAC will be the submission of a GHG Management Plan to the EAO (and other relevant agencies), again the contents of this plan are unknown and it is difficult to understand the true significance of the effects of GHG emissions. Suggest, at minimum, that GHG Management Plan include an GHG emissions offsetting plan and the development of these plans be a transparent process among all affected stakeholders.	Section 4.3.5.2 of the Application states "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislation and will contain continuous assessment of monitoring and management requirements applicable to the mitigations listed in Table 4.3-12 (e.g., requirements of a fugitive emission survey program). The management plan will also contain a Best Achievable Technology analysis." Compliance with the provincial intensity benchmark of 0.16 tonnes of CO2e/tonne of LNG produced will be clarified in the annual reports submitted to the Climate Action Secretariat during the operation phase of the project. Each year, the project will be able to choose if it will purchasing credits, offsets or investing in a technology fund.
2447.1	round 1	Gitga'at First Nation	4.3 (Talbe 4.3-9)	Greenhouse Gases	As stated in the responses from the proponent to WG members associated with the screening review: "As indicated in the Application, it is not anticipated that waste management will interact with GHGs in a substantial manner. The primary basis for this conclusion is that Aurora LNG intends to avoid open burning of accumulated waste during all phases of the Project. Therefore, based on the avoidance and minimization of burning of accumulated waste, it is not anticipated that waste management contribute to GHGs in substantial manner. To reflect this commitment, the list of GHG mitigations has included a mitigation to "Minimize open burning of accumulated waste materials from the construction camp" (Mitigation 4.2.6) which will be managed through the Solid Waste Management Plan. This indicates that burning of waste during the construction phase may occur, but Aurora LNG plans to minimize this activity, where possible and safe to do so." Even with a timber salvage plan, how does Nexen propose to eliminate the wood waste from clearing 773 ha if burning will not take place?	The construction GHG inventory conservatively includes burning of biomass to account for debris, stumps, and unused portions of the salvaged timber. However, the Project intends to avoid the burning of biomass where practical and safe to do so.
2448.1	round 1	Gitga'at First Nation	4.3 (page 4.3-20	Greenhouse Gases	Gitga'at does not agree with the exclusion of LNG carrier emissions from the Project's operational total (emissions). The proponent should calculate the percentage of emissions attributable to their LNG carriers transiting, at minimum, from Triple island to the berth and assess this as part of the total project GHG emissions and operational intensity calculation.	Shipping activities are quantified and presented in Table 4.3-14 of Section 4.3 of the Application. These totals include emissions from LNG carriers (international) and domestic boats. In the GHG assessment, Project operation emissions are compared to PIR and NIR totals to determine the impact or percent contribution. However, the PIR and NIR totals do not include international shipping activities. Therefore, this assessment has excluded them in this comparison. Further, the GHG emission intensity presented in the Application does not include international shipping emissions as these would not be included in future compliance reporting obligations and would not be included in annual operation GHG intensity calculations.
2449.1	round 1	Gitga'at First Nation	4.3 (Table4.3-12	Greenhouse Gases	Gitga'at would like to participate in the development of the GHG Management Plan. As proposed in Table 4.3-12 many of the proposed mitigations that are to be a part of the GHG Management Plan are standard best practices; however, Gitga'at is looking for innovative and adaptive management strategies such that Nexen will be viewed as taking steps above and beyond industry standards to reduce their GHG footprint (as was done with other LNG companies in BC).	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Greenhouse Gas Management Plan.
2450.1	round 1	Gitga'at First Nation	4.3	Greenhouse Gases	Gitga'at agrees with screening comments from WG members regarding the need to quantify the GHG emissions associated with Project decommissioning. Generally, and without FEED information, many of the emission rates / quantities associated with construction activities are but estimates. Estimates for decommissioning activities could be made.	The construction emission inventory was prepared based on Project estimates of equipment usage in conjunction with emission factors that apply to current mobile equipment. The decommissioning phase will be more than 30 years in the future. Therefore, not only are Project equipment estimates more difficult but emission factors for equipment that will operate at the time of decommissioning are currently unknown (i.e., current generation of equipment will be retired). Emissions calculations for the decommissioning phase are therefore not possible at this time. Given the nature of the decommissioning phase activities, it is expected that equipment usage will be for a shorter period of time and less intensive than the construction phase. However, future decommissioning requirements are unknown so this may be incorrect. Mobile equipment will likely consume fuel more efficiently and emissions may differ from current depending on technologies employed. These factors suggest that during the decommissioning phase of the Project, GHG emissions should be less than the construction phase.
2451.1	round 1	Gitga'at First Nation	4.3 (Table 4.3-15)	Greenhouse Gases	It is unclear how a Project Residual Effects on GHG Emissions can have a negligible magnitude from decommissioning activities if GHG emissions have not be quantified for those effects. Please provide more information.	Based on the assessment conclusion that construction emissions will have a "low" magnitude of GHG emissions and that decommissioning activity is expected to be a shorter period with less GHG emissions than the construction phase, it was qualitatively determined that decommissioning will have a negligible magnitude of GHG emissions. As identified in the Application, only land clearing emissions during the construction phase will impact the PIR and NIR emission totals. During the decommissioning phase, little-to-no land clearing is expected. Therefore, the decommissioning phase will have limited impact to the PIR and NIR emission totals.
2452.1	round 1	Gitga'at First Nation	4.3	Greenhouse Gases	Gitga'at would like to see a commitment from the Proponent to assess every five years (or less) the feasibility of using electricity for LNG production activities with the objective to move away from natural gas to electric drive power. This would also include a commitment to develop and build power drives such that they may be switched from natural gas drives to electric drive.	Aurora LNG acknowledges the intent of this comment. The Aurora LNG project is proposed in phases with two LNG trains planned for the first phase and subsequent phases based on market demand. If there are no power options available and the facility design is based on the current gas turbine scenario and the Project takes a final investment decision to move forward, it is very unlikely that Aurora LNG would consider retrofitting the constructed portions of the facility with e-LNG at a later date. Given the very high capital costs, very long lead order time, and the numerous linked aspects of changes in design involved and that all of the facility plans and operations procedures would be based on a defined set of hardware. However, it may be feasible to consider e-LNG for subsequent phases of the Project. This would need to be reviewed at that time based on the latest information available. The current Project design proposes the use of gas turbines for both LNG trains and onsite power generation. At this time, this is the only technically feasible option given the limitations of the BC Hydro grid to accommodate new industrial power demand. Aurora LNG is continuing discussions with BC Hydro and other potential power providers to determine if "e-LNG" is a feasible option. If Aurora LNG is able to secure sufficient reliable power for e-LNG in advance of detailed design, then this option will be reviewed in detail and may be considered a viable option at that time.
2453.1	round 1	Gitga'at First Nation	4.3	Greenhouse Gases	It is not clear if the Application calculated the GHG emissions resulting from peatland destruction. This is essential to calculate given the large amount of peatlands that will be destroyed from the Project.	GHG emissions specific to land clearing activities on peatlands is not specifed in the GHG Assessment. However, to estimate CO2e emissions related to land clearing, average emission and decay factors for the Skeena ecoregion from Dymond (2014) are used. These emission factors have been derived for ecoregions in BC and consider the types of biomass that may be handled in those regions.
2454.1	round 1	Gitga'at First Nation	4.3	Greenhouse Gases	Also see Greenhouse Gas comments submitted by TESA.	Aurora LNG acknowledges this comment to see additional Greenhouse Gas comments submitted by TESA.
2455.1	round 1	Gitga'at First Nation	9.2.2	Accidents or Malfunctions	The assessment of the potential risk of effects from an accident or malfunction is based on a risk matrix that combines the likelihood of a residual effect after mitigation and response measures and the consequence (i.e., severity or magnitude) of the residual effect after mitigation and response measures. Since the mitigation and response measures relevant to accidents that have the potential to affect marine water quality are not described in detail, it is difficult to evaluate the appropriateness of the conclusions made about the risk of an accident and whether that accident will have significant effects. More detail is required.	Mitigation measures for on-shore or marine spill events are provided in section 9.8.2. and 9.9.2, respectively, and will be further detailed in the Emergency Response Plan (described in Section 14.16).Aurora LNG will engage with regulators, Aboriginal Groups, and interested stakeholders in the development of the Emergency Response Plan.
2456.1	round 1	Gitga'at First Nation	9.8.3, 9.8.4	Accidents or Malfunctions	The Proponent has stated, "After mitigation and response measures have been implemented following an on-shore hazardous spill, the likelihood and consequence of residual effects to water quality from both small-scale and large-scale spills are very low. Based on these factors, the risk matrix ranking is remote and the residual effects are not significant." However, a large-scale spill of diesel oil into the marine environment would be difficult to clean up, making the consequence (i.e., severity of effects) and likelihood of residual effects both moderate or high (not “very low”) and resulting in residual effects that are significant. A fact sheet cited in Chapter 9 of the EAC application (US FWS 2004) states that "light oils [including diesel] leave a film on intertidal resources and have the potential to cause long-term contamination." In addition, an expert report on oil spill response prepared for the City of Vancouver and the Tsleil-Waututh and Tsawout First Nations stated that “collecting and removing oil from the sea surface is a challenging, time-sensitive, and often ineffective process, even under the most favourable conditions” (Nuka Research and Planning Group, LLC 2015). Therefore, spilled oil is likely to remain in the environment after mitigation and response measures, meaning there could be a determination of significant effects according to the definition provided in Section 4.5.12.8: "A significant residual adverse environmental effect on marine water quality is one that is predicted to result in a change in sediment or water quality that would result in a health risk to a local population of marine biota (toxicity for contaminants, habitat and physical damage to fish for suspended sediments). A health risk is identified considering the water and sediment quality guidelines, the conservatism built into those guidelines, and spatial extent and duration of exposure to altered water quality." The Application must be updated with realistic evaluations of hydrocarbon spills. Nuka Research and Planning Group, LLC. 2015. Oil Spill Response Analysis: Technical Analysis of Oil Spill Response Capabilities and Limitations for Trans Mountain Expansion Project. Expert Report prepared for Tsleil-Waututh Nation, City of Vancouver, and Tsawout First Nation. Available at: http://vancouver.ca/images/web/pipeline/NUKA-oil-spill-response-capabilities-and-limitations.pdf. Accessed: February 2017.	Following a release of diesel, natural attenuation by evaporation and dispersal are expected to reduce the hydrocarbons toxicity to marine organisms over the short term. If unrecovered following containment and recovery operations, and not cleaned up from shorelines, heavier hydrocarbon fractions may persist in shoreline sediments; however, the toxicity and bioavailability of these heavier fractions is expected to be rapidly reduced through weathering processes (including physical losses and biodegradation) (Lee et al. 2003; Page et al. 2002). Considering the elements of the significance threshold (e.g.,..spatial extent and duration of exposure to altered water quality) the characterization of residual effects from an onshore spill with respect to water quality, remains valid. References Lee, K., R.C. Prince, C.W. Greer, K.G. Doe, J.E.H. Wilson, S.E. Cobanli, G.D. Wohlgeschaffen, D. Alroumi, T. King and G.H. Tremblay. 2003. Composition and toxicity of bunker C fuel oil in intertidal sediments after 30 years. Spill Science & Technology Bulletin, 8(2):187-199. Page, D.S. Page, P.D. Boehm, G.S. Douglas and A.E. Bence. 2002. Identification of hydrocarbon sources in the benthic sediments of Prince William Sound and the Gulf of Alaska following the Exxon Valdez oil spill. In P.G. Wells, J.N. Butler, J.S. Hughes (Eds.), Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters. ASTM STP1219, American Society for Testing and Materials, Philadelphia, PA (1995), pp. 41–83.
2457.1	round 1	Gitga'at First Nation	9.9.2	Accidents or Malfunctions	While response measures to a vessel grounding or collision are outlined briefly in this section, a full oil spill response plan should be included as part of the EAC application. It appears that a spill response plan will be included in the Emergency Response Plan (Section 14.16), but this plan is currently under development, and this information is required during the Application Review Stage.	Emergency response plans are typically prepared during a project's detailed design phase when more information is available to identify appropriate emergency response countermeasures and site-specific emergency response resources.
2458.1	round 1	Gitga'at First Nation	Section 9.9.3, 9.9.4	Accidents or Malfunctions	The Proponent has stated, "After mitigation and response measures have been implemented following a vessel grounding or collision event with a spill of diesel or LNG, the likelihood and consequence of residual effects to water quality is low. Based on these factors, the risk matrix ranking is low. Residual effects on marine water quality from a release of diesel or LNG due to a vessel grounding or collision event are predicted to be not significant." However, while a website cited in Chapter 9 of the EAC application (NOAA 2014) states that "Small diesel spills will usually evaporate and disperse naturally within a day or less," it also states that "what is commonly referred to as "marine diesel" is often a heavier intermediate fuel oil that will persist longer when spilled. When spilled on water, diesel oil spreads very quickly to a thin film of rainbow and silver sheens, except for marine diesel, which may form a thicker film of dull or dark colors." In addition, "it is possible for the diesel oil that is dispersed by wave action to form droplets that are small enough [to] be kept in suspension and moved by the currents" (NOAA 2014). Therefore, dispersed oil droplets could have an ongoing effect on marine water quality. Furthermore, in October 2016 a tug boat carrying almost 60,000 gallons (> 200,000 litres) of diesel fuel ran aground near Bella Bella and the spill response was hampered by bad weather. The diesel spread across the water and contaminated the clam beds used by the Heiltsuk First Nation (CBC 2016). The Final Situation Report on this incident from Spill Response BC states that 107,552 litres of the 237,262 litres of diesel fuel (45%) on board the tug was recovered (Seaforth Channel Incident Unified Command 2016). In addition, it took over a month to complete the spill cleanup efforts on the water (Seaforth Channel Incident Unified Command 2016). This is evidence that diesel oil can remain in the water during and after a spill response. Therefore, the consequence (i.e., severity of effects) and likelihood of residual effects could both be moderate or high (not “low”) and result in residual effects that are significant. Since tug boats will be escorting the LNG vessels, there is the potential for a large diesel spill having lasting significant adverse environmental effects on marine water quality. The Application must be updated with realistic evaluations of hydrocarbon spills. CBC (Canadian Broadcasting Corporation). 2016. Bella Bella diesel spill cleanup complicated by severe weather. Available at: http://www.cbc.ca/news/canada/british-columbia/bella-bella-diesel-spill-cleanup-complicated-by-severe-weather-1.3806058. Accessed: January 2017. Seaforth Channel Incident Unified Command. 2016. Final Situation Report – Nov 21. Seaforth Channel Incident Unified Command Information Site. Available at: http://spillresponsebc.ca/2016/11/22/final-situation-report-nov-21/. Accessed: February 2017.	As noted in this comment, 107,552 litres of diesel were recovered out of the total tug fuel volume of 237,262 litre following tug Nathan E. Stewart grounding. It is important to note that the reported recovered volume does not account for any evaporative loss in volume (i.e., only a portion of the total 237,262 litres would have been potentially recoverable). Further, the referenced Final Situation Report (November 21, 2016) does not appear to suggest that spill clean up, that was specifically on-water, took one month. Shoreline cleanup assessment technique surveys (SCAT) were conducted between October 14 and November 20, 2016 (Seaforth Channel Incident Unified Command 2016), but involved the assessment of oiling on potentially affected shorelines. The potential persistence of heavier, weathered, hydrocarbon fractions in the marine environment is not expected to be synonymous with an increase in consequence ranking for water quality because toxicity, concentration and bioavailability of these fractions is expected to be reduced through weathering in the short term (e.g., by evaporation, dispersal, dissolution, spreading). Reference Seaforth Channel Incident Unified Command. 2016. Final Situation Report – Nov 21. Seaforth Channel Incident Unified Command Information Site. Available at: http://spillresponsebc.ca/2016/11/22/final-situation-report-nov-21/. Accessed: February 2017.

2459.1	round 1	Gitga'at First Nation	9.9.3, 9.9.4	Accidents or Malfunctions	The Proponent has stated, "After mitigation and response measures have been implemented following a vessel grounding or collision event with a spill of bunker oil, the likelihood of residual effects to water quality is low, while the consequence is moderate. Based on these factors, the risk matrix ranking is low. Residual effects on marine water quality from a release [of] bunker oil due to a vessel grounding or collision event are predicted to be not significant." While admitting that a bunker oil spill would have a larger consequence on marine water quality than an LNG or diesel spill, the Proponent still concludes that the risk is low and effects are not significant. However, bunker C oil is persistent. A website discussing bunker C spills (NOAA 2017) says "the oil can be carried hundreds of miles in the form of scattered tarballs by winds and currents. The tarballs will vary in diameter from several yards to a few inches and may be very difficult to detect visually or with remote sensing techniques." In addition, an expert report on oil spill response prepared for the City of Vancouver and the Tsleil-Waututh and Tsawout First Nations stated that "collecting and removing oil from the sea surface is a challenging, time-sensitive, and often ineffective process, even under the most favourable conditions" (Nuka Research and Planning Group, LLC 2015). Therefore, spilled oil is likely to remain in the environment after mitigation and response measures and there could be a health risk to a local population of marine biota, meaning that a vessel grounding or collision resulting in a spill of bunker oil could have a significant residual adverse environmental effect on marine water quality. NOAA (National Oceanic and Atmospheric Administration). 2017. No. 6 Fuel oil (Bunker C) Spills. Available at: http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/no-6-fuel-oil-spills.html. Accessed: January 2017.	In the unlikely scenario that portions of released bunker fuel are not recovered through containment and recovery operations and are not cleaned up from shorelines, heavier hydrocarbon fractions may persist in shoreline sediments or on the water surface. The toxicity of these fractions to marine organisms is, however, expected to be rapidly reduced through weathering processes (including physical losses and biodegradation) (Lee et al. 2003; Page et al. 2002). Floating tar balls may be transported by winds and currents. The hard crust-like surface of tar balls, formed through the oxidation of high-viscosity unrecovered hydrocarbons floating on the sea surface, reduces the bioavailability of contaminants of potential concern (Martin 2011). The prediction for the significance of residual effects remains valid. References Lee, K., R.C. Prince, C.W. Greer, K.G. Doe, J.E.H. Wilson, S.E. Cobanli, G.D. Wohlgeschaffen, D. Alroumi, T. King and G.H. Tremblay. 2003. Composition and toxicity of bunker C fuel oil in intertidal sediments after 30 years. Spill Science & Technology Bulletin, 8(2):187-199. Martin, J.D. 2011. Comparative toxicity and bioavailability of heavy fuel oils to fish fish using difference exposure scenarios. Master of Science Thesis, Department of Biology, Queen's University, Kingston, ON, Canada. Available at: https://qspace.library.queensu.ca/bitstream/handle/1974/6610/Martin_Jonathan_D_201107_MSc.pdf?sequence=1 (Accessed: February 2017). Page, D.S. Page, P.D. Boehm, G.S. Douglas and A.E. Bence. 2002. Identification of hydrocarbon sources in the benthic sediments of Prince William Sound and the Gulf of Alaska following the Exxon Valdez oil spill. In P.G. Wells, J.N. Butler, J.S. Hughes (Eds.), Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters. ASTM STP1219, American Society for Testing and Materials, Philadelphia, PA (1995), pp. 41–83.
2460.1	round 1	Gitga'at First Nation	Section 9.10.3	Accidents or Malfunctions	There appears to be a typo in the Water Quality Section on p. 9-46. The text states "Consequently, the magnitude of residual effect to air quality is negligible and within the geographic extent of the LAA." Since this is in the Water Quality section it is assumed the words "air quality" should be replaced with "water quality."	Aurora LNG acknowledges this is a wording error. The word 'air' in the sentence on p. 9-46 should be 'water' and this correction will be included in an erratum. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2461.1	round 1	Gitga'at First Nation	Section 4.5.13.1	Water Quality	The Canadian Council of Ministers of the Environment (CCME) has not established interim sediment quality guidelines (ISQGs) and probable effects levels (PELs) for Total PAHs in sediments; however, ISQGs and PELs are available for 18 individual PAHs. These benchmarks should be used in Table 4.5-22 and carried forward to the effects assessment.	In the Marine Sediment and Water Quality Technical Report (Appendix F of the Application), sediment data were screened against the CCME guidelines for individual PAHs. Of the 192 samples tested, all were below the Disposal at Sea total PAH screening criterion, and only four samples had individual PAH concentrations above CCME ISQG. Given the limited number of individual PAH exceedences, the total PAH criterion, which encompasses 16 high priority PAHs was considered more appropriate for the effects assessment.
2462.1	round 1	Gitga'at First Nation	Section 4.5.13.1	Water Quality	The CCME has not established ISQGs and PELs for Total PAHs in sediments; however, other sources of "threshold effects" and "probable effects" type benchmarks have been developed for use in risk and/or impact assessments. For example, MacDonald *et al.* (1996) provides threshold effects levels (TELs) and probable effects levels (PELs) of 1.684 and 16.77 mg/kg dry weight, respectively. These benchmarks should be considered for use in the effects assessment. MacDonald, D.D., R.S. Carr, F.D. Calder, E.R. Long, C.G. Ingersoll. 1996. Development and evaluation of sediment quality guidelines for Florida coastal waters. Ecotoxicology. 5: 253-278.	The Disposal at Sea total PAH screening criterion encompasses 16 individual PAHs considered relevant to environmental effects in the marine environment. Therefore this criterion was considered the most appropriate for total PAH screening in the effects assessment.
2463.1	round 1	Gitga'at First Nation	Appendix F (5.3)	Water Quality	It is stated that concentrations of arsenic and copper were routinely above ISQGs, but at naturally occurring concentrations for the area. This statement should be verified by comparing to the distribution of concentrations in reference areas within the RAA.	The assessment of dredge material focused on sediment sampling within the dredge footprint and followed the Disposal at Sea evaluation criteria for characterizing sediments. Elevated arsenic and copper levels in soils of the Skeena Region are documented in the Ministry of Environment Protocol 4: Determining Background Soil Quality. These documented levels are similar to those found in sediment from the assessment area. Elevated levels of copper and arsenic were found at all depths sampled, (down to 15 m below seabed), indicating that these metal concentrations predate industrial activity.
2464.1	round 1	Gitga'at First Nation	4.9.5.1	Marine Fish and Fish Habitat	The Marine Fish and Fish Habitat VC was reviewed alongside the Marine Water Quality VC in order to understand whether effects related to exposure to TSS were addressed. Section 4.9.5.1 lists the assumptions underlying the effects assessment. To assess effects related to TSS exposure, factors including dredge volume, disposal volume, and dredge rate were used to predict concentrations and spatial extent of TSS exposure. However, assumptions around exposure duration were not explicitly stated here and need to be provided.	The amount of time TSS levels are anticipated to exceed guidelines for the protection of aquatic life associated with dredging and disposal at sea activities was included in the model as part of the sediment dispersion modeling exercises. As described in Appendix G (Technical Data Report - Aurora LNG: MOF and Terminal Dredge Modelling), elevated TSS levels are expected to persist in Casey Cove for the duration of dredging activities (dredging in Casey Cove is anticipated to run for approximately 20 hours per day for approximately 48 days), with levels returning quickly to baseline conditions upon cessation of dredging activities. At South Digby Island, elevated TSS levels are expected to persist for the duration of dredging activities (dredging is anticipated to occur for ten hours per day for approximately 13 days at Berth 1 North, 17 days at Berth 1 South, and 11 days at Berth 2), with levels returning quickly to baseline conditions upon cessation of dredging activities. As described in Appendix H (Technical Data Report - Aurora LNG: Disposal at Sea Modelling), elevated TSS levels are expected to persist at Brown Passage during and immediately following each disposal event, with levels returning to baseline conditions relatively faster in shallower waters than in deeper waters. Disposal of dredged materials from the MOF is anticipated to require 124 disposal events (once every 8 hours, for approximately 41 days); disposal of dredged materials from Berth 1 North is anticipated to require 18 disposal events (once every 16 hours, for approximately 11 days); disposal of dredged materials from Berth 1 South is anticipated to require 23 disposal events (once every 16 hours, for approximately 15 days); disposal of dredged materials from Berth 2 is anticipated to require 15 disposal events (once every 16 hours for approximately 9 days). Dredging and disposal at sea activities will be limited to the DFO least risk timing window (November 30 to February 15) and will take place over two years. The amount of time marine fish may be exposed to elevated levels of TSS during dredging and disposal at sea activities was considered in the assessment of potential changes in marine fish health (Section 4.9.5.5 of the Marine Fish and Fish Habitat VC). In addition to the duration of dredging and disposal at sea activities themselves, and associated TSS levels, other factors such as species, life stage, and the behaviour of the individual may also influence exposure duration. For example, some species (such as pelagic fish), may choose to move away from or avoid areas of elevated TSS (Kjelland et al. 2015), resulting in relatively short-duration exposure. Other species (such as demersal fish, species with lower motility, or sessile invertebrates) may remain near the dredge or disposal areas, resulting in exposure to elevated TSS for relatively longer duration (up to a maximum of approximately 2.5 months, the length of the DFO least risk timing window). Reference: Kjelland, M.E., Woodley, C.M., Swannack, T.M. and D.L. Smith. 2015. A review of the potential effects of suspended sediments on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. Environment Systems and Decisions, 35(3): 334-350.
2465.1	round 1	Gitga'at First Nation	4.5.15	Water Quality	Residual effects of re-deposition on benthic invertebrates during and post- dredging activities have not been included in the effects assessment. This information needs to be provided and assessed.	The potential for marine fish and invertebrates to be crushed or buried by marine sediment associated with dredging activities is assessed under the 'change in mortality risk' effect (Section 4.9.5.4 of the Application). The potential for health effects to marine fish and invertebrates due to exposure to elevated TSS concentrations associated with dredging activities is assessed under the 'change in health' effect (Section 4.9.5.5 of the Application).
2466.1	round 1	Gitga'at First Nation	4.5.15.3	Water Quality	It appears that the proponent did not conduct an effects assessment for the discharge of wastewater effluent to the receiving environment. For a project of this nature where seawater is proposed to be used for several project operations, we would have expected a more in depth and quantitative assessment of potential effects on marine water quality and marine resources, at both intake and discharge locations. Furthermore, limited information on the proposed mitigation for sanitary wastewater effluent management during construction and operations was provided in the Application. For example, details on the expected capacity or treatment level of the wastewater facility were not provided. More detailed information is required. A comprehensive description of water management and associated environmental effects should be undertaken.	As stated in Section 4.5.15.3 of the Application (Characterization of Residual Effects – Waste Management), waste water outfall designs and locations will comply with federal and provincial legislation designed to protect water quality. Sanitary wastewater will meet effluent permit requirements, including dechlorination of any chlorinated wastewater. Mitigation 4.5.8, Table 4.5-26 also states that waste discharges to the marine environment will comply with the Fisheries Act, Canadian Environmental Protection Act, Canada Shipping Act 2001, and the BC Environmental Management Act (Waste Discharge Regulation). Specific details on waste volumes and contaminant concentrations are not yet available and will be determined during Front End Engineering Design. However, Aurora LNG is legally obliged to abide by all waste discharge regulations, designed to protect the marine environment. Environmental effects from waste discharge are therefore predicted to be not significant. Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2467.1	round 1	Gitga'at First Nation	4.5.15.3	Water Quality	It appears that the proponent did not conduct an effects assessment for the discharge of desalination effluent to the receiving environment. For a project of this nature where seawater is proposed to be used for several project operations, we would have expected a more in depth and quantitative assessment of potential effects on marine water quality and marine resources, at both intake and discharge locations. Furthermore, limited information on the proposed mitigation for desalination wastewater effluent management during operations was provided in the Application. For example, details on the volumes of effluent generated and the feasibility of meeting water quality guidelines (WQGs) were not provided. More detailed information is required. A comprehensive description of water management and associated environmental effects should be undertaken.	Desalination waste water will meet CCME and BC regulatory water quality guidelines (WQG) outside of the initial dilution zone. These guidelines allow a maximum temperature change of $\pm 1^{0}$C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The CCME interim WQG for salinity limits the change of salinity to 10% from background conditions for a given time and depth. The residual chlorine concentration at the edge of the initial dilution zone, will be below the CCME WQG (0.5 µg/L). The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of desalination waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2468.1	round 1	Gitga'at First Nation	Section 4.5.15.3	Water Quality	It appears that the proponent did not conduct an effects assessment for the discharge of cooling water effluent to the receiving environment. For a project of this nature where seawater is proposed to be used for several of project operations, we would have expected a more in depth and quantitative assessment of potential effects on marine water quality and marine resources, at both intake and discharge locations. Furthermore, limited information on the proposed mitigation for cooling water effluent management during operations was provided in the Application. For example, details on the volumes of effluent generated and the feasibility of meeting water quality guidelines (WQGs) were not provided. More detailed information is required. A comprehensive description of water management and associated environmental effects should be undertaken.	Cooling water discharge will meet CCME and BC regulatory water quality guidelines for temperature, outside of the initial dilution zone. These guidelines allow a maximum change of $\pm 1^{0}$C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The exact size of the initial dilution zone is not yet known, and will be determined through modelling in the permitting phase. However,under the Fisheries Act, waste discharges within and outside the initial dilution zone, cannot be acutely toxic to fish. The effect of cooling water discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life. Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2469.1	round 1	Gitga'at First Nation	Table 4.5-26	Water Quality	Mitigation measure 4.5.5 is to use silt curtains, "where practicable, to reduce the spatial extent of suspended sediments in the water column during dredging activities." The description of how the silt curtains will be implemented is very brief. The use of silt curtains for mitigating the effects of elevated TSS on marine water quality should be described in more detail.	The manner in which silt curtains are employed is dependent on numerous factors, including water depth, currents, tides, wave height, wind direction and speed, and the nature of the work conducted within the curtains. As such, specific details on silt curtain use cannot be provided until these factors are established on a site-specific basis. Silt curtains will be used, where practicable, to isolate the work site from the surrounding marine environment, during dredging. Strong currents, high winds and waves, and frequency of marine traffic into/out of the work site may prevent placement of silt curtains, and or limit their effectiveness. Fluctuating water depth due to tidal patterns may also alter the area over which silt curtains can be employed. Use of silt curtains was classed as having a moderate likelihood of success due to the limiting factors listed above. The classification of "effective in the short-term" refers to the duration over which the measure is employed, and not the likelihood of success. The modelling of TSS plumes does not incorporate the use of silt curtains.
2470.1	round 1	Gitga'at First Nation	Table 4.5-26	Water Quality	There appears to be a contradiction between the statements in Table 4.5-26 that "there is a moderate likelihood of success" with mitigation measure 4.5.5 and "this mitigation measure is effective in the short-term." If success is only moderately likely than the mitigation measure will not always be effective, so further mitigations are required. Please describe additional effective mitigations.	The manner in which silt curtains are employed is dependent on numerous factors, including water depth, currents, tides, wave height, wind direction and speed, and the nature of the work conducted within the curtains. As such, specific details on silt curtain use cannot be provided until these factors are established on a site-specific basis. Silt curtains will be used, where practicable, to isolate the work site from the surrounding marine environment, during dredging. Strong currents, high winds and waves, and frequency of marine traffic into/out of the work site may prevent placement of silt curtains, and or limit their effectiveness. Fluctuating water depth due to tidal patterns may also alter the area over which silt curtains can be employed. Use of silt curtains was classed as having a moderate likelihood of success due to the limiting factors listed above. The classification of "effective in the short-term" refers to the duration over which the measure is employed, and not the likelihood of success. The modelling of TSS plumes does not incorporate the use of silt curtains.
2471.1	round 1	Gitga'at First Nation	Table 4.5-26	Water Quality	Mitigation of TSS dispersion during infrastructure (i.e., non-dredging) construction is not discussed in the table of mitigation measures proposed to avoid or reduce change in physical or chemical composition of marine waters. An assessment of mitigation during infrastructure construction is required.	In Section 4.5.15.3 of the Application, under Characterization of Residual Effects - General Construction Activities, it is stated that "The volume of sediment disturbed by marine construction will be much lower than for dredging, and mitigation measures (e.g., silt curtains) will be used where practical to limit sediment dispersion"
2472.1	round 1	Gitga'at First Nation	Section 14.9	Environmental and Operational Management Plans	The information on the Marine and Freshwater Resources Management Plan in Section 14.9 (approximately half a page) is insufficient to evaluate the adequacy of the plan. For example, the frequency and locations of water quality monitoring have not been provided. Please provide more information.	The intent of Section 14.9 of the Application was to identify the components of the Marine and Freshwater Resources Management Plan. Aurora LNG recognizes that the details of these management plans, such as monitoring intensity, frequency and location, are important to the success of the programs. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the environmental management plans. Typically these plans include details on the drivers, objectives, methods, and reporting requirements. Please note that for water quality specifically, as per mitigation measure 4.5.8, Aurora LNG is committed to meeting all regulatory requirements, including compliance with CCME and BC water quality guidelines.
2473.1	round 1	Gitga'at First Nation	14.9	Environmental and Operational Management Plans	The Marine and Freshwater Resources Management Plan does not include any information regarding post-dredging sediment characterization. Considering that some contaminants of concern (COCs; e.g., dioxins/furans) are present in dredged sediments, it is recommended that a follow-up sediment characterization monitoring program is implemented to analyze deposited sediments within the MOF, Berth 1, and Berth 2 areas. Please outline a follow-up monitoring program for this activity.	Section 4.5.15 of the Application concluded that contaminant re-settling will be limited at and around the dredge pockets. Baseline sediment sampling indicated that dioxins and furan levels above CCME ISQG were contained in the upper 0.2 m of sediment. As such, the upper 0.5 m of sediment will be removed during dredging and disposed of on land. A small amount of sediment containing elevated dioxins and furans will re-settle in and around the dredge site, likely at reduced concentrations. Much of this re-settled sediment will be removed in subsequent dredging (down to -15 m chart datum) or covered subsequently with dispersed sediment of lower PCDD/F concentrations. Therefore, it is expected that surface sediment contaminant levels will decrease relative to existing conditions and that post-dredging sediment monitoring is not necessary.
2474.1	round 1	Gitga'at First Nation	4.5	Water Quality	Mitigation measures included meeting water quality guidelines; however, insufficient detail is included in the Application to assess the feasibility of meeting guidelines. Please provide more information and evidence that water quality guidelines can be met.	Details on how water quality guidelines will be met are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

2475.1	round 1	Gitga'at First Nation	4.5	Water Quality	A TSS monitoring plan should be provided that includes suggestions for a station array around the constructions site and whether TSS will be monitored in real time. In the same context, a TSS exceedance response plan needs to be provided that entails how TSS is going to be reduced in case of exceedances.	As noted in mitigation measure 4.5.3, (Table 4.5-26: Section 4.5.15.3 of the Application), water quality will be monitored during dredging. This will consist of real-time turbidity measurements. The actual station array used during dredging will depend on various factors such as the nature and extent of in-water construction activity, weather and tidal conditions, and vessel traffic. Therefore, it is not possible to provide sampling arrangement details at this time. Mitigation measures to address water quality exceedences are also site and condition dependent, and will be determined on-site, with input from the environmental monitor, and the dredging contractor. This may include slowing or temporarily stopping some of the dredging activities in areas of high turbidity.
2476.1	round 1	Gitga'at First Nation	4.5	Water Quality	A safe storage and run-off containment plan is needed for the PCDD and Furan contaminated marine sediment site storage site on land.	As noted in mitigation 4.5-10 (Table 4.5-26, Section 4.5.15.3), the land disposal site will be designed and managed to meet BC Contaminated Sites Regulations (CSR) standards for sediment storage. It should also be noted that under BC Contaminated Sites Regulations, the dioxin and furan limit for disposal of sediment on non-agricultural land is 350 µg/g, more than 100 times higher than the maximum concentration recorded in the proposed dredgeate. The sediment will not be considered contaminated, as defined under the CSR. Consider the following: 1. The maximum concentration of PCDD/F in the sediment was 2.86 picograms per gram of sediment, based on mammalian toxic equivalency (pg-TEQ/g). 2. The BC Contaminated Sites Regulations for PCDD/Fs in sediment for marine and estuarine waters are: - Sensitive Contaminated Site - 130 pg-TEQ/g - Typical Contaminated Site - 260 pg-TEQ/g http://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-remediation/docs/policies-and-standards/sed_criteria_tech_app.pdf 3. When sediments are disposed on land, they are managed as soils. The BC Contaminated Sites Regulations for PCDD/Fs in soil are: - Agriculutral/Parkland/Residential Land - 350 pg-TEQ/g - Commercial Land Use - 1,000 pg-TEQ/g - Industrial Land Use - 70,000 pg-TEQ/g http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/375_96_07 4. The BC Contaminated Sites Regulations - Schedule 7 for soil relocation to non-agricultural land for PCDD/Fs are: - 350 pg-TEQ/g http://www.bclaws.ca/civix/document/id/loo78/loo78/375_96_09 5. The Canadian Food Inspection Agency dioxin limit for all fish products is 20 parts per trillion (ppt), measured as TEQ. In comparison, the dioxin concentrations in sampled marine foods were: - Dungeness crab meat - 0.273 ppt - Dungeness crab hepatopancreas - 1.4 ppt - Clam - 0.811 ppt http://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/text-texte/fish_man_standardsmethods_appendix3_1406403090196_eng.pdf
2477.1	round 1	Gitga'at First Nation	4.5	Water Quality	A silt curtain development plan must be developed.	The manner in which silt curtains are employed is dependent on numerous factors, including water depth, currents, tides, wave height, wind direction and speed, and the nature of the work conducted within the curtains. As such, a silt curtain development plan cannot be provided until these factors are established on a site-specific basis. Silt curtains will be used, where practicable, to isolate the work site from the surrounding marine environment, during dredging. Strong currents and high winds and waves may prevent placement of silt curtains, or limit their effectiveness. Fluctuating water depth due to tidal patterns may also alter the area over which silt curtains can be employed. The on-site environmental monitor will work with the dredging contractor to deploy silt curtains in the most efficient manner.
2478.1	round 1	Gitga'at First Nation	4.5	Water Quality	"The Freshwater Quality Assessment focuses on potential acidification and eutrophication effects related to air emissions from the proposed LNG facility." Why only air emissions? Many site works have the potential to impact freshwater quality. For example, water quality from the large settling ponds that are required for grubbing and clearing have the potential to stir up legacy contaminants. This should be assessed, along with other impacts such as spills and waste management. Furthermore, water management of the soils storage area is concerning given the baseline conditions (peatlands), and that contaminated marine dredgeate (with dioxins and furans) will be stored within the PDA. How will these areas be managed? How will the volume of organics be managed, including the freshwater naturally contained within these systems? What about acid rock drainage/metal leaching? Substantially more information is required.	The potential effects of soil erosion on the freshwater ecosystem are assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4 of the Application. Runoff and discharges to marine water are assessed under Project Mechanisms for Change in the Physical or Chemical Composition of Marine Waters (Marine Water Quality VC, Section 4.5.15.3 of the Application). It is noted in this section that "The soils storage area will be re-vegetated, where possible and drainage patterns will be established to manage runoff to the marine environment." As noted in Mitigation 4.5.8 (Table 4.5.26, Section 4.5.15.3 of the Application), the project will be designed to maintain discharges to the marine environment within regulations and guidelines for the protection of aquatic life. Runoff from the soils storage area is therefore not expected to cause effects to the freshwater or marine ecosystem. Table 4.8-9 of Section 4.8.4 of the Application lists on-land disposal during construction, and waste management during operations, as potential project interactions. These activities include acid rock drainage/metal leaching from stored soil. The Project Description (Section 1.2.5.3) outlines management of acid generating rock to prevent low pH runoff from the soil storage area entering the freshwater ecosystem. Runoff and discharges to the freshwater environment are also assessed under Wastewater Management in Section 4.8.5.4 of the Freshwater Fish and Fish Habitat VC. As noted in Mitigation 4.8.8 (Table 4.8.8, Section 4.8.5.2), the project will be designed to maintain discharges to the freshwater environment within guidelines for the protection of aquatic life. Runoff from acid rock drainage is therefore not expected to cause effects to the freshwater ecosystem. Due to the low PCDD/F levels, marine sediment proposed for disposal in the soil storage area is not considered contaminated. This sediment has the potential to interact with the freshwater environment only through introduction of suspended sediment in surface water runoff. Suspended sediment is assessed in Section 4.8.5.4. There are regulatory requirements for the relocation of sediment to land under the Contaminated Sites Regulation, as noted in Mitigation 4.5.10, Table 4.5-26 (Marine Water Quality VC, Section 4.5.15.3). The storage of marine sediment in an engineered storage area has been designed to meet these requirements (sediment meets the most conservative criteria for PCDD/Fs; because of the saline nature of the sediment, it needs to be disposed of in an area where drainage goes to the marine environment). Preliminary design of the soils storage area is provided in the Project Description (Section 1.2.5.3).
2479.1	round 1	Gitga'at First Nation	4.5	Water Quality	The extreme flashiness of creeks and systems as a result of the extensive clearing of the site is not considered. This is especially important given that the bogs holding capacity and complexity will be removed. As such, streams and drainages will become extremely "flashy" resulting in high levels of erosion with impacts to water quality.	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4 of the Application. Aurora LNG will reduce disturbance to riparian areas, to the extent possible, and will not disturb watercourses and riparian areas outside the PDA. Exclusion fencing will be installed where needed to delineate the protected areas. Runoff water will be controlled and diverted through erosion and sediment control facilities such as retention ponds to manage potential turbidity prior to testing water quality and prior to discharging into existing watercourses/marine environment. An environmental monitor will be onsite during all instream works to monitor for potential harm to fish and to evaluate erosion control measures. The soils storage area will be re-vegetated, where possible and drainage patterns will be established to manage runoff. The systems in place to mitigate sediment and erosion control will be designed to account for high flow events.
2480.1	round 1	Gitga'at First Nation	4.5.3.2	Water Quality	Water chemistry was measured for hardness nutrients, but were pollutants such as LEPH's PAHs etc. measured?	Full chemical data are provided in Appendix E of the Application (Surface Freshwater Technical Data Report). Parameters tested include total and dissolved metals nutrients, organic carbon, and physical parameters. PAHs and LEPH's were not measured as part of the freshwater assessment as there is expected to be no input of these contaminants by the Project. The future monitoring programs are anticipated to include a more detailed baseline collection program and, if shown to be relevant, these parameters may be considered during that time.
2481.1	round 1	Gitga'at First Nation	4.5.3.2	Water Quality	Does "soil characteristics" include organics? This is not clear and does not appear to be discussed.	Section 4.5.3.2 of the Application provides an overview of current conditions for freshwater systems. The pH in lakes and streams can vary due to influence from numerous factors including surficial geology, sediments and soils, rainfall, and historical pollution sources. Regions with high precipitation often have dilute waters with acidic to circum-neutral pH A detailed description of soil characteristics is available in Appendix D of the Application (Soils Acidification and Eutrophication Technical Data Report).
2482.1	round 1	Gitga'at First Nation	Table 4.5.6	Water Quality	Waste management was not included as a potential change in physical composition of surface water, and should be considered given the extensive site works planned (including the removal of natural vegetation and soil). It is likely that both flow volumes and water quality will change. Therefore, volume changes (from "flashiness" changes and reduced flows from reserve/wetland destruction) must be assessed.	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat assessment, Section 4.8.5.4 of the Application. Runoff and discharges to marine water are assessed under Project Mechanisms for Change in the Physical or Chemical Composition of Marine Waters (Marine Water Quality assessment, Section 4.5.15.3). It is noted in this section that "The soils storage area will be re-vegetated, where possible and drainage patterns will be established to manage runoff to the marine environment." As noted in Mitigation 4.5.8 (Table 4.5.26, Section 4.5.15.3), the project will be designed to manage discharges to the marine environment within regulations and guidelines. Runoff from the soils storage area is therefore not expected to cause effects to the freshwater or marine ecosystem. The systems to be put in place to mitigate sediment and erosion control will account for potential high flow events.
2483.1	round 1	Gitga'at First Nation	Table 4.5-15	Water Quality	Prince Rupert airport is listed as not having cumulative effects on fresh water; how is this possible due to activities or events such as de-icing, emissions, spills etc.?	The Prince Rupert airport will have its own environmental management plans in place to deal with de-icing and spills. Project related effects to freshwater are evaluated due to facility emissions of nitrogen and sulfur compounds. Airplane emissions were accounted for in the air quality model predictions by adding a background baseline to the model predictions.
2484.1	round 1	Gitga'at First Nation	4.5.13.1	Water Quality	The "detailed sediment sampling program ran from Jan 15- feb 3 2016". To be clear this is one field shift, to collect all your "detailed" data. Is this enough sampling to fully characterize sediments and to make statistically significant inferences?	A detailed sediment sampling program was carried out at the three proposed dredge footprints (Berth 1, Berth 2 and the MOF). A total of 192 samples were collected to characterize physical parameters, metals, PAHs, PCBs, and PCDD/Fs in marine sediment. This included 28 surface samples (0-0.07 m depth), 102 large interval core samples (0-1.5 m depth, divided into 0.5 m intervals), and 62 small interval core samples (0-1.0 m depth, divided into 0.2 m intervals). Sediment samples were collected over two field programs; a 5 day field program (December 15 to 19, 2014) and a 16 day field program (January 15 to February 3, 2016). Field program design was reviewed and approved by Environment and Climate Change Canada (ECCC) prior to sampling. The sampling programs also met ECCC disposal at sea criteria for number of samples required based on dredge volume. The field programs yielded a comprehensive and statistically robust dataset.
2485.1	round 1	Gitga'at First Nation	4.5.15.3	Water Quality	TSS run-off entering the marine environment. This will likely be a large amount (locally) as the project is proposing to grub and strip a large area of peatlands. Extreme sediment and erosion control methods must be employed to avoid impacts from TSS.	Potential effects of soil erosion on the freshwater ecosystem is assessed under Wastewater Management in the effect "Change in Fish Abundance or Relative Abundance" in the Freshwater Fish and Fish Habitat VC, Section 4.8.5.4. Aurora LNG will reduce disturbance to riparian areas, to the extent possible, and will not disturb watercourses and riparian areas outside the PDA. Exclusion fencing will be installed where needed to delineate the protected areas. Erosion and Sediment Control facilities will receive diverted site run-off prior to discharge into existing watercourses/marine environment. An environmental monitor will be onsite during all instream works to monitor for potential harm to fish and to evaluate erosion control measures. The soils storage area will be re-vegetated, where possible and drainage patterns will be established to manage runoff to the marine environment. The systems in place to mitigate sediment and erosion control will account for high flow events.
2486.1	round 1	Gitga'at First Nation	4.5.15.3	Water Quality	"Loss of sediment from dredge equipment is estimated at 3% of the total volume dredged" On quick calculation that is approximately 15,792 cubic meters, which is a large amount. Please assess this amount.	Loss of sediment from the dredge equipment is factored into the dredging model. Model predictions are used to assess effects to water quality in detail in Characterization of Residual Effects component of Section 4.5.13.3.
2487.1	round 1	Gitga'at First Nation	page 4.5-62	Water Quality	The operations section - "best available technology" is listed, so we expect this to apply to all aspects of the project and would like the following outlined more concisely: What kind of wastewater treatment is proposed? Is deep discharge the best available technology really? By seeing that desalination is part of the plan, is a closed loop system now out of the question?	Aurora LNG has acknowledged and committed to adhere to wastewater regulatory requirements prior to discharging to the marine environment. There are various wastewater treatment technologies available that Aurora LNG will assess prior to selecting the treatment technology for the Project. During operations water will be recirculated /recycled throughout the facility, where feasible. This includes process water and water in the cooling system. Water is lost from the closed loop system through evaporation therefore "makeup water" is required to replenish or "top up" the water supply for the process units. Makeup water is also required to dilute and flush the system water mineral concentrations that increase due to the water evaporation. It is expected that approximately 50% of the water will evaporate. The desalination plant does not exclude a closed loop system. Desalinated sea water will supply potable water, demineralized water, power plant cooling water, utility water and firewater for the facility. Included in this is the makeup water that will be required throughout operations. Please also see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2488.1	round 1	Gitga'at First Nation	Table 4.5-27	Water Quality	4.5.2 needs to include operations, not just construction.	This comment is unclear. Table 4.5-27 shows model inputs for sediment dispersion and deposition predictions.
2489.1	round 1	Gitga'at First Nation	page 4.5-78	Water Quality	Please explain how deep outfall pipes and non recycled cooling water is considered "best available technology"?	Aurora LNG has acknowledged and committed to adhere to wastewater regulatory requirements prior to discharging to the marine environment. There are various wastewater treatment technologies available that Aurora LNG will assess prior to selecting the treatment technology for the Project. During operations, water will be recirculated /recycled throughout the facility, where feasible. This includes process water and water in the cooling system. Water is lost from the closed loop system through evaporation. Therefore, "makeup water" is required to replenish or "top up" the water supply for the process units. Makeup water is also required to dilute and flush the system for mineral concentrations that increase due to the water evaporation. It is expected that approximately 50% of the process water will evaporate. The desalination plant is not a closed loop system. The desalinated sea water will supply potable water, demineralized water, power plant cooling water, utility water and firewater for the facility. Included in this is the makeup process water that will be required throughout operations. Please also see the "Discharges to the Marine Environment" technical memo, which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.

2490.1	round 1	Gitga'at First Nation	Table 4.5-29	Water Quality	WCC is not included in the cumulative effects of water quality. Please include and reassess.	The assessment concluded that there is no potential for spatial overlap between marine water quality effects from the Aurora LNG Project and the proposed WCC LNG development. Project interactions with the marine environment were considered, to determine potential for spatial overlap. Aurora LNG and WCC LNG will, if constructed, discharge waste water to the marine environment. Wastewater discharges will be subject to permit restrictions, limiting the quality and quantity of waste, the discharge rate, and the size of the waste discharge initial dilution zone. WCC LNG may also require dredging, which will be subject to the same mitigation measures used for Aurora LNG (e.g. silt curtains), to limit sediment dispersion. Considering the wastewater regulatory restrictions, mitigation measures for dredging, and the distance of over 9 km between the two projects, no potential for spatial overlap was identified.
2491.1	round 1	Gitga'at First Nation	Figure 4.5-12	Water Quality	Cumulatively there is a lot of dredging works planned. Depending on project schedules there is huge potential for adverse effects to marine life due to WQ issues. Although as stated there is low likelihood of spatial overlap of TSS plumes, the cumulative effects to Marine life may be large. If multiple dredge programs occur simultaneously, the area of refuge for marine life will become limited. The overall suspension of contaminants becomes much more substantive and impact to local food harvest becomes dangerous. Therefore it is hard to understand the determination that the likelihood of residual cumulative effects as low.	Individual dredging programs will result in increased TSS in the surrounding water. However, without spatial overlap, simultaneous programs will not act cumulatively to further increase TSS, and associated contaminant concentrations in water. Potential cumulative effects of dredging and disposal at sea on marine fish health are assessed in Section 4.9.6.6 of the Marine Fish and Fish Habitat VC. The assessment considered the possibility that construction schedules of future proposed projects may overlap temporally with that of Aurora LNG, and the potential residual cumulative effects on marine fish health are characterized accordingly. In the event that construction schedules do overlap, a relatively larger area of the RAA would be affected by elevated TSS concentrations. However, potential cumulative effects would be limited to the Prince Rupert area, where most of the projects are proposed, and at the Brown Passage disposal at sea site. Vast areas of marine habitat within the RAA would be unaffected by elevated TSS concentrations; therefore, suitable habitats are not expected to be limited for marine species that avoid localized areas of elevated TSS.
2492.1	round 1	Gitga'at First Nation	4.5.17.2	Water Quality	Just because spatial overlap is likely minimal, does not address cumulative impact to the environment.	Individual dredging programs will result in increased TSS in the surrounding water. However, without spatial overlap, simultaneous programs will not act cumulatively to further increase TSS, and associated contaminant concentrations in water. Potential cumulative effects of dredging and disposal at sea on marine fish health are assessed in Section 4.9.6.6 of the Marine Fish and Fish Habitat VC. The assessment considered the possibility that construction schedules of future proposed projects may overlap temporally with that of Aurora LNG, and the potential residual cumulative effects on marine fish health are characterized accordingly. In the event that construction schedules do overlap, a relatively larger area of the RAA would be affected by elevated TSS concentrations. However, potential cumulative effects would be limited to the Prince Rupert area, where most of the projects are proposed, and at the Brown Passage disposal at sea site. Vast areas of marine habitat within the RAA would be unaffected by elevated TSS concentrations; therefore, suitable habitats are not expected to be limited for marine species that avoid localized areas of elevated TSS.
2493.1	round 1	Gitga'at First Nation	4.5	Water Quality	What are the impacts on water quality from the cruise ship proposed during construction?	Aurora LNG does not propose the use of a cruise ship for any project activity. A temporary floating camp is currently proposed to house early construction workers in Casey Cove until the proposed construction camp is able to accommodate the construction work force. See the "Floating Camp Review" technical memo for more details. The technical memo will be filed with the BC EAO.
2494.1	round 1	Gitga'at First Nation	4.5	Water Quality	Was a baseline groundwater survey conducted? Given the site works proposed (storing contaminated dredgate within the PDA), are there any impacts to groundwater anticipated?	A baseline groundwater survey was not conducted. Project effects to groundwater are not anticipated. The dredgate proposed for storage in the soils storage area is not considered contaminated under the BC Contaminated Sites Regulation. The maximum concentration of PCDD/F in the sediment was 2.86 picograms per gram (pg-TEQ/g). When sediments are disposed on land, they are managed as soils. The BC Contaminated Sites Regulations - Schedule 7 criterion for soil relocation to non-agricultural land for PCDD/Fs is 350 pg-TEQ/g. In addition, the dredgate storage area will be designed to capture runoff and direct it to the marine environment, rather than to groundwater sources.
2495.1	round 1	Gitga'at First Nation	4.5	Water Quality	Please provide an assessment on the potential impacts from air emissions on shoreline habitats (e.g., salt marshes), eelgrass meadows, and kelp beds.	Marine areas acidification and eutrophication is not expected to occur due to the high buffering capacity of marine waters, and as a result, this interaction was not included in the Environmental Assessment. Furthermore, no adverse effects on marine fish habitat, including salt marshes, eelgrass meadows, and kelp, due to acidification and eutrophication are anticipated.
2496.1	round 1	Gitga'at First Nation	Table 4.6-13	Vegetation and Wetland Resources	Mitigation 4.7.3 - As mentioned frequently, management plans are not mitigations, so what specific mitigations are/will be in the "Decommissioning and Abandonment Plans"? Please provide more information. Also please include evidence that Nexen considered climate change and future conditions in reclamation success of baseline ecosystems. Please also include further information on what Nexen will do to ensure the long-term viability of soils (topsoil, subsoil and organics) for use during decommissioning. Please provide evidence from past projects where organics remain viable for reclamation use. All of this information must be included in the EAC Application and not left to permitting and/or 25-30 years after disturbance.	As stated in Section 14 of the Application, each of the Environmental and Operational Management Plans will include "mitigation measures and written procedures, specifications and controls that direct Project activities", in addition to a description of "monitoring and reporting requirements". According to the Application Information Requirements, "Conceptual decommissioning and abandonment plans will be discussed in the Application, but detailed plans will be developed as part of the BC OGC LNG permitting process (Section 1.2)". Section 14.17 of the Application provides a conceptual overview of the content that the Decommissioning and Abandonment Plans will include when they are fully developed as part of the BC OGC LNG permitting process to meet the laws, regulations and standards in place during permitting. The plant species used in decommissioning and abandonment will be determined based on conditions at the time of decommissioning and abandonment. While long-term storage of soil stockpiles does affect the viability of propagules (Strohmayer 1999; AEW 2012; Rai et al. 2014), there are approaches to maintain or restore soils. One strategy for maintaining the viability of soils during stockpiling is to plant them with local native species to promote nutrient cycling and suitable soil biotic conditions, though the benefits typically occur within the top metre of stockpiled material (AEW 2012; Rai et al. 2014) Additionally, there are approaches that can help establish soil microbial communities (e.g., inoculation of tree and shrub seedlings with ectomycorriza or bacteria before they are planted on reclaimed landforms). Preliminary studies have shown positive results in the early stages of reclamation for forest species in the oil sands (Quoreshi et al. 2005; Quoreshi et al. 2008). In Alberta, best management practices call for the mixing of organic and mineral soil creates a peat-mineral mix which reduces the risk of losing organic matter due to rapid decomposition or in the event of a surface fire (AEW 2012). Aurora LNG will consider and develop reclamation alternatives in a manner that is consistent with conditions of the certificate and permitting approvals for the Project and recognized best management practices. Detailed reclamation plans will be progressed further following Project approval. References AEW (Alberta Environment and Water). 2012. Best Management Practices for Conservation of Reclamation Materials in the Mineable Oil Sands Region of Alberta. Prepared by D. Mackenzie for the Terrestrial Subgroup, Best Management Practices Task Group of the Reclamation Working Group of the Cumulative Environmental Management Association. Fort McMurray, Alberta. Quoreshi, A.M., D.P. Khasa, G. Bois, J.L. Jany, E. Begrand, D. McCurdy and M. Fung. 2005.Mycorrhizal Biotechnology for Reclamation of Oil Sand Composite Tailings and Tailings Land in Alberta, pp. 117-122. In: The Thin Green Line – A Symposium on the State-of-the-Art in Reforestation. Forest Research Information Paper No. 160. Ontario Forest Research Institute, Ontario Department of Natural Resources. Sault Ste. Marie, Ontario. Quoreshi, A.M., Y. Piche and D.P. Khasa. 2008. Field performance of conifer and hardwood species 5 years after nursery inoculation in the Canadian Prairie Provinces. New Forests 35(3): 235–253. Rai, V.K., N.S. Raman, S.K. Choudhary and S. Rai. 2014. Top soil management in coal mines: A paradigm shift required in approach. International Journal of Innovative Research in Advanced Engineering (IJIRAE) 1(10): 448–454. Strohmayer, P. 1999. Soil Stockpiling for Reclamation and Restoration Activities After Mining and Construction. Restoration and reclamation Review, Volume 4, Number 7, Spring 1999. University of Minnesota.
2497.1	round 1	Gitga'at First Nation	4.6	Vegetation and Wetland Resources	Based on screening comment #7, a significant effect should be concluded for "change in wetland function".	Screening comment #7 expresses concern about the accuracy of the five-year timeframe for reclamation of the site contained in the Project Description. The response to comment #7 clarifies that reclamation activities are anticipated to last for five years, but acknowledges that subsequent ecosystem recovery is a longer-term process. In response to comment # S7 here, please see Table 4.6-6 which provides the significance threshold for residual effects on wetland functions. Note that the threshold is tied to the definition of 'ecologically important wetlands,' as defined by regional guidance from Environment and Climate Change Canada (Environment Canada 2014). Some of the peatland wetland associations present in the PDA do not meet the definition of 'ecologically important wetlands' according to this regional guidance and are therefore not subject to the no-net-loss-of-wetland-functions goal of the Federal Policy on Wetland Conservation. Consequently, the significance threshold listed in Table 4.6-6 is not exceeded and Project residual effects to wetland functions are predicted to be not significant.
2498.1	round 1	Gitga'at First Nation	4.6	Vegetation and Wetland Resources	What is Nexen's plan for mitigating the huge loss of peatlands? Why are these wetlands not being compensated for?	Screening comment #7 expresses concern about the accuracy of the five-year timeframe for reclamation of the site contained in the Project Description. The response to comment #7 clarifies that reclamation activities are anticipated to last for five years, but acknowledges that subsequent ecosystem recovery is a longer-term process. In response to comment # S7 here, please see Table 4.6-6 which provides the significance threshold for residual effects on wetland functions. Note that the threshold is tied to the definition of 'ecologically important wetlands,' as defined by regional guidance from Environment and Climate Change Canada (Environment Canada 2014). Some of the peatland wetland associations present in the PDA do not meet the definition of 'ecologically important wetlands' according to this regional guidance and are therefore not subject to the no-net-loss-of-wetland-functions goal of the Federal Policy on Wetland Conservation. Consequently, the significance threshold listed in Table 4.6-6 is not exceeded and Project residual effects to wetland functions are predicted to be not significant.
2499.1	round 1	Gitga'at First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.1 - "Pre- construction rare plant surveys will be conducted in the PDA, near known locations of rare plants" How is this a mitigation to avoid or reduce change in the Abundance of Plant species of Interest when it is known and assumed that all vegetation within the PDA will be removed? Gitga'at questions the reasoning behind this because confirming that rare plants exist and then clearing them away so that construction can occur is not mitigation for reducing or avoiding a plant species of interest. It's simply identifying where something is so that it can be documented and subsequently destroyed.	A pre-construction survey is required to reconfirm the full extent of each known occurrence as a precursor to plant relocation, which is the subsequent pre-construction mitigation measure. If additional plants are detected at the time of the pre-construction survey, contingency measures would be implemented such as relocation or collection of seed or propagules of those newly identified plants to reestablish populations off-site, or to augment existing off-site populations.
2500.1	round 1	Gitga'at First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.3 -"The red-listed non vascular plant, Sphagnum majus and blue listed non-vascular plant, Sphagnum centrale will be translocated from the known locations within the PDA". What evidence does Aurora LNG have that this mitigation is viable? and what kind of monitoring measures is Aurora LNG prepared to put forth to monitor the success or failure of this measure? Gitga'at does not have any confidence in this mitigation measure.	The BC Conservation Data Centre's Guidelines for Translocation of Plant Species at Risk (Maslovat 2009) notes that, "in some cases, translocations may be the only viable option. For example, translocation can be a useful tool to mitigate threats to plants in development areas where no other option is feasible." Avoidance is not feasible for Sphagnum centrale and Sphagnum majus because they are located within the PDA. If the Project proceeds, the risks of attempting translocation are limited because the populations would otherwise be lost as a result of clearing within the PDA. Aurora LNG considers this a potentially-viable mitigation measure considering the successful research trials and methods of peatland restoration and moss propagation that have been developed in conjunction with the horticultural/agricultural sector and oil & gas sectors in North America and Europe. Examples of research institutes with publications that address the restoration of Sphagnum spp. include, but are not limited to the following: Peatland Ecology Research Group at the University of Laval, http://www.gret-perg.ulaval.ca/ See: Quinty, F. and L. Rochefort, 2003. Peatland Restoration Guide, second edition. Canadian Sphagnum Peat Moss Association and New Brunswick Department of Natural Resources and Energy. Québec, Québec. Peatland Restoration program at the Northern Alberta Institute of Technology http://www.nait.ca/70709.htm See: Sobze, J., M. Gauthier and R. Thomas 2012. Peatland Restoration – Harvest and Transfer of Donor Material. Technical Note. Available at: http://www.nait.ca/docs/1_Donor_Site_Harvesting_and_Moss_Transfer.pdf Aurora LNG will monitor the performance (survival, establishment, and growth) of the translocated populations during the growing season according to the Guidelines for Translocation of Plant Species at Risk (Maslovat 2009) . Translocation results will be made available to the BC Conservation Data Centre in order to increase collective knowledge of the species.
2501.1	round 1	Gitga'at First Nation	4.6 Table 4.6-10	Vegetation and Wetland Resources	Mitigation 4.6.6 - "An invasive Plant Management Plan will be implemented - The Weed Control Act and Regulations prohibit the spread of noxious weeds on highways and prohibits…" This is not "mitigation" and is required by law.	This comment cites the rationale for the mitigation measure, not the mitigation itself: The mitigation is to develop and implement an Invasive Species Management Plan.
2502.1	round 1	Gitga'at First Nation	4.6	Vegetation and Wetland Resources	In the Summary section under "Likelihood of Residual Effects For Change in Abundance of Plant Species of Interest" it is stated that "the translocation (of plant species of interest) will be successful". This is in direct relation to Sphagnum majus and Sphagnum centrale. Gitga'at disagrees with this conclusion and it should be removed. There is no evidence presented in the document that supports this statement.	The full statement in the Summary Section says, "There is a medium likelihood that residual effects to plant species of interest will occur and that the translocation will be successful. Although Sphagnum majus and Sphagnum centrale are known to be present within the PDA and disturbance cannot be avoided, their translocation to outside the PDA is expected to be successful in mitigating the effect. Potentially suitable habitat (i.e., bogs) is present within the terrestrial LAA, which will increase the likelihood of successful translocation (Maslovat 2009)."Section 4.6.2.7 defines Medium likelihood as " Medium—Adverse interactions between the Project and vegetation and wetland resources may be difficult to avoid or mitigate, and adverse residual effects are likely". So while the translocation mitigation is expected to be successful, the medium likelihood rating accounts for some uncertainty. The assumption is that if the species can be relocated to a suitable habitat (which is known to exist) then it is reasonable to assume it will be successful.
2503.1	round 1	Gitga'at First Nation	Table 4.6.11	Vegetation and Wetland Resources	Mitigation 4.6.10 - This is monitoring and not mitigation. It is stated that soils will be monitored and adaptive management will be provided if necessary. What does this mean? What adaptive management? If vegetation and soils are impacted by NO2 and SO2 atmospheric concentrations and soil acidification or soil eutrophication occur to levels that are unacceptable what actual mitigation measure outside of "monitoring" will occur?	Monitoring the predicted areas of exceedance (for acidification or eutrophication) to determine whether any adverse effects are detectable is the first step to determine whether any additional mitigation is required.The following factors are uncertain:whether potential effects will be observable and measurable,the timeframe within which effects from this mechanism could be detectable,the degree to which they could occur, andthe rate of change observed in soils and/or ecological communities. Therefore, monitoring is required before further mitigation measures are evaluated and applied. It is expected the monitoring effort will be regionally focused to encompass all of the potential airshed contributors and coordinated through the BC Ministry of Environment. In establishing that regional monitoring effort, it is assumed that the Ministry will determine the monitoring criteria and outline a suite of potential mitigation measures to address expected outcomes based on the monitoring results.Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2504.1	round 1	Gitga'at First Nation	Table 4.6.11	Vegetation and Wetland Resources	Mitigation 4.2.8 - "An Air Quality Management Plan" is cited as a mitigation measure. Management Plans are not mitigation measures but rather a Management Plan would list mitigation measures within it. Since a "Air Quality Management Plan" was not included in the Application, more information is required to assess the effectiveness of this mitigation measure. Therefore, what exactly is the mitigation measure in this case? is it the "Project Specific Program" to reduce air emissions? if so, what is the "Project Specific Program" exactly? How will it reduce Air Emissions? Those would be the mitigations measures....Please be specific about what exactly the mitigation measure is going to be.	See table 4.2-10 of the Application for specific mitigation measures that would be included in the Air Quality Management Plan. The intent of listing mitigation measure 4.2.8 in this vegetation and wetlands section is to acknowledge that mitigation measures within the Air Quality Management Plan would contribute to reducing effects (due to emissions) on vegetation.

2505.1	round 1	Gitga'at First Nation	4.6	Vegetation and Wetland Resources	Under the heading "Characterization of Residual Effects for Change in Abundance or Condition of Ecological Communities of Interest" The conclusion is made that the implementation of the mitigation measures in table 4.6-10 will reduce potential edge effects to "negligible magnitude". Please provide more information as it is not clear how this conclusion is made.	The reasoning behind the conclusion of negligible magnitude is based on first identifying the potential mechanisms that could affect ecological communities at the edges of the PDA, and then identifying a feasible mitigation measure for each potential effect-mechanism.Examples of effect mechanisms that were considered include the following: creation of additional edge by windthrow; deposition/aggradation due to erosion processes; or, changes in soil moisture levels due to stormwater flows. Examples of corresponding mitigation measures include the following: windthrow management (windfirming treatments) of remaining stands; application of erosion and sediment control measures; and maintaining pre-existing surface hydrology patterns While there may be some changes to soil moisture, soil temperature, air temperature, or light levels within communities located at the edge of the PDA, given the feasible mitigation/management measures identified in Tables 4.6-10 and 4.6-11 of the Application, any remaining changes to abiotic factors are not anticipated to result in measurable effects to ecological communities of interest due to edge effects. The characterization of residual effects is thus predicted to be negligible (see Table 4.6-5 of the Application for the definition of negligible in this context).
2506.1	round 1	Gitga'at First Nation	4.6	Vegetation and Wetland Resources	It is stated that the residual loss of old-growth forest is low in magnitude. If the old growth forest that the project will be impacting is considered in terms of the PDA (10%), Gitga'at views this as high and long term. The Characterization of Residual Effects does not consider the PDA. It gives thresholds in consideration of the entire RAA which produces a skewed conclusion of what is actually going to happen on the ground. In our view this is unacceptable. If the project is going to cut down 100% of the old growth forest within the PDA, regardless of what populations are present in the RAA or LAA, this will have a high residual effect that is long term in duration. This is of particular interest to traditional users in that the "go elsewhere to get your resources" argument is not logical or possible. If people wanted to use the resources on the PDA they will no longer be able to because it will be gone. Therefore the residual effect of the loss of this resource, within that geographical extent, is high and long term. The assessment of residual effects, in this particular case, is flawed.	The government of BC has developed the approved Great Bear Rainforest Order (GBRO), which establishes explicit retention targets for old growth forest within the landscape units that this Project intersects. The GBRO is based on a regional ecosystem management approach, which means natural resources such as old growth forests are managed on a regional scale, such as the landscape units identified in the GBRO. These landscape units are considerably larger than the PDA, or LAA. The Application aligns with the ecosystem management approach in effect within the region, and uses the retention targets contained in the GBRO to guide characterization of the magnitude of Project effects (See table 4.6-5 in the Application re: old growth magnitude criteria relative to the GBRO thresholds for the relevant landscape units.) The GBRO represents an approved Ministerial Order which allows for up to 40% loss of old growth forest from the specified landscape units which correspond to the Project's RAA. The loss of old growth forest due to the Aurora LNG Project is far below such allowable thresholds set for other (timber harvest) industries within the region. Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4 of the Application, and include assessment on vegetation gathering. Effects on First Nation harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address the site-specific loss of vegetation resources for traditional use within the PDA. See also the technical memo titled, "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. This technical memo will be filed with the BC EAO.
2507.1	round 1	Gitga'at First Nation	Table 4.6.13	Vegetation and Wetland Resources	Mitigation No. 4.6.15 - a Wetland Monitoring Program is not a mitigation; it is a Monitoring Program. What exact mitigations are Aurora LNG proposing? If the monitoring program finds that the wetland functions have not been adequately replaced or met, what actual mitigations is Aurora planning on?	Mitigation measure 4.6.15 specifically refers to monitoring the performance of restored, enhanced, or created wetlands that are established according to the Project's approved Wetland Compensation Plan. This monitoring is intended to determine whether or not the compensatory habitat is functioning as intended. In the event that restored, enhanced, or created wetland habitat is determined, through monitoring, to be not functioning as intended, then adaptive management would be applied. Aurora LNG's framework for adaptive management is as follows: Environmental management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Precise adaptive management measures cannot be defined ahead of time without knowing what the issue(s) regarding function is, however potential examples could include such management measures as: adjustment to wetland hydrology through grading or channel design; replanting with more-suitable plant species; controlling herbivory; or removing invasive plant species. The precise measures would depend on the stressors and/or monitoring plan results.
2508.1	round 1	Gitga'at First Nation	Table 4.6-14	Vegetation and Wetland Resources	It is unclear how Operations are not applicable to the residual effects on the change in Abundance of Plant Species of Interest and Wetland Function in the PDA, TLAA, VALAA and/or RAA . Please provide more information.	During operations, no plant species of interest or wetlands will remain in the PDA; they will have been removed during construction. During operation of the Project, no residual effects on plant species of interest or wetland functions are anticipated in the remaining study boundaries, thus the use of N/A in the residual effects summary table. Effects on wetlands due to acidification/eutrophication are addressed under changes to condition of ecological communities of interest, for which there are residual effects during the operations phase; these are characterized in Table 4.6-14 of the Application.
2509.1	round 1	Gitga'at First Nation	Section 4.6	Vegetation and Wetland Resources	"Old-growth forests are relatively undisturbed and common in the RAA; they are considered resilient because they can recover from perturbation, albeit taking over 200 years to develop" - this is not low in magnitude. The actual time it takes to re-establish vegetation populations to existing levels should be considered when evaluating residual effects.	The duration of an effect is one attribute that is used to characterize residual effects, while magnitude is another attribute. See Table 4.6-5 of the Application for definitions of each characterization. All characterizations in Table 4.6-5 are considered for each measurable parameter that contribute to each residual effect. The duration of effects on old growth forest are considered long-term, but of low magnitude according to the definitions of each term provided in Table 4.6-5.
2510.1	round 1	Gitga'at First Nation	Section 4.6.6.5	Vegetation and Wetland Resources	Under Cumulative Effects Mitigation it is stated that it is expected that future projects will be held to the same standards as past and present projects, including compensation required for ecologically important wetlands and offsetting. This is not adequate mitigation. Specific mitigations are needed with consideration for all of the other projects and development which have occurred or will possibly occur within the RAA.	Please see Table 4.6-13 of the Application for the full suite of mitigation measures intended to avoid, limit, and/or offset the loss of wetland functions for this Project. These Project-specific mitigation measures will also directly reduce potential for cumulative interactions.
2511.1	round 1	Gitga'at First Nation	Section 4.6.7.1	Vegetation and Wetland Resources	Gitga'at disagrees with the conclusion that the project residual effects to vegetation and wetland resource will not be significant based on the reasoning that plant species of interest are viable within the RAA and traditional use plants are abundant elsewhere. The "can be found elsewhere" reasoning is not acceptable. Vegetation and wetland resources within the PDA will be significantly altered because the project will destroy them.	Effects on the changes in consumptive and non-consumptive land and resource use for traditional purposes are presented in Section 11.3 and 11.4, of the Application and include assessment of vegetation gathering. Effects on First Nations harvesting-related Aboriginal interest are presented in Part C, Section 12 of the Application. Together these sections address the site-specific loss of vegetation resources for traditional use within the PDA. Please also see the technical memo titled, "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" prepared by Aurora LNG in response to comments pertaining to concerns about access and availability of traditional use species. This technical memo will be filed with the BC EAO.
2512.1	round 1	Gitga'at First Nation	4.7	Wildlife Resources (Terrestrial)	At this time, Gitga'at considers the Marine riparian management zone associated with Delusion Bay to be too narrow to provide a sufficient buffer. The inherent richness of the estuary and edge effect are favoured habitat for many species. The conceptual layout of project components at full build-out, does not provide a depiction of a realistic concept to support terrestrial wildlife species. Species such as Western screech owl and Little brown Myotis are expected to favour these habitats . The project does not depict a concept that considers natural breaks in terrain or an effort to protect or maximize cover. Please justify why the zone is considered acceptable.	Habitats surrounding Delusion Bay were rated as having high or moderate suitability for western screech-owl and little brown myotis under existing conditions, however Delusion Bay was rated as Nil suitability for both species to support breeding activity (Section 4.7.3.2 of the Application). The assessment for change in habitat identifies that the change in area of preferred habitat (i.e., high or moderate suitability) from clearing within the PDA will result in a 17% change from existing conditions for western screech-owl and little brown myotis (Table 4.7-13) with indirect effects extending beyond the PDA boundaries (Table 4.7-14). As described in Section 4.7.5.2, the assessment of change in habitat was considered conservative because it assumed that all vegetation will be removed from within the PDA. Collectively, the riparian reserve zones, management areas, and marine riparian disturbance buffer will result in the retention of mature and old forested habitat; these areas are not predicted to continue to serve as preferred habitat for either species during operations (e.g., Figure 4.7-10 and Figure 4.7-11), but will reduce noise and light disturbance effects to adjacent habitats, including Delusion Bay. The riparian buffers also maintain connectivity between forested and wetland communities northwest of the PDA and Delusion Bay. These corridors will facilitate access to upland and intertidal habitats for species that rely on them for breeding, roosting, foraging, and staging activities.
2513.1	round 1	Gitga'at First Nation	4.7	Wildlife Resources (Terrestrial)	Gitga'at is concerned about fencing the facility, especially along the streams and Delusion Bay. There should be no restrictions or blocking of escape for terrestrial prey species such as Coastal Black tail deer. Stream crossing should be full span bridges to allow wildlife passage.	Aurora LNG is proposing to install fencing around the LNG facility and the worker camp to support security requirements and to reduce the potential for negative interaction between Project personnel and wildlife (e.g., bears, wolves). However, portions of the PDA will not be fenced (e.g., access road) to facilitate ongoing movement of wildlife, including black-tailed deer, throughout the LAA for the duration of Project operations. To the extent practicable, Aurora LNG will install crossings (e.g., at watercourses) to facilitate wildlife passage throughout the LAA while restricting access to the LNG facility.
2514.1	round 1	Gitga'at First Nation	4.7	Wildlife Resources (Terrestrial)	Mitigation 4.7.3 - As mentioned frequently, management plans are not mitigations, so what specific mitigations are/will be in the "Decommissioning and Abandonment Plans"? Please provide substantially more information. Also please include evidence that Nexen considered climate change and future conditions in reclamation success of baseline ecosystems. Please also include further information on what Nexen will do to ensure the long-term viability of soils (topsoil, subsoil and organics) for use during decommissioning. Please provide evidence from past projects where organics remain viable for reclamation use. All of this information must be included in the EAC Application and NOT left to permitting and/or 25-30 years after disturbance/ecosystem destruction.	As stated in Section 14 of the Application, each of the Environmental and Operational Management Plans will include "mitigation measures and written procedures, specifications and controls that direct Project activities", in addition to a description of "monitoring and reporting requirements". According to the Application Information Requirements, "Conceptual decommissioning and abandonment plans will be discussed in the Application, but detailed plans will be developed as part of the BC OGC LNG permitting process (Section 1.2)". Section 14.17 of the Application provides a conceptual overview of the content that the Decommissioning and Abandonment Plans will include when they are fully developed as part of the BC OGC LNG permitting process to meet the laws, regulations and standards in place during permitting. The plant species used in decommissioning and abandonment will be determined based on conditions at the time of decommissioning and abandonment. While long-term storage of soil stockpiles does affect the viability of propagules (Strohmayer 1999; AEW 2012; Rai et al. 2014), there are approaches to maintain or restore soils. One strategy for maintaining the viability of soils during stockpiling is to plant them with local native species to promote nutrient cycling and suitable soil biotic conditions, though the benefits typically occur within the top metre of stockpiled material (AEW 2012; Rai et al. 2014) Additionally, there are approaches that can help establish soil microbial communities (e.g., inoculation of tree and shrub seedlings with ectomycorriza or bacteria before they are planted on reclaimed landforms). Preliminary studies have shown positive results in the early stages of reclamation for forest species in the oil sands (Quoreshi et al. 2005; Quoreshi et al. 2008). In Alberta, best management practices call for the mixing of organic and mineral soil creates a peat-mineral mix which reduces the risk of losing organic matter due to rapid decomposition or in the event of a surface fire (AEW 2012). Aurora LNG will consider and develop reclamation alternatives in a manner that is consistent with conditions of the certificate and permitting approvals for the Project and recognized best management practices. Detailed reclamation plans will be progressed further following Project approval. References AEW (Alberta Environment and Water). 2012. Best Management Practices for Conservation of Reclamation Materials in the Mineable Oil Sands Region of Alberta. Prepared by D. Mackenzie for the Terrestrial Subgroup, Best Management Practices Task Group of the Reclamation Working Group of the Cumulative Environmental Management Association. Fort McMurray, Alberta. Quoreshi, A.M., D.P. Khasa, G. Bois, J.L. Jany, E. Begrand, D. McCurdy and M. Fung. 2005.Mycorrhizal Biotechnology for Reclamation of Oil Sand Composite Tailings and Tailings Land in Alberta, pp. 117-122. In: The Thin Green Line – A Symposium on the State-of-the-Art in Reforestation. Forest Research Information Paper No. 160. Ontario Forest Research Institute, Ontario Department of Natural Resources. Sault Ste. Marie, Ontario. Quoreshi, A.M., Y. Piche and D.P. Khasa. 2008. Field performance of conifer and hardwood species 5 years after nursery inoculation in the Canadian Prairie Provinces. New Forests 35(3): 235–253. Rai, V.K., N.S. Raman, S.K. Choudhary and S. Rai. 2014. Top soil management in coal mines: A paradigm shift required in approach. International Journal of Innovative Research in Advanced Engineering (IJIRAE) 1(10): 448–454. Strohmayer, P. 1999. Soil Stockpiling for Reclamation and Restoration Activities After Mining and Construction. Restoration and reclamation Review, Volume 4, Number 7, Spring 1999. University of Minnesota.
2515.1	round 1	Gitga'at First Nation	4.7.3	Wildlife Resources (Terrestrial)	More information is required on the rationale for why the focal species were selected.	The assessment for wildlife resources uses two modelling approaches to evaluate change in habitat for species known or potentially occurring within the PDA and LAA. Wildlife habitat community modelling was developed to provide an assessment of potential effects on habitat availability for 15 wildlife habitat communities within the LAA. These wildlife habitat communities provide coverage for all habitat types that occur within the LAA and are used to assess effects of change in habitat to a wider suite of wildlife species assemblages that occupy them. Methods and findings of the wildlife habitat community models are provided in Section 4.1 of Appendix J and carried forward in Section 4.7.5.2 of the Application. These sections provide a detailed description of each of the 15 communities, describes wildlife species that are expected to occur within each, and discusses potential effects to species assemblages due to construction and operation of the Project. Four terrestrial wildlife species were selected for wildlife habitat suitability modelling (i.e., marbled murrelet, western screech-owl kennicottii subspecies, little brown myotis, and western toad) based on the following suite of criteria (also described in Sections 4.7.3 of the Application and Section 4 of Appendix J): (1) likelihood of occurrence or documented use of habitats within the LAA and RAA; (2) potential interaction with Project activities; (3) conservation status; (4) ecological importance; (5) established base of information, knowledge, or data; and, (6) cultural or traditional value. The four selected species were considered to best represent the criteria listed above, given consideration of the primary habitats available within the LAA and the likelihood of occurrence based on Project and regional datasets and known habitat requirements. In addition, the four selected species were determined to be good candidates for species-specific habitat suitability models because they each require a suite of habitat features that are best assessed at the species-level (rather than at the community-level). Provincial standards advise planners to select species for suitability modelling where there is a strong understanding of the relationship between habitat characteristics and species whose life requisites (e.g., breeding, feeding) compare well with terrestrial ecosystem map units (RIC 1999). Specifically, marbled murrelet requires old to mature coniferous forests with specific tree-level characteristics for nesting (e.g., large branches, high epiphyte cover); western screech owl requires open mixedwood forest with large diameter trees for nesting and roosting; little brown myotis requires mature and old growth forests with cavities and snags for male and maternal roosting; and western toad requires shallow wetlands with fine sediments that retain open water throughout the breeding season. Collectively, the habitat requirements of the four selected species are complementary and serve to evaluate a range of habitat types within the LAA in combination with the wildlife habitat community modelling. Reference: Resource Inventory Committee (RIC). 1999. Wildlife Habitat Rating Standards, Version 2. Ministry of Environment, Lands and Parks. Victoria, BC. 98 pp.

2516.1	round 1	Gitga'at First Nation	4.7.2	Wildlife Resources (Terrestrial)	More information is required on the impacts to migratory birds.	As described in Section 4.7.1, the assessment of wildlife resources was inclusive of all species of mammals, birds, amphibians, and reptiles that rely on the terrestrial environment for all or part of their life requisites, including species defined by Article I of the Migratory Birds Convention. Section 4.7 acknowledges that habitats within the PDA and LAA provide seasonal life requisites for migratory birds, including foraging, breeding, roosting, and staging during migration. Supporting field studies were scheduled to coincide with important patterns in seasonal use for migratory birds in accordance with Resource Inventory Standards Committee Standards. Collectively, these data are used to help characterize potential Project effects to migratory birds in Sections 4.7.5, recognizing that migratory periods can increase the potential for interaction with Project activities and infrastructure. Section 5(1)(a) of CEAA 2012 also requires that environmental effects or changes to components listed in Section 5(1)(a)(iii) must be taken into account in relation to an act or thing, physical activity, or a designated project. Section 4.7.5, and Section 4.7.6 of the Application provide an assessment of effects to terrestrial wildlife, inclusive of migratory birds. Please refer to Section 11 for a summary of statutory requirements under CEAA 2012. Residual Project effects and cumulative effects are described specifically for migratory birds in Section 11.2, Table 11.2-2. A significance determination for migratory birds is provided in Section 11.9, Table 11.9-1.
2517.1	round 1	Gitga'at First Nation	4.7.3	Wildlife Resources (Terrestrial)	It is not clear where the bat assessment data/information is from given that acoustic surveys for bats was not conducted?	Incidental information on bat occurrence was collected concurrently during marbled murrelet dawn audiovisual surveys in July 2015. Recordings of bat vocalizations indicated the potential presence of little brown myotis within the PDA and LAA. To improve understanding of bat species presence and occurrence, and to support the development of the Bat Management Plan, additional information on seasonal activity patterns for bats has been prepared as a technical memo, entitled "Aurora LNG Project Bat Monitoring Program" and it will be filed with the BC EAO.
2518.1	round 1	Gitga'at First Nation	4.7.3	Wildlife Resources (Terrestrial)	The magnitude of residual effects should be species specific given the unique life-histories of species as well as status. Please provide rationale for why the magnitude used is appropriate for each species.	The magnitude of a residual effect is determined based on a measurable change from existing conditions and considers applicable legislation, management standards, or environmental and regulatory thresholds, and takes into account the viability of local or regional populations. With respect to the magnitude of residual effects (i.e., the amount of change to the Wildlife Resources [Terrestrial] VC relative to existing conditions), the definitions of the qualitative categories (i.e., negligible, low, moderate, and high) apply to all terrestrial wildlife species, including species of management concern and federally-listed species. Accordingly, the magnitude of a potential Project effect will depend on the status of a given species (and may be larger for species at risk or those with unique life histories that would increase the potential for an interaction with the Project), in which case the assessment applies the most conservative (i.e., highest) magnitude to characterize potential Project effects to wildlife, overall. Additional information on species-specific determinations for potential Project residual effects and significance determinations is provided in Section 4.7.2.8 of the Application.
2519.1	round 1	Gitga'at First Nation	4.7	Wildlife Resources (Terrestrial)	Can Nexen commit to no clearing during breeding bird season (rather than using vague language, e.g., if possible)?	Aurora LNG is committed to following a mitigation hierarchy to avoid, limit, and mitigate for potential effects to wildlife resources, including breeding birds. Accordingly, Aurora LNG will schedule vegetation clearing and site preparation to occur outside of restricted activity periods for breeding birds (as per mitigation 4.7.17) to the greatest extent feasible. If vegetation clearing is required within restricted activity periods for breeding birds, pre-clearing surveys will be completed (as per mitigation measures 4.7.18 and 4.7.19). Aurora LNG has further committed to monitoring the heron rookery if vegetation clearing for the Project overlaps with the breeding period for great blue heron. The Wildlife Management Plan and Marbled Murrelet Management Plan (specifically for marbled murrelet) will outline measures to avoid, reduce, mitigate, and monitor for breeding birds and will include direction on mitigation measures specific to breeding birds (e.g., Mitigation measures 4.5.1, 4.6.2, 4.7.1, 4.7.2, 4.7.4, 4.7.5, 4.7.6, 4.7.8, 4.7.10, 4.7.12, 4.7.14, 4.7.16, 4.7.17, 4.7.18, and 4.7.19).
2520.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	The extreme flashiness of creeks and systems as a result of the extensive clearing of the site is not considered. This is especially important given that the bogs holding capacity and complexity will be removed. As such, streams and drainages will become extremely "flashy" resulting in high levels of erosion with impacts to water quality, and causes for fish habitat loss and impacts to ecological function.	Clearing and development of the PDA will remove the majority of the existing watercourses with the exception of reaches J1-5 and J1.1. Aurora LNG acknowledges that clearing and grading of the PDA may result in higher volumes of overland flow due to removal of organic soils. Water flows within the PDA will be controlled and managed within the site stormwater management system which will be designed to handle the precipitation and surface runoff typical for this area. Stormwater flows will be diverted, as appropriate to watercourses to maintain downstream habitat. The larger, more complex, watercourse systems containing reaches J1-5, and J1.1, which will not be removed by project development, will also retain intact established riparian zones.
2521.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	In table 4.8-13 the proponent describes the area of fish habitat to be lost in the PDA to be 10,857 m². This would require an off-setting replacement at 2x which is 21,714 m² of similar fish habitat. At this time, Gitga'at is not confident that said off-setting will be successful, and avoidance is the best mitigation.	Offsetting for serious harm in the marine and freshwater environments will be considered collectively by Aurora LNG. This is because the freshwater habitats affected by the Project will affect anadromouos fish species (e.g., pink and coho salmon) that use freshwater and estuarine habitats for spawning and rearing. While efforts will be made to maximize the amount of freshwater habitat created or enhanced to offset the loss of fish habitat in watercourses within the PDA (i.e., "like-for-like" habitat replacement such as those on Digby Island presented in the Conceptual Fish Habitat Offsetting Plan [Appendix V]), the overall objective of the offset plan will be to maximize fish productivity for CRA fish species affected by the Project. Thus, where opportunities exist to create, restore, or enhance habitats used by juvenile salmon in estuarine or marine environments, particularly where options in the estuarine or marine environments have lower risks, uncertainties, or time lags than options in the freshwater environment, these projects will be included in the detailed offset plan with the objective of providing a net gain in production in the regional fishery. Through collaborative engagement with regulatory agencies (primarily DFO) and consultation with Aboriginal Groups during the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets.
2522.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	Further to table 4.8-13, the riparian habitat to be lost is 218,830 m², replacement at 2x would be 437,664 m². More information is required on the feasibility of this area being offsetted in an area with unique characteristics of Digby Island. In addition, to apply a minimum DFO standard, 15 m riparian zone is unacceptable. The dynamic peatland-forest ecosystem acts as a buffer to provide a moderated slow release of the ~ 3 meter annual rainfall received. It would be more appropriate to apply a minimum 30 meter riparian management zone on either side of the streams and inter-tidal zones of the Delusion Bay Estuary. Also, has modeled climate change conditions been considered in the Application? For example, with offsetting, it may be crucial to increase the foreshore buffer to adapt to future sea-level during the life of the Project.	Aurora LNG agrees that this amount of riparian offsetting would be difficult, if not impossible, to achieve. Aurora LNG takes the position that riparian habitat associated with streams that will no longer exist do not need to be included in the habitat balance accounting as this riparian habitat no longer provides "services" (e.g., shading, leaf litter) to the stream when the stream no longer exists. Only riparian habitats lost or altered adjacent to streams that remain after construction of the Project would require offsetting because it is only these streams that would receive less of the services provided by the riparian habitat and, therefore, be less able to produce fish. The gain-to-loss ratio for riparian habitats lost or altered adjacent to streams remaining after construction of the Project will be determined with DFO during permitting phase. Aurora LNG has taken a conservative approach of applying a 15 m riparian reserve zone (RRZ) on all streams (based on the Riparian Management Area Guidebook, Ministry of Forests, 1995) within the PDA,as the 15 m RRZ would only be required for the largest streams (classified as S3 streams). The most common stream class in the PDA are non-fish bearing S5 or S6 streams, which do not required a riparian reserve zone (Ministry of Forests, 1995). Discussion on the fore-shore habitat is addressed by the Marine Fish and Fish Habitat section (4.09).
2523.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	Gitga'at considers the freshwater invertebrate productivity to be essential to sustain fish health and productivity. A baseline invertebrate inventory for the streams affected in the PDA would be appropriate to provide an indicator for stream health. This should be initiated pre- construction and for reasonable increments throughout the project operations up to and including de-commissioning.	Aurora LNG acknowledges that freshwater invertebrate production is essential to fish health and productivity. However, Aurora LNG believes that it is not necessary to collect baseline invertebrate data or monitoring invertebrates in streams throughout the life of the Project. This is because Aurora LNG has committed to mitigation measures that avoid, eliminate, or reduce potential effects to CRA fish species e.g. salmon and charr, which are sensitive to changes in water quality, stream flow, and sedimentation. By doing so, Aurora LNG believes that these mitigation measures will equally protect freshwater invertebrates and their habitat. Additionally, changes in water quality that would cause a change in the abundance, distribution, or species composition of freshwater invertebrates are not anticipated. Aurora LNG will engage with appropriate regulatory agencies and Aboriginal Groups identified in Schedule B of the Section 11 Order(as amended) to develop the environmental effects monitoring plans required for freshwater and marine environments.
2524.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	p. 4.8-53, in Additional Mitigation measures: to transport salvaged fish outside the PDA is unacceptable.	Aurora LNG will transport and release fish salvaged from affected watercourses within the PDA to the nearest watercourses with similar water quality (e.g., temperature and salinity) and habitat (e.g., pools for rearing). However, transport and release of fish to watercourses outside of the PDA may be required if similar water quality and habitats are not present. The selection of potential release areas will be determined in advance of any fish salvage conducted with consideration of the water quality and habitat conditions as well as the distance and access that may affect the time required to hold fish in tanks or tubs before release. Riparian buffers (15 m minimum on both sides of the streams) will be left adjacent to all watercourses remaining within the PDA after construction and impact to the upstream watershed will be minimized, where possible. These measures will reduce the potential effect of sediment reaching the streams and the estuary, and minimize the reduction in freshwater run-off reaching the estuary; no change in any water quality parameter is expected to occur. Aurora LNG agrees that careful planning will be required in developing a detailed water management plan and erosion and sediment control measures. FEED will provide input to the Marine and Freshwater Resources Management Plan and Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
2525.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	p. 4.8-53, the final paragraph about surface water quality changes is vague and lacks a level of description to provide assurance that fish and fish health will be protected. It is well known that clear-cut, clearing and grubbing produce a flashy hydrological response in a watershed. Gitga'at is concerned that an industrial disturbance this close to critical fish and fish habitat will cause serious and permanent damage to the fresh water and estuary environment. Settlement ponds, ditching and filter fabric systems will require careful design and engineering to mimic the natural buffering of this coastal ecosystem.	Riparian buffers (15 m minimum on both sides of the streams) will be left adjacent to all watercourses remaining within the PDA after construction and impact to the upstream watershed will be minimized, where possible. These measures will reduce the potential effect of sediment reaching the streams and the estuary, and minimize the reduction in freshwater run-off reaching the estuary; no change in any water quality parameter is expected to occur. Aurora LNG agrees that careful planning will be required in developing a detailed water management plan and erosion and sediment control measures. FEED will provide input to the Marine and Freshwater Resources Management Plan and Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of this plan.
2526.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	Table 4.8-15, Gitga'at finds this description to be inadequate for such a critical piece. Include " and excessive grease" behind leaks in the opening sentence. Remove" where possible" with respect to fueling construction vehicles. We require more information for the proponents fuel management safety systems such as: Spill response capacity must be adequate to contain/ control all volumes of hydrocarbons on site. Spill capacity must be adequate to contain/ control Spills to the ditches, ponds and silt fences for site water management systems. All machinery will be supplied with spill kits and additional spill containers will be onsite at strategic locations. All crew members will be trained and understand spill response equipment and their use. In addition, we would expect to see a detailed description of spill capacity for all Marine operations including fuel storage and adequate containment for these storage stations.	Aurora LNG acknowledges the wording suggestions and have revised Mitigation No. 4.8.10 as follows: All construction equipment onsite will be kept clean, free of leaks, excess oil, and grease. Refuelling or servicing of construction equipment will take place at least 30 m away from any watercourse or waterbody; exceptions may be made for large or immobile construction equipment in which case drip trays or bermed areas will be utilized so that any spillage will not enter the waterbody. An errata document is being compiled that captures these corrections and it will be filed with the BC EAO. The mitigation has been revised to clarify the intent of the "where possible" wording as relocation of such equipment for fueling purposes may cause more environmental disturbance. Measures related to the use of fuels and machinery on site will be included in the Marine and Freshwater Resources Management Plan. The plan will address spill containment capacity, number, type, and size of on site spill kits, and training for all personnel on site . All site personnel will review, understand, and follow all of the management plans while working on site. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan.
2527.1	round 1	Gitga'at First Nation	4.8	Freshwater Fish and Fish Habitat	Mitigation 4.8.8 must be for all the phases, not just construction.	Aurora LNG will adhere to mitigation 4.8.8 in all project phases where there is a the potential for sediment loads to enter a watercourse.
2528.1	round 1	Gitga'at First Nation	4.9.5.1	Marine Fish and Fish Habitat	The Marine Fish and Fish Habitat VC was reviewed alongside the Marine Water Quality VC in order to understand whether effects related to exposure to TSS were addressed. Section 4.9.5.1 lists the assumptions underlying the effects assessment. To assess effects related to TSS exposure, factors including dredge volume, disposal volume, and dredge rate were used to predict concentrations and spatial extent of TSS exposure. However, assumptions around exposure duration were not explicitly stated here and need to be provided.	The amount of time TSS levels are anticipated to exceed guidelines for the protection of aquatic life associated with dredging and disposal at sea activities was included in the model as part of the sediment dispersion modeling exercises. As described in Appendix G (Technical Data Report - Aurora LNG: MOF and Terminal Dredge Modelling), elevated TSS levels are expected to persist in Casey Cove for the duration of dredging activities (dredging in Casey Cove is anticipated to run for approximately 20 hours per day for approximately 48 days), with levels returning quickly to baseline conditions upon cessation of dredging activities. At South Digby Island, elevated TSS levels are expected to persist for the duration of dredging activities (dredging is anticipated to occur for ten hours per day for approximately 13 days at Berth 1 North, 17 days at Berth 1 South, and 11 days at Berth 2), with levels returning quickly to baseline conditions upon cessation of dredging activities. As described in Appendix H (Technical Data Report - Aurora LNG: Disposal at Sea Modelling), elevated TSS levels are expected to persist at Brown Passage during and immediately following each disposal event, with levels returning to baseline conditions relatively faster in shallower waters than in deeper waters. Disposal of dredged materials from the MOF is anticipated to require 124 disposal events (once every 8 hours, for approximately 41 days); disposal of dredged materials from Berth 1 North is anticipated to require 18 disposal events (once every 16 hours, for approximately 11 days); disposal of dredged materials from Berth 1 South is anticipated to require 23 disposal events (once every 16 hours, for approximately 15 days); disposal of dredged materials from Berth 2 is anticipated to require 15 disposal events (once every 16 hours for approximately 9 days). Dredging and disposal at sea activities will be limited to the DFO least risk timing window (November 30 to February 15) and will take place over two years. The amount of time marine fish may be exposed to elevated levels of TSS during dredging and disposal at sea activities was considered in the assessment of potential changes in marine fish health (Section 4.9.5.5 of the Marine Fish and Fish Habitat VC). In addition to the duration of dredging and disposal at sea activities themselves, and associated TSS levels, other factors such as species, life stage, and the behaviour of the individual may also influence exposure duration. For example, some species (such as pelagic fish), may choose to move away from or avoid areas of elevated TSS (Kjelland et al. 2015), resulting in relatively short-duration exposure. Other species (such as demersal fish, species with lower motility, or sessile invertebrates) may remain near the dredge or disposal areas, resulting in exposure to elevated TSS for relatively longer duration (up to a maximum of approximately 2.5 months, the length of the DFO least risk timing window). Reference: Kjelland, M.E., Woodley, C.M., Swannack, T.M. and D.L. Smith. 2015. A review of the potential effects of suspended sediments on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. Environment Systems and Decisions, 35(3): 334-350.
2529.1	round 1	Gitga'at First Nation	4.9.5.5	Marine Fish and Fish Habitat	The Marine Fish and Fish Habitat VC was reviewed alongside the Marine Water Quality VC in order to understand whether effects related to exposure to TSS were addressed. While estimates of exposure concentrations are stated in section 4.9.5.5, the application is less clear on exposure durations. Newcombe and Jensen (1996) provide a means for estimating severity of effects for estuarine fish (models 4 and 5) based on exposure concentration and exposure duration. These models could be used to estimate the likelihood and degree of residual effects to fish health. Further assessment is required on exposure duration. Newcombe, C. P. and J. O. Jensen. 1996. Channel suspended sediments and fisheries: a synthesis for quantitative assessment of risk and impact. North American Journal of Fisheries Management 16(4):693-727.	Duration of effect was considered in the Application. Specifically, duration is one of the metrics by which every residual effect is characterized (please see Table 4.5-5). Aurora LNG considered adopting quantitative thresholds for some of these metrics, including duration. Ultimately, however, the thresholds used were adopted because they can be applied consistently to all four potential effects and across different mechanisms within the same potential effect. In contrast, quantitative thresholds - such as the Newcombe and Jenson (1996) approach, are highly context specific. There are several reasons why the model predictions in the reference cited in the IR are not appropriate to an EA context and in particular for those in the Skeena estuary. First, Newcombe and Jensen (1996) (N&J) highlight the great variability among species, and importance of life-stages and particle size. They base their meta-analysis on studies that were (1) species-focused, (2) typically from highly controlled laboratory studies, and (3) "adequately documented". They implicitly assume information is available on several variables that are required to apply their linear models. That is, the N-J approach is of most use in data-rich, species-specific applications, where fish are exposed to steady elevations of TSS, non-stop, for a prolonged duration. In the context of an EA, where many species, life-stages and biophysical scenarios are involved, information on key variables is lacking, and (in this case) TSS plumes are highly variable over time and space, the approach is far less viable or practicable. Indeed, N-J recognize that the response of fish in wild populations exposed to episodic pulses of elevated TSS (as would be the case here) may not fit with their model predictions since, for example, wild fish are likely to actively avoid TSS plumes.

2530.1	round 1	Gitga'at First Nation	Table 4.9-2	Marine Fish and Fish Habitat	There is no reference to potential effects of “Ballast Water” on marine habitat, fish, and invertebrate species in the subtidal, tidal, and beach zones. In addition to the initial listing of species that have been reported to be introduced to the BC coast by ballast water releases, there should be a ballast water management and release monitoring approach. The Proponent needs to state whether the International Maritime Organizations (IMO’s) “International Convention for the Control of Ship’s Ballast Water and Sediments”[1] will be adhered to. As outlined in these guidelines all ships that are exchanging ballast water must: 1. Exchange water outside the Canadian EEZ (200 Nautical Miles offshore or if not possible due to storm at an absolute minimum of 50 Nautical Miles offshore), ballast water treatment and a ballast water exchange monitoring plan; 2. Carry a ballast water record book; 3. Possess a ballast water management certificate.<	As per Mitigation Measure No. 4.5.7 (Section 4.5.15.3, Table 4.5-26 of the Water Quality VC), vessels transiting to and from the Aurora LNG marine terminal will adhere to the Vessel Pollution and Dangerous Chemicals Regulations and the Ballast Water Control and Management Regulations under the Canada Shipping Act (2001). The Ballast Water Control and Management Regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Therefore, no adverse effect on marine water quality as a result of ballast water discharge is expected. Subsequently, no adverse effects to marine fish and fish habitat are expected.
2531.1	round 1	Gitga'at First Nation	Table 4.9-3	Marine Fish and Fish Habitat	Under the “Potential Project Effects” column, there is no mention of one of the greatest and likely dangers for fish and fish habitat of this project, the accidental release of larger amounts of bunker oil as well as the continuous release of smaller amounts of oil and exposure to antifouling paint as part of normal operations. These effects, and their effect mechanism, measurable parameters and rationale for measurable parameters should be listed here even if they have also been listed elsewhere in the Application. The impacts of operational releases of oil and other harmful substances (e.g., mechanical fluids and antifoul paint) must be assessed.	As Gitga'at First Nation has noted, the release of bunker fuel into the marine environment would constitute an accident or malfunction. It is standard Environmental Assessment methodology to consider potential effects of accidents and malfunctions separately from other Project-related effects (i.e., effects of construction, routine operations, and decommissioning). For a discussion of the potential effects of a bunker fuel spill on marine fish and fish habitat, please see Section 9.9 of the Application. Mitigation of potential effects related to the release of "smaller amounts of oil and exposure to antifouling paint as part of normal operations" fall within the scope of best management practices. Aurora LNG is committed to ensuring that all construction equipment (including vessels) will be kept clean, free of leaks, and will have spill kits. Where possible, fueling of construction vehicles will take place at least 30 m away from any watercourse or waterbody. This mitigation measure will limit the risk of spills to the aquatic environment. Please see mitigation measure 10.8.10. Nevertheless, small releases of hazardous materials still constitute accidents or malfunctions and are considered in Section 9 of the Application.
2532.1	round 1	Gitga'at First Nation	4.9.2.5	Marine Fish and Fish Habitat	It is unclear whether the spatial boundaries are also based on oil dispersion models taking currents and wind into consideration in case of a bunker oil spill. Clarification is necessary.	Spatial boundaries for the Marine Fish and Fish Habitat VC were developed to assess potential effects resulting from Project construction, routine operations, and decommissioning, and reflect the areas within which such effects could be measurable. A bunker fuel spill is considered an unlikely event and would constitute an accident or malfunction. It is standard EA methodology to consider potential effects of accidents and malfunctions separately from other Project-related effects. For a discussion of the potential effects of bunker fuel spill on marine fish and fish habitat, please see Section 9.9 of the Application.
2533.1	round 1	Gitga'at First Nation	Table 4.9-5	Marine Fish and Fish Habitat	Within the “Magnitude” row and under the “Quantitative Measure…” column we recommend quantifying statements in the following way: For “Low”, we suggest quoting how much change from existing conditions is needed to define change.	Aurora LNG appreciates the suggestion to adopt specific thresholds for the magnitude levels, and this approach was given serious consideration during the refinement of these criteria. Ultimately, there were two main reasons why a qualitative approach was adopted: The degree of deviation from baseline conditions required to meet the different levels ('negligible', 'low', 'moderate', 'high') would likely vary depending on the specific effect and underlying mechanism. It is unlikely that adequate detail could be always obtained on each mechanism and for each potential effect to defensibly specify a % deviation from baseline conditions. In summary, Aurora LNG felt that a qualitative approach was ultimately more appropriate and defensible than having quantitative thresholds for each magnitude level.
2534.1	round 1	Gitga'at First Nation	4.9.2.8	Marine Fish and Fish Habitat	Based on the Application, “A significant adverse residual effect on marine fish and fish habitat is defined as one that threatens the long-term persistence of a marine fish population”. The determination of significance for the Marine Fish and Habitat VC was in all instances tied to “CRA fish populations” and not to just “CRA fish” as required by the Fisheries Act. We do not agree with this definition of a significant adverse residual effect and do not believe that it is based on the definition of harm to CRA Fish and Fish Habitat as defined in the Fisheries Act. Significance should be re-assessed with regards to fish and their habitat as well as ongoing productivity, not just fish populations.	The significance threshold defined in Section 4.9.2.8 of the Marine Fish and Fish Habitat assessment is different from the definition of serious harm to fish (as per the Fisheries Act), since it explicitly considers mitigation measures, which include fully offsetting serious harm to fish, as defined in the Fisheries Act (see Appendix V, Conceptual Fish Habitat Offsetting Plan). Nevertheless, the concept of serious harm to fish is a fundamental part of the measurable parameters, mitigation measures and characterization of residual effects for 'change in fish habitat' (Section 4.9.5.2) and 'change in mortality risk' (Section 4.9.5.5). Specifically, the measurable parameters (Table 4.9-3) directly inform the assessment of potential and, ultimately, residual serious harm to fish (Appendix V), which in turn guides the choice of mitigation measures. The mitigation measures (Tables 4.9-11 and 4.9-18) serve to: (a) reduce or avoid serious harm to fish and (b) counterbalance remaining serious harm to fish through offsetting (mitigation measure # 4.9.2; Appendix V). Characterization of residual effects includes the metric 'Magnitude'. The definition of the different levels for magnitude includes "change from existing conditions that is below [for low magnitude]/above [for moderate and high magnitude] environmental and/or regulatory guidelines, but does not affect [for moderate]/and has potential to adversely affect [for high] the long-term persistence of any marine fish populations" (Table 4.9-5). Compliance with the Fisheries Act is considered explicitly under "below/above...regulatory guidelines", and separately from the effect on the long-term persistence of fish populations (e.g. top of page 4.9-53).
2535.1	round 1	Gitga'at First Nation	4.9.2.8	Marine Fish and Fish Habitat	Significance of an effect should not be bounded by temporal or population level limits as is done here. A significant effect can occur over short periods of time and affect less than the whole population of a fish species. In addition, significant effects can occur for other species groups and should not be limited to “a marine fish population”. Please revise.	Aurora LNG acknowledges that defining a significance threshold for an ecological Valued Component (VC) is subjective, as it depends on what characteristics of the VC are considered of value to an individual or organization. For the Marine Fish and Fish Habitat VC, Aurora LNG took an ecological function approach, whereby an exceedance of the significance threshold (i.e., local extirpation of a population) could result in a significant effect on the function of the marine ecosystem. The definition also allowed adequate flexibility to be generalizable to all four marine fish and fish habitat potential effects. Effects manifesting over a short period of time, or on a scale that does not affect the whole population, were captured as part of the broader characterization of residual effects, based on the metrics defined in Table 4.9-5. Finally, the term 'fish' is used as per the Fisheries Act definition, which does include marine species beyond the taxonomic group of finfish. Please see page 4.9-1 (second paragraph) of the Application for this definition of 'fish'.
2536.1	round 1	Gitga'at First Nation	4.9.3.1	Marine Fish and Fish Habitat	In the listing of different modelling studies provided, there is no current and wind dispersion model for large scale and accidental bunker oil releases and for operational and likely frequent releases of bunker oil, and other mechanical fluids as well as ballast water from the tankers. Please provide such a model.	The potential effects of an accidental release of bunker fuel on marine water quality and marine fish and fish habitat are discussed in Section 9.9 of the Application. The assessments in Sections 4.5 (Water Quality VC) and 4.9 (Marine Fish and Fish Habitat VC) focus on potential effects of Project construction, routine operations and decommissioning. It is standard EA practice to consider the effects of accidents and malfunctions separately from other Project-related effects. Aurora LNG disagrees with the statement that there will be "likely frequent releases of bunker oil, and other mechanical fluids...". Vessels calling on the Aurora LNG marine terminal will comply with all relevant federal and international regulations (e.g., Vessel Pollution and Dangerous Chemical Regulations of the Canada Shipping Act, 2001) that have been established to minimize the potential for releases of hazardous materials. For a discussion on preventative measures and response measures that would be implemented in the unlikely event of an accidental spill, please see Section 9.9.2. Aurora LNG is of the opinion that undertaking current and wind modelling of large scale and or accidental bunker oil releases is not required to characterize potential Project interactions between released oil and marine fish and fish habitat. Oil trajectory modelling following an unlikely release incident would use real-time meteorological and oceanographic data to more accurately predict the movement of oil, and guide response activities at that time. The release of ballast water is regulated by Transport Canada through the Ballast Water Control and Management Regulations of the Canada Shipping Act (2001). The regulations are aimed at avoiding the introduction of invasive species to local waters, and outline mandatory management procedures for ballast water management, exchange and treatment, reporting requirements, compliance and enforcement, and research. Further discussion is provided in Table 4.5-17 and in the Water Quality VC (Section 4.5.15.3, Operations). Vessels transiting to the Aurora LNG marine terminal will comply with Transport Canada regulations, as per Mitigation 4.5.7 (Section 4.5.15.3, Table 4.5-26 of the Water Quality VC).
2537.1	round 1	Gitga'at First Nation	4.9.3.2	Marine Fish and Fish Habitat	For all of the locations the observations appear to be purely based on presence and absence without any attempt to determine densities by species or species groups. Please explain how Aurora LNG plans to measure changes in species densities or relative species composition in the intertidal and subtidal zone based on presence-absence based surveys? Please also provide a summary table for all surveyed locations for the intertidal and subtidal species composition and densities.	Detailed methods and results of Project-specific field surveys are provided in Appendix L. Estimated relative abundance of species and species groups is presented using density where appropriate (e.g., quadrat-based observations during intertidal surveys, numbers per area seined) and other metrics where more suitable (e.g., number per length of ROV transect or number per time of tangle net set). Summary tables of intertidal data are presented in Appendix 1 of Appendix L, summary tables of subtidal data are presented in Appendix 2 of Appendix L, and summary tables of marine fish data (sampled in both the intertidal and subtidal) are presented in Appendix 6 of Appendix L. The characterization of species composition and relative abundance in Appendix L was used to inform the assessment of Project-related effects that could result in changes to species composition or relative abundance. Assessment of potential change in habitat is in Section 4.9.5.2, assessment of change in behaviour is in 4.9.5.3, assessment of change in mortality risk is in Section 4.9.5.4, and assessment of change in health is in Section 4.9.5.5.
2538.1	round 1	Gitga'at First Nation	Figures 4.9-3, 4.9-4 and 4.9-5	Marine Fish and Fish Habitat	Please explain why the areas that are going to be dredged as part of the construction of marine infrastructure are by colour-coding (dark blue) characterized as “altered” and not as “lost” or as “permanently altered”.	Figures 4.9-3 to 4.9-5 show alteration and loss of marine substrate and vegetation as a result of Project construction. The area affected by dredging is captured by three colours: light pink (indicating a change from intertidal to [lower elevation] intertidal), dark pink (indicating a change from intertidal to subtidal), and blue (indicating a change from subtidal to [deeper] subtidal). These changes are classified as 'alterations' since the substrate will remain available for use by marine species (including CRA species) after dredging has been completed, but will be different in their nature. Other changes, in which the substrate is completely removed from the marine environment, are classified as "lost". The figures do not further depict between alterations that are considered temporary or permanent; this distinction is covered in the text itself. A permanent alteration is determined based on DFO's definition -- i.e., that the change is of a duration that could impair the ability of a CRA species to complete one or more life processes. Habitat changes caused by dredging (or any other mechanism), that fulfilled this definition were included in the area estimates of permanent alteration, and will be offset. The lag time during which marine communities recover to their climax state (resulting in a productivity deficit) are (and will continue to be) accounted for in estimates of offsetting requirements through an appropriate offset ratio.
2539.1	round 1	Gitga'at First Nation	Figure 4.9-7b	Marine Fish and Fish Habitat	The figure shows only one dredging location at the jetty site while Figure 4.9-3 shows another dredging location south of Tuck Island that would be exposed to higher current speeds and therefore sediment disturbed by dredging would likely be deposited at higher distances from the dredging location shown for the one dredging site close to Digby Island. Please add the second dredging site and related sedimentation patterns to Figure 4.9-7b.	The purpose of Figure 4.9-6 and Figure 4.9-7 (in the Marine Fish and Fish Habitat VC) was to demonstrate that sediment deposition associated with dredging activities is expected to occur predominantly in areas that experience natural sedimentation (as opposed to accretion). The LNG Jetty - Berth 1 North and the Pile-and-Deck MOF option were chosen as two examples to visually display this phenomenon. At the LNG Jetty – Berth 2, areas of predicted sediment deposition (displayed in Figure 10-6 of Appendix G [Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling]) are also expected to occur predominantly in areas that experience natural sedimentation (displayed in Figure 64a of Appendix M [Hydrodynamic Modelling of Changes in Sediment Erosion and Accretion due to Project Infrastructure]).
2540.1	round 1	Gitga'at First Nation	4.9.5.2	Marine Fish and Fish Habitat	The loss of eelgrass is not expressed in the big picture of percentage loss of eelgrass within the Prince Rupert Harbour area. The categorization of the loss of eelgrass as “moderate in magnitude” can only be made once the total historical versus current extent of eelgrass occurrence in the Prince Rupert Harbour area has been assessed. Please add an assessment of total area of historical and current eelgrass in the harbour area to this report and then base the assessment of magnitude of effect on this spatial scale.	It is standard Environmental Assessment methodology to assess and characterize project-related effects in relation to current (i.e., existing baseline) conditions. Management and restoration decisions for eelgrass, which consider a broad spatial and temporal scope, are the responsibility of regulatory agencies (such as Environment and Climate Change Canada, Fisheries and Oceans Canada, the Government of BC's Ministry of Environment and Ministry of Forest, Lands and Natural Resource Operations) and local environmental groups. Wherever possible and practicable, Aurora LNG will adopt restoration or offsetting goals to complement the objectives of these efforts. However, Aurora LNG believes that baseline conditions should be based on current -- not historical -- conditions. Please note that cumulative effects (which consider past, present and reasonably foreseeable projects) are considered in Section 4.9.6 of the Application.
2541.1	round 1	Gitga'at First Nation	4.9.5.2	Marine Fish and Fish Habitat	The characterization of dredging and marine construction as “low to moderate” is in our opinion inappropriate based on the Proponent’s own classification scheme and the Fisheries Act: The Act does not define harm as “harm to fish populations” but harm to “CRA fish” in Section 35(1) of the Fisheries Act and prohibits any work, undertaking or activity that results in serious harm to fish that are part of a CRA fishery, or to fish that support such a fishery. Serious harm to fish is defined as “the death of fish or any permanent alteration to, or destruction of, fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.” The Application should be revised.	Aurora LNG is of the opinion that the characterization of residual changes to marine fish habitat (under the 'change in habitat effect', Section 4.9.5.2) is fair. The magnitude of residual changes in marine fish habitat associated with dredging and marine construction activities (including infilling, pile driving, and the installation of intake and outfall pipes) is characterized as being low (i.e., measurable, but below regulatory guidelines [i.e., serious harm to fish under the Fisheries Act] and does not affect the long-term persistence of any marine fish population) to moderate (i.e., measurable, above regulatory guidelines [i.e., serious harm to fish under the Fisheries Act], but does not affect the long-term persistence of any marine fish population). The characterization of 'low magnitude' accounts for residual effects such as those associated with sediment deposition during dredging activities, which are not expected to limit or diminish the ability of CRA fishery species to complete one or more life processes; therefore, residual serious harm to fish is not anticipated. The characterization of 'moderate magnitude' accounts for residual effects such as those associated with the loss of habitat during dredging activities (e.g., eelgrass), which are expected to constitute serious harm to fish and will require offsetting. With the successful implementation of mitigation measures identified in Table 4.9-11, including the development and successful implementation of a habitat offsetting plan, residual changes in marine fish habitat from dredging and marine construction activities are not expected to threaten the long-term persistence of a marine fish population. Therefore, residual effects are considered not significant.
2542.1	round 1	Gitga'at First Nation	4.9.5.2	Marine Fish and Fish Habitat	The characterization of dredging and marine construction as “low to moderate” is in our opinion inappropriate based on the Proponent’s own classification scheme and the Fisheries Act (see comment above). Therefore, harm especially to eelgrass beds clearly falls under this classification and therefore the effects of dredging and construction should be re-classified as a significant adverse effect.	Aurora LNG is of the opinion that the characterization of residual changes to marine fish habitat (under the 'change in habitat effect', Section 4.9.5.2) is fair. The magnitude of residual changes in marine fish habitat associated with dredging and marine construction activities (including infilling, pile driving, and the installation of intake and outfall pipes) is characterized as being low (i.e., measurable, but below regulatory guidelines [i.e., serious harm to fish under the Fisheries Act] and does not affect the long-term persistence of any marine fish population) to moderate (i.e., measurable, above regulatory guidelines [i.e., serious harm to fish under the Fisheries Act], but does not affect the long-term persistence of any marine fish population). The characterization of 'low magnitude' accounts for residual effects such as those associated with sediment deposition during dredging activities, which are not expected to limit or diminish the ability of CRA fishery species to complete one or more life processes; therefore, residual serious harm to fish is not anticipated. The characterization of 'moderate magnitude' accounts for residual effects such as those associated with the loss of habitat during dredging activities (e.g., eelgrass), which are expected to constitute serious harm to fish and will require offsetting. With the successful implementation of mitigation measures identified in Table 4.9-11, including the development and successful implementation of a habitat offsetting plan, residual changes in marine fish habitat from dredging and marine construction activities are not expected to threaten the long-term persistence of a marine fish population. Therefore, residual effects are considered not significant.
2543.1	round 1	Gitga'at First Nation	4.9.5.2	Marine Fish and Fish Habitat	Where are accidental and large volume or operational and small volume oil spill effects considered under Marine Fish and Habitat? It is not sufficient to provide this information Under Accidents and Malfunctions; please also assess it here and in the context of damage to CRA fish and their habitat.	It is standard Environmental Assessment practice to consider the effects of accidents and malfunctions separately from other Project-related effects (i.e., effects of construction, routine operations, and decommissioning). Potential effects of an accidental oil release on marine fish and fish habitat are assessed in Section 9.9 of the Accidents and Malfunctions VC chapter.
2544.1	round 1	Gitga'at First Nation	4.9.5.4	Marine Fish and Fish Habitat	Eelpouts (Zoarcidae spp.) are described as “more motile…fish” . We disagree with this characterization in this context since eelpouts have the tendency to seek shelter or even burry deeper when disturbed (experience of author: Dr. Elmar Plate) and thus are unlikely to avoid mortality during dredging. Please reassess impacts.	Aurora LNG acknowledges that the mention of eelpout as a fish likely to flee the area in response to dredging was not appropriate. An errata document is being compiled that captures this correction and it will be filed with the BC EAO. The assessment of change in mortality risk described in Section 4.9.5.4 will not be affected by the removal of eelpout from the list on Page 4.9-87.
2545.1	round 1	Gitga'at First Nation	4.9.5.5	Marine Fish and Fish Habitat	Is a contingency plan for water release in place? Please state the trigger concentrations for water treatment in a table and show how the trigger concentrations are monitored for all COPCs.	Waste water discharges are subject to a range of permitting and regulatory oversight, dependent on the source and nature of the discharge. Details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2546.1	round 1	Gitga'at First Nation	Table 4.9-21	Marine Fish and Fish Habitat	This table, as does the whole “Marine Fish and Habitat” chapter, leaves out all effects of accidental and large volume oil spills and operational and small volume oil spills. Wherever else in this Application they are mentioned, please also assess them here and in the context of damage to CRA fish and their habitat.	It is standard Environmental Assessment practice to consider the effects of accidents and malfunctions separately from other Project-related effects (i.e., effects of construction, routine operations, and decommissioning). Potential effects of an accidental oil release on marine fish and fish habitat are assessed in Section 9.9 of the Accidents or Malfunctions VC chapter.

2547.1	round 1	Gitga'at First Nation	Table 4.9-22	Marine Fish and Fish Habitat	Please explain why only one of the many past projects has led to change in mortality risk and none have led to changes in health? Just like the proposed Aurora LNG Project, all past projects have led and continue to lead to changes in mortality risk and health of marine fish and fish habitat.	Aurora LNG can not speak for the assessments completed by other projects. The purpose of Table 4.9-22 in the Marine Fish and Fish Habitat VC (Section 4.9) is to identify other past, present, and reasonably foreseeable future projects and physical activities that may interact cumulatively (from a marine fish and fish habitat perspective) with the proposed Aurora LNG Project. A description of each project and physical activity that was considered in the cumulative effects assessment is included in Table 3-4 of the Assessment Methods (Section 3.0 of the Application). Table 4.9-22 identifies past projects and physical activities that have resulted in lasting effects to marine fish habitat, or that continue to adversely affect fish through changes in mortality risk, behavior, or health. For a past project or physical activity to interact cumulatively with the Aurora LNG Project itself (and receive a check mark in Table 4.9-22), the following needs to be satisfied: i) the past project continues to adversely affect marine fish and fish habitats (e.g., the project continues to result in the injury or mortality of marine fish), and ii) these adverse effects are likely to interact cumulatively with the proposed Aurora LNG Project (e.g., adverse effects of the past project or physical activity overlap on a spatial or temporal scale with the proposed Aurora LNG Project, or affect a population within the Marine Fish and Fish Habitat RAA, such that the effects are expected to interact cumulatively). Section 3.7 of the Assessment Methods Chapter provides additional details on the methods for assessing cumulative effects.
2548.1	round 1	Gitga'at First Nation	4.9.6.6	Marine Fish and Fish Habitat	In this paragraph, planned projects and their metrics of permanent ACR fish habitat alterations are listed as a start of a meaningful cumulative impact assessment. In addition to these numbers expressed in lost or permanently altered area, we need the same metrics for all existing projects in Prince Rupert Harbour to assess "real" cumulative impacts. Please provide these numbers and delineate all past and planned future loss or permanent alterations of ACR fish and fish habitat in table format and as a GIS layer on a map. As it stands, the cumulative impact assessment does not provide any overview/assessment of cumulative impact in this area. As part of this assessment, please also provide an estimate of suggested total development limits in this area to protect ecological function.	Please note that for a cumulative effects assessment, "residual" effects are considered from Aurora LNG's Project and other past, present and reasonably foreseeable projects likely to interact cumulatively. Residual effects constitute any remaining effect after the implementation of mitigations - including habitat offsetting, which is not considered in the rationale underpinning this comment. Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsetting to counterbalance serious harm to fish caused by the loss or permanent alteration of habitat. Further, Aurora LNG assumes that other projects will also adhere to their legal requirement to offset any serious harm to fish they cause, since failure to do so would contravene the Fisheries Act and trigger serious consequences. As such, residual effects of the Aurora LNG Project and other potentially interacting projects as a result of areas lost or permanently altered are not expected to interact cumulatively in a manner that could cause adverse effects to the productivity or sustainability of CRA species. Finally, since a consideration of the residual effect of Project should include habitat offsetting, it is not necessary, appropriate (or, indeed, possible) to map areas lost or permanently altered for all past, present or reasonably foreseeable future projects.
2549.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	Overall, insufficient assessment in Section 4.9. Further assessment is required on the densities and relative species composition for the marine fauna and flora as it pertains to all CRA fish and invertebrate species and their habitat in all areas that will be temporarily and permanently affected or destroyed by the Project.	Aurora LNG is of the opinion that this level of information has been presented in the Application. Detailed methods and results of Project-specific field surveys are provided in Appendix L of the Application (Marine Fish and Fish Habitat Technical Data Report). Estimated relative abundance of species and species groups is presented using density where appropriate (e.g., quadrat-based observations during intertidal surveys, numbers per area seined) and other metrics where more suitable (e.g., number per length of ROV transect or number per time of tangle net set). Summary tables of intertidal data are presented in Appendix 1 of Appendix L; summary tables of subtidal data are presented in Appendix 2 of Appendix L; and summary tables of marine fish data (sampled in both the intertidal and subtidal) are presented in Appendix 6 of Appendix L. The characterization of species composition and relative abundance in Appendix L was used to inform the assessment of Project-related effects that could result in changes to species composition or relative abundance. Potential changes to habitat are assessed in Section 4.9.5.2; potential changes in behaviour are assessed in Section 4.9.5.3; potential changes in mortality risk are assessed in Section 4.9.5.4; and potential changes in health are assessed in Section 4.9.5.5. Particular attention is given to CRA species throughout Appendix L and the effects assessment.
2550.1	round 1	Gitga'at First Nation	Appendix G, 4.1 (top panel) and Table 4-2	Marine Fish and Fish Habitat	The measured peaks of the horizontal current speeds appear to be consistently underestimated by the modeled results for all higher current speeds. Please adjust and re-calibrate the model based on empirical data. For the 16.7 m depth, the observed maximum values are more than twice the modeled values.	As discussed in Section 4.3 of Appendix G of the Application) re-calibration of the model is not considered necessary. There are a few very large speed values in the observed data, which are attributed to buoy motion. A moored buoy is often susceptible to spikes in the current data due to pitch and roll of the sensor by wave action and these are considered noise. Readings at Tuck Buoy gave a maximum current speed of up to 40.2 cms-1 at 16.7 m depth, which is unrealistic values for near the seabed. The company that collected and supplied the ADCP data (Ausenco) confirmed there were some discrepancies in data quality and the uncertainties are larger than desired for the purpose of comparison to model output. However, the data indicate that the model is performing well in this region, following the trends in the observed data. There are a number of instances at each depth where the model slightly over-predicts the currents.
2551.1	round 1	Gitga'at First Nation	Appendix G. 12.1	Marine Fish and Fish Habitat	In this paragraph it is stated that "Values exceeding 5 mg/L can extend as a narrow plume northwards to a maximum distance of 700 m, with width remaining within 300 m." Please confirm that this result was reported in Section 4.9 Fish and Fish Habitat. If missed, please add this statement to Section 4.9 and interpret its results in the light of significance of effect.	A detailed description of the spatial and temporal extent of predicted TSS sediment plumes associated with dredging activities at the MOF and the LNG Jetty is included in Appendix G (Technical Memorandum - Aurora LNG: MOF and Terminal Dredge Modelling). This information was considered in the assessment of potential effects to marine fish health associated with exposure to elevated levels of TSS (under the 'change in health' effect, Section 4.9.5.5 of the Marine Fish and Fish Habitat VC).
2552.1	round 1	Gitga'at First Nation	Appendix V, Conceptual Fish Habitat Offsetting Plan, Table 16, Table 17	Fish Habitat Offsetting Plan	The rationale that only "hard" habitats have to be offset would only apply if the "soft" habitats would not provide for ACR fish species. This is not true based on the Proponent's own baseline studies that found ACR fish species in the "hard" and the "soft" bottomed habitats especially considering that "fish" in the Fisheries Act are defined as "parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals;". We therefore think that by applying the Fisheries Act provisions correctly to ACR" fish" rather than "whole fish populations" and including the non-fish ACR species a total minimum of 172,124 m2 of area has to be entered into the habitat offsetting account for change in marine substrate resulting from dredging, infilling , and installation of seawater system pipes. Based on the same rationale, an additional minimum of 19,883 m2 (MOF–pile-and-deck-option) or 78,675 m2 (MOF-concrete caisson option) have to be added to the offsetting account due to marine substrate loss.	The distinction between "hard" and "soft" substrates is not based on whether or not they "provide for" CRA species. Rather, the distinction is based on whether or not a change to, or removal of, such habitat has the potential to cause residual serious harm to fish - i.e., that it could impair the ability of a CRA species to complete one or more life process. As per Page 47 of the Conceptual Fish Habitat Offsetting Plan (Appendix V), "The potential for residual serious harm to fish resulting from a change in intertidal or subtidal substrates depends on the comparative value of the initial and final conditions". For this reason, the different types of changes are identified (i.e., soft to hard, hard to soft, change in height or shape of soft substrate, change in height or shape of hard substrate - Page 47; loss of hard substrate, loss of soft substrate - Page 48), and consideration is given to the potential for residual serious harm from each change. For details on this distinction, please see Pages 47 48 of the Conceptual Fish Habitat Offsetting Plan (Appendix V).
2553.1	round 1	Gitga'at First Nation	Appendix V	Fish Habitat Offsetting Plan	In this paragraph the Proponent mentions for the first time that "…offsetting is expected to be required to counterbalance the temporary loss of productivity (i.e. time lag)". It is good to see that this principle of offsetting is applied in this case but the same principle must be applied to all other cases of temporary loss of habitat for the whole project. Please add the "offsetting for temporary loss of productivity principle" to all other temporary habitat loss aspects of this Project and add the temporary loss to the offsetting account. Also the temporary loss of ecological function must be added to the offsetting account.	As described in the Conceptual Fish Habitat Offsetting Plan (Appendix V of the Application), time lags in the function of offset habitats will be reduced through offset scheduling, and accounted for in offsetting ratios (pages 53, 64) and habitat equivalency analysis (page 65). Please note that, under the Fisheries Act, habitat offsetting is required for activities that result in serious harm to fish. DFO (2013) defines serious harm to fish as: a) the death of fish; b) a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; or c) the destruction of fish habitat of a spatial scale, duration or intensity that fish can no longer rely upon such habitat for use as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Temporary changes to fish habitat that do not affect the the ability of fish to complete one or more life processes do not constitute serious harm to fish, and therefore, do not require habitat offsetting. Reference: Fisheries and Oceans Canada [DFO]. 2013. Fisheries Protection Policy Statement. Ecosystem Programs Policy. Ottawa, Ontario. 22 pp.
2554.1	round 1	Gitga'at First Nation	9.2	Accidents or Malfunctions	In the listing of Accidents or Malfunction scenarios, neither the accidental spill of large volumes of bunker oil due to vessel collision or sinking nor the operational spill of small amounts of oil and other mechanical fluids are mentioned. Please add both of these scenarios to this list and assess their potential risks for the environment.	A spill of marine fuel (bunker or diesel) is considered within section 9.9 (Vessel Grounding or Collision). The On-shore Hazardous Spills section (9.8) assesses the potential for spills (small or large) reaching the marine environment.
2555.1	round 1	Gitga'at First Nation	9.9.3	Accidents or Malfunctions	At the end of this chapter it is stated that "Residual effects on marine water quality from diesel or bunker fuel due to vessel grounding or collision event are predicted to be not significant." This sentence does not apply to this chapter where the residual effects for marine fish and fish habitat are supposed to be stated. Please change this sentence and re-think the categorization based on the report statement that "e.g., bunker fuel can persist in the marine environment and if left to weather, clean-up efforts can be difficult and continue over the long-term." In addition, please consider the residual effects of the Exxon Valdez deposition of oil into intertidal habitats that persisted for more than two decades.	Aurora LNG acknowledges that there are two repeated errors in Section 9.9.3 of the Application under the sub-heading Marine Fish and Fish Habitat. The final sentences of paragraphs two and four on p. 9-39 should read: 'Residual effects on marine fish and fish habitat from diesel or bunker fuel due to a vessel grounding or collision event are predicted to be not significant.' An errata document is being created that will capture these corrections and it will be filed with the BC EAO. The potential persistence of portions of unrecovered and stranded oil that may become buried in intertidal sediments is not expected to be synonymous with the persistence of effects on marine fish and fish habitat. The loss of lighter fractions of hydrocarbons through evaporation, dispersal and other weathering processes in the days and weeks after a release is expected to reduce the potential for toxic effects where pathways to exposure exist. Furthermore, pathways to exposure are expected to be limited through burial of weathered oil portions or hard crusts formed over their surface (formation of 'tar balls'). The emergency response community has benefited through experience and technological improvements in oil containment and recovery techniques in the over 27 years since the Exxon Valdez incident. Emergency response to a release of bunker fuel will focus on the containment and recovery of floating oil, and the deflection away from, and booming of, sensitive shorelines to limit the stranding of oil.
2556.1	round 1	Gitga'at First Nation	6.5.4.2	Marine Use and Navigable Waters	The Application determined that wake waves generated by LNG carriers and escort tugs are not likely to cause adverse effects on Aboriginal and commercial marine harvest. This was determined based upon a report produced for LNG Canada that predicted that wake generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high (at the source vessel), which is within the size range of naturally occurring waves in the region. They provide an example that wave height in Douglas Channel experiences a maximum height was 3.4 m with an averaged 0.14 m. The Application then screens out vessel wake in the assessment because it is expected that mariners and shoreline harvesters will be accustomed to dealing with project-related wake waves. While the magnitude vessel wake waves maybe well within the range of normal wave conditions, the predicted wave conditions are not provided for Chatham Sound. More information is required.	Environment Canada and Fisheries and Oceans Canada monitor 17 buoys that record weather data. However, none of the buoys are located in Chatham Sound. Of these buoys, two were used in Section 6.5.4.2 to represent the potential range of wave heights experienced in the Project area. The South Hecate Strait buoyis located in relatively deep water (approximately 228 m) in an exposed area with high fetch, where Hecate Strait meets Queen Charlotte Sound. The mean monthly average wave height recorded at this buoy is 1.8 m, while the historical maximum is 13.7 m. The Nanakwa Shoal buoy, in Douglas Channel, is located in relatively shallow water (approximately 22 m) in a confined area with less potential for east-west fetch. Mean monthly average wave height at this buoy is 0.14 m and the historical maximum is 3.4 m. Specific wave height information for Chatham Sound is not available through the buoy monitoring system noted above. However, the weather buoy in South Hecate Strait is relatively more exposed than Chatham Sound, while the Douglas Channel buoy is in a much more confined location. The exposure and fetch of Chatham Sound are less than the area of the South Hecate Strait buoy, yet greater than the Douglas Channel buoy location. It is therefore reasonable to assume that average wave height experienced in Chatham Sound will fall somewhere between that seen at South Hecate Strait and that seen in Douglas Channel. The assessment in Section 6.5.4.2 states that a wave height range of 0.14 m and 1.8 m is assumed to be the average natural wave height typically observed in the Project area.
2557.1	round 1	Gitga'at First Nation	6.5.4.2	Marine Use and Navigable Waters	The assessment does not consider wave frequency or timing. Increased wave frequency could increase the likelihood of shoreline and intertidal erosion, thus impacting habitat for intertidal species (i.e., harvested invertebrates and algal species). Where the timing of waves and intertidal harvesting overlap, vessel wake can have a detrimental disturbance effect on harvesting practices as harvesters must accommodate for vessel wake. In addition, there has been no vessel wave study and wake wash impact assessment conducted in the Application. A more sophisticated analysis (magnitude, frequency, timing) is required to reduce uncertainties in the assessment, and provide a more rigorous framework for comparison with both the ambient storm wave climate and the wake associated with shipping traffic.Therefore, it is premature to conclude that there will be no adverse effects on shoreline/intertidal habitats and intertidal harvesting, much less to conclude that there is no pathway for effects to occur as was done in the Application. Further assessment is required	Potential changes to marine fish habitat resulting from vessel wake generated by Project-related vessels are discussed under the 'change in habitat' effect (Section 4.9.5.2, Marine Fish and Fish Habitat), Based on the results of the assessment, wake effects resulting from vessels associated with the Project are not expected to adversely affect marine fish habitat. Therefore, wake effects were not considered further within the Marine Fish and Fish Habitat assessment. If it is conservatively assumed that intertidal harvesters working on shore are using both low tide periods in a day (this is unlikely, as the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping effects is temporally restricted on a daily basis. For approximately 83% of each day, wake from Project-related shipping will not interact with intertidal harvesters Section 6.5.4.2 of the Application describes that the mean monthly average natural wave height in the area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m, produced by LNG carriers and escort vessels at 12 knots, is within the range of the mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches the shoreline is lower than the wake height at the source vessel, and well within the natural wave height range currently experienced by shoreline harvesters. Additional large vessel traffic may alter the frequency of vessel generated wake but this is not expected to measurably change the wave activity in the area. Moreover, Project-related vessels will travel along the existing and established shipping route currently used by larger marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large, loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by shoreline harvesters, relating to natural weather patterns and large vessel traffic. Reference: Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
2558.1	round 1	Gitga'at First Nation	6.5.2.1	Marine Use and Navigable Waters	The environmental and economic consequences of species invasions are well known in the US and Canada. However, the Application does not discuss any potential for the introduction of invasive species into the LAA and RAA. The Application does mention that the Canadian Shipping Act and the associated Ballast Water Control and Management Regulations (BWCMR) exist, but there was no formal assessment. The regulations require vessels to exchange ballast at least 50 nautical miles west of Haida Gwaii or Vancouver Island. These areas are quite far offshore so unless there is noncompliance with the regulations, this measure should reduce the likelihood of introduction of invasive species. However, the BWCMR only require a 95% exchange rate of ballast so that 100% elimination of the potential for the introduction of exotics is not required nor mentioned in the Application. In addition, the effectiveness of mid-ocean ballast exchange depends entirely on compliance and the method of ballast treatment. Pui Gwun Lo (2009) pointed out several caveats regarding the effectiveness of mid-ocean ballast exchange. Hull fouling is another means for invasive species to be introduced into the LAA and RAA. Hull fouling involves organisms such as barnacles or mussels attaching themselves to ship hulls and either encountering structures in a new port or releasing larvae into the water. Therefore, invasive species must be assessed in the Application.	Sections 6.5.2.1 and 6.5.6.4 of the Application identify the legislation and regulations pertaining to the control and management of ballast water. As per Mitigation Measure No. 4.5.7 (Section 4.5.15.3, Table 4.5-26, of the Water Quality assessment), vessels transiting to and from the Aurora LNG marine terminal will adhere to the Vessel Pollution and Dangerous Chemicals Regulations and the Ballast Water Control and Management Regulations under the Canada Shipping Act (2001). The Ballast Water Control and Management Regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Project-related international shipping will be required to adhere to these regulations. The Prince Rupert Port Authority (PRPA) is a standing member of the Green Marine Program, which encourages international ship owners to implement anti-fouling measures to reduce the risk of aquatic invasive species introductions from hull-attached organisms. The PRPA also monitors the potential establishment of invasive species as part of the Plate Watch program. To date, no aquatic invasive species have been documented in the Prince Rupert harbour as part of this program. Because the above identified mandatory management procedures for preventing the introduction of aquatic invasive species are well established and effective, a separate assessment of invasive species is not warranted.
2559.1	round 1	Gitga'at First Nation	9.8.3	Accidents or Malfunctions	The Application determined that spills are not likely to cause adverse effects on Aboriginal and commercial marine harvest. Accidental discharges of fuel, oil or bilge will likely occur during the life of the project despite all regulations cited as being in place. Should there be an accidental spill of oil or fuel at an anchorage or on route, there may be adverse local effects to fish, invertebrates or marine seaweed/plants depending on the magnitude, location, and timing. To the extent that these effects might be significant will depend on many factors including the time of year, the marine receptors present, and the response measures enacted. For example, a large diesel spill during sensitive egg and larval fish life history stages may have a significant effect on that population if not contained quickly. Further assessment is required.	Aurora LNG agrees that the severity of potential effects, on marine fish and fish habitat, from a spill in the marine environment, will vary depending on various factors. This is described in Section 9.9.3 of the Application. The levels of mortality that could occur are not expected to measurably affect species at a population level, and are predicted to be not significant (as defined in the threshold for significance in the Marine Fish and Fish Habitat assessment: Section 4.9 of the Application). It is predicted that some amount of mortality may occur. However, with mitigation and relevant response measures in place, these effects should be limited to the immediate spill area but could potentially extend out to the LAA.. The extent of the spill will depend on various factors including the type and volume of material spilled, the location, weather (during and following the spill) and season, marine fish (and life stages) and habitat present; tidal influences, response time and response measures. An LNG spill would be expected to vaporize rapidly (i.e., within hours) and would not leave any residue in the marine environment. A diesel spill would be expected to spread more rapidly due to its lighter nature and evaporate and disperse/break down over the short term. A bunker fuel spill would be expected to spread more slowly and persist for a longer period of time due to its thicker consistency. The potential effects from each event may vary depending on the combination of influencing factors and will need to be evaluated and considered in the Emergency Response Plan developed for the Project.

2560.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	What are the impacts on fish and fish habitat from the cruise ship proposed during construction?	A cruise ship is not proposed during construction of the Project. For a discussion of the potential effects of the floating construction camp, which may be used to house construction workers in Casey Cove during the initial stages of Project construction, please refer to the "Floating Camp Review" technical memo which will be filed with the BC EAO.
2561.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	At this time the Marine Riparian zone appears insufficient in width, and the location of the flaring structures could impact Delusion Bay. Please justify why the zone is considered acceptable.	Section 1.2.5.1 of the Application describes the proposed flare system design. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). As per mitigation 4.7.20, maintenance flaring events will be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. Additionally, the 30 m marine riparian buffer will be maintained during all phases of the Project to retain shoreline habitats and limit noise and light dispersal, and is expected to further reduce potential for disturbance to marine species using shoreline and nearshore habitats in Delusion Bay.
2562.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	The Application includes a statement: "unidentified larval fish (a grouping that could possibly include eulachon, as well as other Osmerids)." Nexen should confirm identity as utilization of project area by eulachon is important information to Gitga'at.	Aurora LNG recognizes the importance of eulachon to Gitga'at First Nation. Information on eulachon in areas potentially affected by the Project was obtained from both publicly available literature and from Project-specific field studies (Appendix L, Marine Fish and Fish Habitat TDR). Project-specific field studies reported the following information on eulachon: -Thirty-six adult eulachon were captured at night by mid-water trawl in March 2015 in the channel between Digby Island and Kaien Island (n=6) and in waters off the coast of south Digby (n=30, see Section 3.4.4 of Appendix 5 of Appendix L). Trawling was not completed during any other of the six marine fish surveys; however, adult eulachon were assumed to be present in the LAA during other times of the year (e.g., during inbound spawner migration [February – March], see Table 6 of Appendix L). -Unidentified larval fish belonging to the Family Osmeridae (which may have included larval eulachon) were observed in beach seine catches completed in the LAA in August 2014, March 2015, October 2015, February 2016, and May 2016. Beach seine catches of unidentified larval fish are presented as catch per unit effort in Figure 41 (Casey Cove), Figure 43 (East Digby Island), Figure 45 (South Digby Island) and Figure 47 (Delusion Bay). It was not possible to identify individuals down to the species level in the field, as this would require DNA analysis. However, the absence of confirmation of eulachon was not used to infer absence of eulachon from the LAA. -DNA analysis of tissue samples taken from unidentified juvenile osmerids captured by beach seine and mid-water trawls in March 2015 was completed (see Section 3.4.8 of Appendix 5 of Appendix L). Tissue samples confirmed that unidentified juvenile osmerids captured by mid-water trawl were capelin, and unidentified juvenile osmerids captured by beach seine were surf smelt. DNA analysis did not identify individuals as eulachon. However, the absence of confirmation of eulachon was not used to infer absence of eulachon from the LAA. No adult eulachon were captured by beach seine at any location in the LAA during any sampling period, including February 2016, March 2015, April 2014, and May 2016. While this result does not mean that adult eulachon do not use nearshore habitats in the LAA, it does suggest that their use of these nearshore habitats - where most of the Project infrastructure will be located - is limited. Literature regarding habitat preferences supports this. Aurora LNG is of the opinion that the information collected through Project specific field studies and publicly available literature is adequate to characterize potential residual effects on eulachon. Further, Aurora LNG is confident that the proposed mitigation measures (i.e., measures 4.9.1 through 4.9.15, described in Section 4.9 of the Application) will be effective at reducing potential adverse effects on eulachon.
2563.1	round 1	Gitga'at First Nation	4.9 (page 4.9-27)	Marine Fish and Fish Habitat	Potential project interaction is missing. Project component "Waste management" and potential effect "change in habitat". Cooling tower discharge has the potential to affect fish habitat.	Installation of the deep water outfall pipe at Charles Point has the potential to affect marine fish habitat, and this is assessed under the 'change in habitat' effect (Section 4.9.5.2). Potential effects to marine fish resulting from waste discharges to the marine environment are assessed under the 'change in health' effect (Section 4.9.5.5). All effluent discharged to the marine environment from the outfall will comply with all relevant regulations and permit requirements, and will meet the BC and CCME water quality guidelines for the protection of aquatic life; therefore, effluent discharges are not expected to result in measurable changes to marine fish habitat.
2564.1	round 1	Gitga'at First Nation	4.9 (page 4.9-28)	Marine Fish and Fish Habitat	Gitga'at would like to see a follow-up study to confirm the predictions that there will be no measurable effect to marine water quality / marine resources from localized marine water acidification or eutrophication. And to confirm there will be no changes to water quality (and thus marine / estuarine vegetation from changes to TSS (especially in Delusion Bay).	Marine water acidification and eutrophication is not expected to occur due to the high buffering capacity of marine waters. Therefore, no adverse effects on marine water quality and marine fish and fish habitat are expected from acidification and eutrophication. However, it is anticipated that a selection of freshwater lakes and streams (which may include streams that flow into Delusion Bay) will be monitored to verify the prediction of no adverse effects on water quality due to acidification and eutrophication. These acidification and eutrophication monitoring programs are expected to be regionally focused and developed in consultation with MOE, Aboriginal Groups, and industry partners. Regarding TSS-driven effects on marine vegetation, all site discharges into the marine environment, including discharges into Delusion Bay (e.g., from the soils storage area), will comply with relevant regulations and permitting requirements, and therefore no adverse effects to marine vegetation in Delusion Bay are expected from these discharges. Adherence with these regulations is a legislated requirement of all proponents, including Aurora LNG, and failure to adhere to them can have serious ramifications. Aurora LNG is committed to developing and implementing a Marine Water Quality Monitoring Program, which will include monitoring turbidity and confirming the effectiveness of mitigation measures. The plan will include water quality thresholds, monitoring frequency, and specific monitoring locations. The content of the plan will be developed in accordance with industry best management practices and standards, applicable regulations, and conditions of the Environmental Assessment Certificate and relevant permits.
2565.1	round 1	Gitga'at First Nation	4.9 (Appendix M)	Marine Fish and Fish Habitat	The hydrodynamic modeling (of erosion and accretion) did not incorporate vessels at berth as a modeled scenario. This must be assessed for changes to fish habitat.	Since vessels are not expected to be berthed continuously, and do not constitute part of the Project infrastructure, they are not expected to have any prolonged, consistent or meaningful impact on sediment erosion and accretion rates. As such, Aurora LNG does not believe that incorporation of vessels into hydrodynamic modelling of Project infrastructure is necessary. Nevertheless, the potential effects of Project vessels on marine fish and fish habitat are considered throughout Section 4.9, and potential effects on marine water quality are considered in Section 4.5.
2566.1	round 1	Gitga'at First Nation	4.9 (Table 4.9-13)	Marine Fish and Fish Habitat	What is the difference between "habitat permanently altered" and "habitat lost"?	"Permanently altered" means that the habitat has changed from one type to another for a duration that could impair the ability of a species to complete one or more life process. "Habitat lost" indicates that the marine habitat is completely removed and no longer available for use by fish, such as when it is raised above the high tide level through infilling.
2567.1	round 1	Gitga'at First Nation	4.9 (Table 4.9-13)	Marine Fish and Fish Habitat	There is no characterization of the fish habitat at Brown Passage, yet there are project effects at that location. More information is required as there are known sponge reefs within the potential range of sediment deposition effects.	Please see the "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea" which will be filed with the BC EAO.
2568.1	round 1	Gitga'at First Nation	4.9 (page 4.9-63)	Marine Fish and Fish Habitat	It is stated that construction activities (e.g. dredging) will occur 20 hours a day at the MOF. This is outside the window BMP from the BC OGC for noise management (near residential Dodge Cove). Clarification is required.	The construction phase noise assessment includes noise effect from dredging activities for a daily duration up to 20 hours. The BC OGC noise guideline recommends construction activity during the daytime period (7:00 to 22:00); however, the guideline does not set specific noise limits for construction activity. Noise effect from dredging activities during the nighttime period is predicted to be in compliance with the thresholds recommended by the Health Canada noise guidance. Please see the "Sleep Disturbance and Speech Interference" technical memo for a discussion on potential sleep disturbance. The technical memo assessed the potential sleep disturbance noise effect due to construction activities. The results indicate that construction noise effect at all receptors is below the noise threshold with the exception of receptor R2 (Dodge Cove). Additional mitigation measures are required during the construction phase to reduce the predicted noise effect to below the sleep disturbance threshold of 45 dBA. The additional mitigation measures are presented in the technical memo. The technical memo will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2569.1	round 1	Gitga'at First Nation	4.9 (Table 4.9-20)	Marine Fish and Fish Habitat	Mitigation 4.5.3 and 4.5.8 is not sufficient to ensure water quality objectives for the protection of aquatic life. It should be included that "when exceedance are discovered outside the area predicted to have exceedances then shut down of construction activities will occur until a reduction in TSS occurs (and new mitigations implemented to ensure exceedances outside the predicted area of exceedances do not occur). " Monitoring of TSS/turbidity and temperature should also be included as mitigation to water quality via regular monitoring of waste water discharge (both construction and operations, e.g. cooling tower effluent [temperature at outfall] and over burden storage area discharge [TSS / turbidity], especially during rain events])	The on-site environmental monitor will work with the dredging contractor to identify and implement site-specific mitigation measures, if water quality exceedances are detected. Waste discharges to the marine environment will be subject to effluent and receiving environment monitoring. The spatial scale, frequency, and required parameters for monitoring will be defined in waste discharge permits issued for the Project. Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2570.1	round 1	Gitga'at First Nation	4.9 (page 4.9-102)	Marine Fish and Fish Habitat	There is a disconnect between the daily duration of dredging activities (20hrs/day for 48 days at MOF) and the requirement for Noise Management (from the OGC 7am - 10pm). Only the noise of blasts and pile driving were modelling in the Acoustic Assessment, but realistically dredging activity will also cause noise (therefore should be modeled) and is proposed to happen outside the OGC window. Please clarify effects.	Noise effect during dredging activity is included in the assessment. The dredging activity noise emissions are summarized in Table 5-2, Section 5.1.2.1 of the Acoustic Environment Technical Data Report of the Application.
2571.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	What is the magnitude of change in temperature in the receiving environment (marine) at the cooling tower discharge? In order to understand potential effects this needs to be characterized (and not left to permitting).	Cooling tower blowdown water will meet CCME and BC water quality guidelines for temperature, outside of the initial dilution zone. These guidelines allow a maximum change of ±1^{0}C from ambient at any time, location, or depth and a maximum rate of change <0.5^{0}C per hour. The exact size of the mixing zone is not yet known, and will be determined through modelling in the permitting phase. Waste discharges within and outside the mixing zone, cannot be acutely toxic to fish (per the Fisheries Act)The effect of cooling tower blowdown waste discharge was assessed based on adherence to legally-binding legislation, designed to protect aquatic life (see Section 4.5.15.3). With a commitment to meet the water quality guideline of maximum change of ±1^{0}C beyond the mixing zone, the effect was characterized as not significant (low in magnitude, within the LAA, continuous, and long-term in duration). Further details on Project waste discharges and associated regulations, are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2572.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	Gitga'at disagrees with the characterization of residual effects to marine fish habitat given that there is no characterization of utilization of habitats by fish (to support an understanding of productivity for offsetting); that there is a significant amount of fish habitat to offset and the conceptual fish offsetting plan presented in the Application is not sufficient in detail, alternatives, or consideration of other project which may required offsetting "space" ; and that many of the suggested mitigation measures do not go the step further to include a stoppage of work if "issues"/exceedances arise or include sufficient commitment to monitoring to confirm effects predictions are correct to justify the conclusions (of residual effects to marine fish and fish habitat).	Aurora LNG has characterized the utilization of habitats by fish to support an understanding of productivity for offsetting. Extensive field studies were undertaken to characterize habitats that would be affected by the Project, and the species that use these habitats. The results of these studies, presented in Marine Fish and Fish Habitat TDR (Appendix L), guided the development of the proposed offsetting measures. Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsets that counter-balance residual serious harm to fish. This commitment will be accomplished by following DFO's guidance on offsetting. This guidance involves understanding habitat productivity through the concepts of species utilization of, and dependence upon, habitats, broken down by species and life stage. It also involves setting specific success criteria, that are subsequently used as benchmark indicators that the offsets have fulfilled their productivity objectives and, as such, have counterbalanced Project-driven serious harm. As stated in the Conceptual Fish Habitat Offsetting Plan (Appendix V), the offsetting philosophy and ideas presented were intended to be concepts that demonstrate Aurora LNG's approach to identifying effective offsets and concrete ideas for counterbalancing harm. They provide a transparent starting point for constructive discussions about habitat offsetting with the ultimate goal of developing widely endorsed, low-risk, effective, appropriately located and well designed offsets. Offset projects and the corresponding "space" required for those projects will be identified through field surveys and in consultation with regulatory agencies (primarily DFO) and Aboriginal Groups. Final designs, amounts, locations, success criteria and monitoring requirements will ultimately be approved by DFO in the Fisheries Act Authorization. Construction of the offsets will be monitored to ensure adherence to the proposed mitigation measures and regulatory requirements and to evaluate the effectiveness of the proposed mitigation measures. Where relevant, threshold values (e.g. CCME water quality guidelines) will be used during monitoring and exceedances will trigger construction action, such as temporary cessation of activity (stop work), or slowing of activity. Details of these adaptive measures will be included in the forthcoming Marine and Freshwater Resources Management Plan. Additionally, the final fish habitat offsetting plan, that will from part of the Request for Authorization application to DFO, will include details on offset monitoring, with specific objectives focused on assessing the effectiveness of habitat offsetting.
2573.1	round 1	Gitga'at First Nation	4.9 (Table 4.9-22)	Marine Fish and Fish Habitat	Alta Gas Propane facility is not listed in the projects interaction list for cumulative effects on Marine Fish and Fish Habitat	As outlined in section 3.7.1 of the AIR, the Project and Activities Inclusion list was finalized within three weeks of submitting the final AIR on November 23, 2015. The Environmental Evaluation for the AltaGas Ridley Island Propane Export Terminal was submitted well after this cutoff, in December 2016. On January 3, 2017, AltaGas announced it would proceed with the Project as it had received its approval under section 67 of CEAA 2012. Given the timing for these activities, the AltaGas project was not considered in the cumulative effects assessment conducted in the Application.
2574.1	round 1	Gitga'at First Nation	4.9.6.3	Marine Fish and Fish Habitat	Gitga'at does not agree with the characterization of cumulative effects to marine fish and fish habitat given that the CFHOP does not ensure that the total area of habitat destruction can be offset (the proponent cannot ensure that there is enough area in the RAA to complete the offset requirements)	Aurora LNG is committed to fulfilling their legal obligation to develop adequate, effective offsets that counterbalance residual serious harm to fish. This commitment will be accomplished by following DFO's guidance on offsetting. This guidance involves following DFO's preference for in-kind over out-of-kind offsetting and for in-situ rather than ex-situ locations. It also involves setting specific success criteria, that are subsequently used as benchmark indicators that the offsets have fulfilled thei productivity objectives and, as such, have counterbalanced Project-driven serious harm. Through collaborative engagement with DFO, and consultation associated with the Fisheries Act authorization application process, Aurora LNG fully anticipates being able to find adequate and appropriate locations, and develop suitable designs, for effective offsets. Additionally, all other proponents are legally bound to offset serious harm to fish caused by their projects. Aurora LNG assumes that other proponents will fulfill this obligation, since not doing so would violate the Fisheries Act and have severe consequences for those proponents. Consequently, Aurora LNG stands by the characterization of cumulative effects to marine fish and fish habitat.

2575.1	round 1	Gitga'at First Nation	4.9.9	Marine Fish and Fish Habitat	Follow-up monitoring is required to ensure effects to marine fish habitat are as predicted should include monitoring around the berth dredging area (and not just at Charles Point).	Aurora LNG is committed to implementing follow-up programs when there is a conclusion of potential residual adverse effect and either a low prediction confidence in that conclusion or uncertainty in a specific component of the assessment. In these cases, a follow-up program will be used to verify the accuracy of predictions. Criteria for proposed inclusion of a follow-up program are consistent with the Considerations for Developing a Follow-up Program outlined in the Operational Policy Statement Follow-up Programs under the Canadian Environmental Assessment Act (Government of Canada, 2011). Aurora LNG has committed to a number of follow-up programs specific to marine fish and fish habitat and marine water quality (see Section 15, Summary of Follow-up Programs and Compliance Reporting), including a Sediment Deposition Monitoring Program. This program will focus on monitoring sediment deposition within a localized area near Charles Point. This program has been put forward because of the potential for sediment deposition in this area to result in serious harm to fish (as defined under the Fisheries Act). As described in Section 4.9.5.2 of the Marine Fish and Fish Habitat VC, the results of hydrodynamic modeling suggest that up to 4-5 cm/year are predicted to be deposited in this area (see Figure 69 (c) of Appendix M [Hydrodynamic Modeling of Changes in Sediment Erosion and Accretion due to Project Infrastructure]), where substrates are composed primarily of a mix of cobble and boulder (see Section 5.1 and Section 2 of Appendix L, Marine Fish and Fish Habitat TDR). As a result, the deposition of sediment in this area could result in serious harm to fish, and additional offsetting would need to be discussed with DFO. However, sediment deposition in this area is only anticipated to occur if the Concrete Caisson MOF is selected for construction, and therefore the program will not proceed if the Pile-and- Deck MOF option is selected. Based on the results of sediment transport modelling (Appendix M), sediment deposition and accretion in other areas (i.e., areas away from Charles Point) are predicted to occur predominately over sediment habitats and changes are expected to be localized and gradual (see Figure 64 (c) and Figure 65 (c) of Appendix M). As such, any changes are not expected to affect the ability of marine species to complete their life processes, and serious harm to fish is not anticipated. For this reason, no monitoring is proposed for areas outside of Charles Point.
2576.1	round 1	Gitga'at First Nation	Appendix H	Marine Fish and Fish Habitat	Although Aurora LNG completed sediment transport and deposition modeling for Brown Passage (as a disposal site), there is no characterization of the habitat or fish presence and as such the characterization of effects to marine fish and fish habitat is not complete. There are multiple benthic and demersal fish species utilizing the area and there are cloud and glass sponge within the deposition zone (in previous DAS zone) (See Brown Passage Subtidal Survey, PNW LNG, Stantec, October 22, 2014) and destruction of these habitat forming species and effects to fish are not fully characterized in the Application.	Potential effects of the disposal of dredgeate on fish habitat at the Brown Passage disposal at sea site are assessed in Section 4.9.5.2 of the Marine Fish and Fish Habitat VC (see page 4.9-52). This assessment considered effects to deep-water soft sediment habitats; however, it did not consider potential effects to glass sponges (Hexactinellida), which are known to occur in this area. For a discussion and characterization of potential effects to glass sponges, Please see the technical memo titled "Brown Passage: Characterization of Existing Conditions and Potential Effects associated with Disposal at Sea"which will be filed with the BC EAO. The potential for injury or mortality of marine fish and invertebrates due to disposal of dredgeate at Brown Passage are assessed in Section 4.9.5.4 of the Marine Fish and Fish Habitat VC (see pages 4.9-87 to 4.9-88). Finally, the potential effects to marine fish health from exposure to elevated TSS concentrations during disposal at sea are assessed in Section 4.9.5.5 (see pages 4.9-103 to 4.9-104).
2577.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	Please provide an assessment on the potential impacts from air emissions on shoreline habitats (e.g., salt marshes), eelgrass meadows, and kelp beds.	Marine areas acidification and eutrophication is not expected to occur due to the high buffering capacity of marine waters, and as a result, this interaction was not included in the Environmental Assessment. Furthermore, no adverse effects on marine fish habitat, including salt marshes, eelgrass meadows, and kelp, due to acidification and eutrophication are anticipated.
2578.1	round 1	Gitga'at First Nation	4.9	Marine Fish and Fish Habitat	The blasting timing window and eulachon may overlap - how will Nexen ensure eulachon are not harmed or disturbed during blasting? What monitoring will Nexen commit to?	Aurora LNG recognizes that schooling adult eulachon returning to spawn in the Nass and Skeena Rivers could be migrating through the LAA during the tail end of the DFO timing window, and could therefore be in the area for a short period of time during underwater blasting. Eulachon are cited to arrive in the Nass River around early to mid-March, but a possible second run might arrive in early April (Langer et al. 1977; Noble et al. 2012). Eulachon have historically returned to the Skeena River during the first week of March, however, in the past decade, they have occasionally returned earlier, during mid to late February (Don Roberts, Kitsumkalum member, pers. comm. 2006, as cited in COSEWIC 2013). However, Aurora LNG is of the opinion that by adhering to a suite of mitigation measures during underwater blasting, the potential for residual adverse effects to marine fish, including eulachon, will be reduced. As discussed in Section 4.9.5.4 (Marine Fish and Fish Habitat VC), these mitigation measures include the following:Aurora LNG is committed to completing underwater blasting during the DFO least risk timing window (i.e., November 30 – February 15), which will avoid or reduce interactions with sensitive species and life stages such as larval eulachon. After a two to eight week incubation period, larval eulachon are flushed downstream and into the ocean, thereby entering the ocean sometime between March and May (COSEWIC 2013). Aurora LNG is committed to following guidelines for underwater blasting as outlined in Wright and Hopky (1998) and DFO (2013). Underwater blasting guidelines were published by DFO for the purpose of guiding proponents proposing works or undertakings that involve the use of confined or unconfined explosives in or near Canadian fisheries waters. The guidelines are intended to reduce harm to fish, including eulachon, and require that underwater pressure levels generated during blasting do not exceed 100 kiloPascals (kPa). Fish exposed to an overpressure in excess of 100 kPa are at risk of being injured or killed.Aurora LNG is committed to installing bubble curtains around the blast area to provide noise attenuation and reduce underwater sound levels emitted into the marine environment. Bubble curtains disrupt the shock wave generated by underwater blasting, attenuate SPLs, and can exclude fish from the work area. The use of bubble curtains will reduce the area within which fish (including eulachon) could be injured or killed during underwater blasting. Bubble curtains can reduce peak pressure levels by approximately 15 dB (Nutzel 2008, as cited in Maxon and Mikkelsen 2013). An Environmental Monitor will be onsite during underwater blasting activities to monitor for fish kills. If a fish kill is observed, blasting will be temporarily suspended and additional mitigation measures will be discussed with DFO.References: Committee on the Status of Endangered Wildlife in Canada [COSEWIC]. 2013. COSEWIC assessment and status report on the Eulachon, Nass/Skeena population, Thaleichthys pacificus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 18 pp. Langer, O.E., B.G. Shepherd, and P.R. Vroom. 1977. Biology of the Nass River Eulachon (Thaleichthys pacificus). Department of Fisheries and Environment Canada, Technical report series no. PAC/T-77-10. 56 p. Maxon, C. M. and D. M. Mikkelsen. 2013. Extension of Harbour in Nuuk Underwater Noise from Blasting. Ramboll, Copenhagen, Denmark. 22 pp. Available at: http://naalakkersuisut.gl/~/media/Nanoq/Files/Attached%20Files/Infrastruktur/DK/Havne/1271001-6712-005-1%20Underwater%20Noise.pdf. Accessed: March 2017. McCarter, P.B. and D.E. Hay. 1999. Distribution of Spawning Eulachon Stocks in the Central Coast of British Columbia as Indicated by Larval Surveys. DFO Canadian Stock Assessment Secretariat Research Document 99/177. 67 pp. Noble, C., W. Duguid, R. C. Bocking, N. Morven and C. Stephens. 2012. Nisga'a Fish and Wildlife Department Nass River Eulachon Harvest Monitoring Program 1997-2012. Prepared by LGL Limited, Sidney, BC, and Nisga'a Lisims Government Fish and Wildlife Department, New Aiyansh, BC, for Nisga'a Lisims Government, New Aiyansh, BC. Nisga'a Fisheries Report #12-30: iv + 27p. Wright, D. G. and G. E. Hopky. 1998. Guidelines for the use of explosives in or near Canadian fisheries waters. Canadian Technical Report of Fisheries and Aquatic Sciences 2107. Available at: http://www.dfo-mpo.gc.ca/Library/232046.pdf. Accessed August 2016. Fisheries and Oceans Canada (DFO) 2013. Measures to Avoid Causing Harm to Fish and Fish Habitat. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html. Accessed: March 2017.
2579.1	round 1	Gitga'at First Nation	4.9.2	Marine Fish and Fish Habitat	Please justify why only a 500 metre buffer around the PDA and shipping lane was assessed? This is limited for assessing underwater noise impacts.	The Marine Fish and Fish Habitat LAA includes several components, one of which is a 500 m buffer on either side of the centreline of the shipping route from LNG jetty to the Triple Island pilot boarding station. The 500 m buffer is considered appropriate for assessing potential effects associated with behavioural changes to marine fish from underwater vessel noise, based on research conducted on herring. Herring are a type-3 fish (as described in Popper et al. 2014), which means they have a swim bladder that is involved with hearing. Type-3 fish are considered the most sensitive to underwater noise (Popper et al. 2014). As described in Section 4.9.5.3 of the Marine Fish and Fish Habitat VC, herring have the ability to determine the location of a sound source within a distance of at least 400 m (Schwarz and Greer 1984). Furthermore, based on the results of a study by Misund et al. (1996), herring have been observed reorienting themselves to the path of an approaching research vessel, with the majority of individuals responding at a distance that aligns with the 400 m distance identified by Schwarz and Greer (1984). Given the results of these two studies, which focus on herring (considered to be a fish that is more sensitive to underwater noise), a 500 m buffer on either side of the shipping lane is expected to be sufficient to assess potential behavioural effects. References: Misund, O.A., J.T. Øvredal and M.T. Hafsteinsson. 1996. Reactions of herring schools to the sound field of a survey vessel. Aquatic Living Resources 9: 5-11. Popper, A. N., A. D. Hawkins, R.R. Fay, D. A. Mann, S. Bartol, T. J. Carlson, S. Coombs, W. T. Ellison, R. L. Gentry, M. B. Halvorsen, S. Lokkeborg, P. H. Roger, B. L. Southall, D. G. Zeddies, and W.N. Tavolga. 2014. Sound Exposure Guidelines for Fishes and Sea Turtles. A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Published by the Acoustical Society of America. Schwarz, A. L. and G. L. Greer. 1984. Responses of Pacific herring, Clupea harengus pallasi, to some underwater sounds. Canadian Journal of Fisheries and Aquatic Sciences 41: 1183-1192.
2580.1	round 1	Gitga'at First Nation	4.10.2.4	Marine Wildlife - Marine Mammals	The Application notes that "The term 'qualitative' was added to qualify likelihood under the measurable parameter for change in mortality risk to better reflect the style of assessment (i.e., a qualitative assessment of mortality risk was undertaken; no quantitative assessment of vessel strike likelihood was performed)." There is no explanation as to why the risk of ship strikes was not evaluated quantitatively or why a comprehensive collision risk assessment was not done.	As strike risk increases in higher density traffic areas, the likelihood of residual cumulative effects for change in mortality risk to marine mammals is considered high. In the event of an accidental vessel strike, effects on the marine mammal involved are assumed to be permanent and irreversible, and would be of heightened concern for SARA-listed species. Based on current marine mammal population sizes and trends for species known to occur in the RAA, changes in mortality risk are considered unlikely to affect population viability, and as noted in the Application, are therefore expected to be not significant. Quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result, and as noted in the IR, a qualitative analysis was completed, with a moderate level of prediction confidence. This approach is consistent with the approach taken for the recently approved Pacific NorthWest (PNW) LNG project, that will occur in the same region of BC. The analysis conducted for Transmountain Pipeline Expansion Project provided estimates of potential vessel-whale encounter risk. This analysis did not extend to vessel-whale strike risk due to limited data available on species-specific responses (e.g., whether the animal dives or turns) to vessel approach. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.
2581.1	round 1	Gitga'at First Nation	4.10.2.8	Marine Wildlife - Marine Mammals	It is stated that "This section describes the threshold for potential effect, beyond which a residual effect is considered significant". Although the Proponent used measurable parameters (see Table 4.10-2) to assess potential effects of the Project, no specific thresholds (e.g., km2 exposed or % population exposed to specific sound levels) are provided in this section. Instead, it is stated that "A significant adverse residual effect is defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA'. Thus, the effects assessment appears to take a more qualitative rather than a quantitative approach.	For the marine mammals assessment, a significant adverse residual effect was defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA. As outlined in Section 4.10.2.8 of the Application, the significance thresholds represent the limits of an acceptable change in a measurable parameter or state of the VC, based on applicable legislation, regulatory guidance documents or other management standards. Where thresholds are not set by legislation, guidance documents or standards (as in this case), a threshold has been developed based on scientific literature and professional judgment.
2582.1	round 1	Gitga'at First Nation	4.10.3; 4.10.5; Appendix N	Marine Wildlife - Marine Mammals	There is a lack of baseline data to characterize the seasonal distribution and relative abundance of various marine mammal species within the LAA. Although adequate data were available to determine abundance for two species (humpback whale and harbour porpoise), density estimates for other marine mammal species would contribute more to the understanding of the use by various species of the LAA and would have been pertinent in assessing potential effects of the Project on marine mammals. The data are therefore not adequate to support a quantitative impact assessment where the potential for mortality or injury is a realistic outcome of an accident or malfunction or to quantitatively assess the effects of Project activities on changes in health or behaviour.	The assessment of change in health, change in behaviour, and change in mortality risk for marine mammals relies on not only the results of the Aurora LNG marine mammal surveys and subsequent analysis and results, but baseline information that includes a literature review, the results of marine mammal surveys for other proposed projects, and information collected by the BC Cetacean Sightings Network. These sources provide information on the seasonal distribution and abundance for marine mammals present within the LAA and RAA. A quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result a qualitative analysis for change in mortality risk was completed, with a moderate level of prediction confidence. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.
2583.1	round 1	Gitga'at First Nation	4.10.3.2	Marine Wildlife - Marine Mammals	California sea lions (*Zalophus californianus*) should have been addressed in Table 4.10-5. Ford (2014) reported a winter haul-out for California sea lions within the RAA near Digby Island.	As noted in Appendix N of the Application, Table 7 presents the 12 marine mammal species (or ecotypes) that are considered to regularly occur in the RAA. The Application further notes that many species of marine mammal are migratory and/or wide-ranging, and the inclusion of a marine mammal in Table 4.10-5 is meant to qualitatively reflect the standard distribution of these species. Specific occurrence of a particular species within the RAA at any given time fluctuates, and is therefore uncertain. As explained in the footnotes to Table 4.10-5, other species, not included in this table, may also be infrequently sighted within the RAA. As noted in the comment, Ford (2014) identifies a California sea lion winter haulout near Digby Island. However, he recognizes that this species is predominantly observed in the Strait of Georgia and along the west coast of Vancouver Island, and is only observed near Haida Gwaii and on the central mainland coast in some years. Ford (2014) also reports that breeding occurs off southern California and Baja California, Mexico and only males are expected to migrate through BC waters in the fall and spring. As a result, it is not anticipated that California sea lions will regularly occur within the RAA.
2584.1	round 1	Gitga'at First Nation	4.10.3.2	Marine Wildlife - Marine Mammals	Although the Application references Ford (2006), the Application made no mention that Chatham Sound is recognized as an important area for northern resident killer whales.	The northern resident killer whale Important Area is included in Section 4.10.2.5 of the Application and is mapped on Figure 4.10-2.
2585.1	round 1	Gitga'at First Nation	4.10.5.1	Marine Wildlife - Marine Mammals	The statement "Pile driving was modeled in deep water sites where sound typically propagates furthest" is not necessarily true. Propagation in shallow water is highly complicated and sound may travel further under certain conditions than in deep water. In fact, Appendix P, Table 1 notes that modeling for pile driving was done for water depths <23 m, so the statement is confusing.	To clarify the intent of the statement: Out of the potential locations where Project-related pile driving activities are anticipated, acoustic modelling sites were selected based on areas of relatively deeper water. As noted, the extent of underwater noise is dependent on many factors (e.g., water temperature and depth) and all acoustic modelling included the geoacoustic properties of the sites, depth and temperature. As part of the Marine and Freshwater Resources Management Plan, developed through engagement with applicable regulatory agencies and Aboriginal Groups, field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.
2586.1	round 1	Gitga'at First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	A comprehensive collision risk assessment should have been conducted for large cetacean species in the LAA and for various types of project-related vessels. The collision risk assessment should be based on transit routes, vessel speeds, ability of vessels and marine mammals to take effective evasive action to avoid collisions, and accurate estimation of the distribution of species' relative densities. All collision risk assessments should have been presented as part of the Application and appropriately documented with uncertainties and limitations of the analyses clearly stated so that collision risk to marine mammals during all seasons is well understood. If the collision risk assessment indicates a non-zero probability of collision with any large cetacean species in the LAA, then further work would be required to determine what the likely annual incident of collisions would be and if they may detrimentally affect population viability (e.g., species listed under SARA). In addition, results of the collision risk assessment would need to be evaluated in light of adding to or modifying necessary mitigation measures. Of particular concern is the potential population level effect of mortality from ship strikes on the Northern Resident killer whale due to this population's low abundance (Williams and O'Hara 2009). It is difficult to assess the actual potential impacts of vessel collisions to marine mammals in the LAA based on the information provided in the Application, particularly due to the inadequate baseline information regarding seasonal distribution and relative abundance in the LAA, and the lack of detail regarding mitigation measures to prevent ship strikes with marine mammals.	As strike risk increases in higher density traffic areas, the likelihood of residual cumulative effects for change in mortality risk to marine mammals is considered high. In the event of an accidental vessel strike, effects on the marine mammal involved are assumed to be permanent and irreversible, and would be of heightened concern for SARA-listed species. Based on current marine mammal population sizes and trends for species known to occur in the RAA, changes in mortality risk are considered unlikely to affect population viability, and as noted in the Application, are therefore expected to be not significant. Quantitative vessel strike analysis typically has a high level of uncertainty due to significant challenges associated with predicting the level of behavioural response for specific marine mammal species and limited data available on species-specific strike rates. As a result, and as noted in the IR, a qualitative analysis was completed, with a moderate level of prediction confidence. This approach is consistent with the approach taken for the recently approved Pacific NorthWest (PNW) LNG project, that will occur in the same region of BC. The analysis conducted for Transmountain Pipeline Expansion Project provided estimates of potential vessel-whale encounter risk. This analysis did not extend to vessel-whale strike risk due to limited data available on species-specific responses (e.g., whether the animal dives or turns) to vessel approach. Aurora LNG maintains that residual effects to marine mammals from an increased potential for ship strikes have been adequately characterized and are expected to be not significant.

2587.1	round 1	Gitga'at First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	Measures to be taken by a vessel to avoid a marine mammal collision have only been specified in vague terms (see Table 4.10-10), and there is not any assessment of the effectiveness of these measures on actually avoiding a collision with transiting marine mammals or an aggregation of feeding marine mammals. No analysis has been presented in the Application regarding stoppage time and stopping distance for a vessel to avoid a marine mammal collision or to determine if this is even possible given a reasonable detection range of a marine mammal from a vessel. There is also no analysis of the feasibility of making route adjustments to avoid a marine mammal.	Project-related vessels will proceed at a safe speed and respect any regionally-defined or PRPA-specific speed profiles that are applicable at the time of operations, subject to navigational safety. The intent of the educational material proposed in Table 4.10-10 is to raise awareness of potential marine mammal presence in the area. Decisions regarding the need for, and feasibility of, undertaking measures such as route or speed alterations upon sighting and approach of a marine mammal(s) rest entirely with the shipmaster and pilot after taking into account navigational and human safety. Educational materials will also detail the reporting protocols in the event of an accidental strike. The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) process, conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects and feedback through engagement with PRPA, DFO, Aboriginal Groups, and others. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
2588.1	round 1	Gitga'at First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	According to the Application, "….ship strikes are more likely to occur when ships are over 80 m in length and travelling at 14 kts or faster (Laist et al. 2001; Panigada et al. 2006). Potential for change in mortality risk is therefore considered greatest during transit operations (relative to other Project phases and vessel types)…". Nonetheless, the Application states that LNG carriers may travel at speeds of up to 16 kts; no vessel speed restrictions have been proposed. The Application only states that "Project-related vessels will proceed at a safe speed", but "safe speed" is not defined. To reduce the risk of ship strikes which have been assessed to be of moderate magnitude and medium likelihood during operations, LNG carriers should not travel >14 kts within the RAA.	The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL), conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects, and feedback through engagement with PRPA, DFO, Aboriginal Groups, and others. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
2589.1	round 1	Gitga'at First Nation	4.10.5.4	Marine Wildlife - Marine Mammals	The mitigation measures for reducing ship strike are outlined as "Aurora LNG will develop educational material that will be distributed to Project-related vessel operators, tug operators, and pilots to inform them of the species of marine mammals in the area, their conservation status, the risk of ship strikes and what mariners can do to help reduce those risks (e.g., reporting the sightings to other mariners, reducing speeds). Educational material will also detail reporting protocols in the event of an accidental strike." However, the Proponent then goes on to say that "Education does not guarantee that vessel operators will take heed of the information provided." Further information is required to gauge the adequacy of this mitigation measure. For example, the level of effort used to detect marine mammals, equipment used to enhance detection, protocols for translating sightings into mitigation action by the ship's captain, data recording, analysis, and reporting-out on the results of monitoring and the efficacy of protocols for avoiding marine mammal collisions.	Project-related vessels will proceed at a safe speed and respect any regionally-defined or PRPA-specific speed profiles that are applicable at the time of operations, subject to navigational safety. The intent of the educational material proposed in Table 4.10-10 is to raise awareness of potential marine mammal presence in the area. Decisions regarding the need for, and feasibility of, undertaking measures such as route or speed alterations upon sighting and approach of a marine mammal(s) rest entirely with the shipmaster and pilot after taking into account navigational and human safety. Educational materials will also detail the reporting protocols in the event of an accidental strike. The Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) process, conducted by Transport Canada, will address vessel speeds and routing, in consideration of mariner safety, environmental effects and feedback through engagement with PRPA, DFO, Aboriginal Groups, and other interested stakeholders. Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of vessel strikes on marine mammals in the RAA.
2590.1	round 1	Gitga'at First Nation	4.10.9	Marine Wildlife - Marine Mammals	The Proponent must implement a follow-up program to monitor underwater noise effects on marine mammals as a result of increased shipping as the magnitude of the residual effects are deemed to be moderate and the likelihood is deemed to be high. In addition, follow-up monitoring for harbour porpoise should occur, as the Application found a Significant effect on the change in behaviour of harbour porpoise. Monitoring would help discern what the actual changes in behaviour are and to what extent they are Significant.	Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe best management practices and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.
2591.1	round 1	Gitga'at First Nation	9.9	Accidents or Malfunctions	For Accidents or Malfunctions, Significant Impacts are expected for On-shore Spills, Vessel Grounding or Collision (only bunker oil, not LNG or diesel), and LNG Spills at Loading Zone. For the Significant impacts, residual effects were deemed to be of moderate magnitude with a medium likelihood, but reversible. It is confusing why LNG Spills at the Loading Zone are assessed to be Significant whereas LNG releases from a Vessel Grounding or Collision are not deemed to have Significant impacts. If residual effects from an LNG spill are assessed to be potentially Significant at the loading zone, they should also be of moderate magnitude, likelihood and consequence, and thus Significant during a Vessel Grounding or Collision.	Aurora LNG acknowledges this discrepancy and agrees that the two accidental LNG release events assessed, whether at the loading facility or along the shipping route, may both result in significant effects to marine mammals if the release results in acute effects (e.g., mortality) on marine mammal species at risk, either from direct exposure or injury from a pressure explosion. We also suggest that the likelihood of a residual effect to marine mammals following the release of LNG under either scenario is more accurately characterized as 'low likelihood' and of 'moderate consequence'. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2592.1	round 1	Gitga'at First Nation	Appendix N: 3.1.3.1	Marine Wildlife - Marine Mammals	The Appendix notes that "There have been a few rare sightings of California sea lions (*Zalophus californianus*), and northern elephant seals (*Mirounga angustirostris*) (Ford 2014). This statement is not supported by the reference. According to Ford (2014), northern elephant seals are not considered rare in northern BC; there is not enough information for this claim for the RAA. In fact, Ford (2014) report a winter haul-out for California sea lions within the RAA near Digby Island. Thus, the statement is incorrect and this species should have been included in the Application in Table 4.10-5 under 4.10.3.2. Northern elephant seals must be assessed in the Application as well.	As noted in Appendix N of the Application, Table 7 presents the 12 marine mammal species (or ecotypes) that are considered to regularly occur in the RAA. The Application further notes that many species of marine mammal are migratory and/or wide-ranging, and the inclusion of a marine mammal in Table 4.10-5 is meant to qualitatively reflect the standard distribution of these species. Specific occurrence of a particular species within the RAA at any given time fluctuates, and is therefore uncertain. As explained in the footnotes to Table 4.10-5, other species, not included in this table, may also be infrequently sighted within the RAA. As noted in the IR, Ford (2014) identifies a California sea lion winter haulout near Digby Island. However, he recognizes that this species is predominantly observed in the Strait of Georgia and along the west coast of Vancouver Island, and is only observed near Haida Gwaii and on the central mainland coast in some years. Ford (2014) also reports that breeding occurs off southern California and Baja California, Mexico and only males are expected to migrate through BC waters in the fall and spring. As a result, it is not anticipated that California sea lions will occur regularly within the RAA. Ford (2014) does not show elephant seal sightings within the RAA and reports they may occur along the northern BC coast. Sightings of elephant seals are typically of individual animals. Although it is possible they may be observed within the RAA, it is anticipated sightings would be infrequent.
2593.1	round 1	Gitga'at First Nation	Appendix N: 3.1.3.1	Marine Wildlife - Marine Mammals	Northern fur seals (Callorhinus ursinus) are not mentioned in the Application but it is possible that they could occur in the RAA so they must be assessed.	Many species of marine mammal are migratory and/or wide-ranging, and the inclusion of a marine mammal in Table 4.10-5 (of the Application) is meant to qualitatively reflect the standard distribution of these species. Specific occurrence of a particular species within the RAA at any given time fluctuates, and is therefore uncertain. Other species, not included in Table 4.10-5 , may also be infrequently sighted within the RAA. Northern fur seals are more typically observed over the continental shelf (Ford 2014) than within the RAA. As a result, the potential for Project interactions with fur seals is anticipated to be very low.
2594.1	round 1	Gitga'at First Nation	Appendix N: 4.4.1	Marine Wildlife - Marine Mammals	It is reported that "Humpback whale sighting numbers were the lowest in the spring and early-summer survey periods." No attempt is made to explain why the survey found lower numbers of humpbacks during the summer than the rest of the year. It is noted that PNW also found lower numbers during summer. However, these findings are in contrast to Ford (2014) that humpbacks are most numerous from April through November. Additionally, according to Appendix O, the number of detection days in 2014 with humpback whale calls peaked from mid-July to late October.	Ford (2014) reports that humpback whales are observed year-round in BC waters, and as noted in the IR, are most abundant in BC waters from April to November. Substantial changes in humpback whale distribution and abundance within the feeding season and inter-annually are also noted (Ford 2014). The Aurora marine mammal surveys covered the RAA (Chatham Sound) and as a result, only provide information on marine mammal presence within the RAA. As the data collected are not reflective of humpback whale abundance "in BC waters", humpback whale sighting information does not contradict Ford (2014). Ford et al. 2010 reported that winter sightings of humpback whales, observed during surveys conducted by DFO, were noted to occur particularly in Chatham Sound and off northern Haida Gwaii. As noted in Appendix O, acoustic data were collected between July and October/November 2014, not during the winter months. It should also be noted that an absence of marine mammal calls does not reflect an absence of the species. Ford, J.K.B., Abernethy, R.M., Phillips, A.V., Calambokidis, J., Ellis, G.M., and Nichol, L.M. 2010. Distribution and relative abundance of cetaceans in western Canadian waters from ship surveys, 2002-2008. Can. Tech. Rep. Fish. Aquat. Sci. 2913: v + 51 p.
2595.1	round 1	Gitga'at First Nation	Appendix O: 1.2	Marine Wildlife - Marine Mammals	No explanation is provided as to why acoustic monitoring was not done year-round – monitoring only took place during July to October/November 2014.	While the data collected during the acoustic monitoring program (Appendix O) was analyzed for marine mammal vocalizations, detection of marine mammals was not the primary objective of this program. The primary objective of the acoustic monitoring program was to document the baseline noise conditions near the proposed Project site so as to provide a statistical noise distribution of the pre-Project development conditions. The timing and duration of the program were therefore developed primarily in consideration of the desire to characterize the existing ambient sound levels and existing vessel traffic, both of which are adequately captured in the selected 3.5 month period that spans periods of lower and higher expected vessel traffic in the region.
2596.1	round 1	Gitga'at First Nation	Appendix O: 3.3	Marine Wildlife - Marine Mammals	The acoustic data were not analyzed for minke whale or Steller sea lion vocalizations, but no explanation is given as to why. Also, no explanation is provided why the acoustic monitoring was not done year-round – monitoring only took place during July to October/November 2014. Please provide explanations.	While the data collected during the acoustic monitoring program (Appendix O) was analyzed for marine mammal vocalizations, detection of marine mammals was not the primary objective of this program. The primary objective of the acoustic monitoring program was to document the baseline noise conditions near the proposed Project site so as to provide a statistical noise distribution of the pre-Project development conditions. The timing and duration of the program were therefore developed primarily in consideration of the desire to characterize the existing ambient sound levels and existing vessel traffic, both of which are adequately captured in the selected 3.5 month period that spans periods of lower and higher expected vessel traffic in the region.
2597.1	round 1	Gitga'at First Nation	4.10	Marine Wildlife - Marine Mammals	A specific exclusion zone was not provided for pile driving.	Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.
2598.1	round 1	Gitga'at First Nation	4.10	Marine Wildlife - Marine Mammals	Acoustic modelling for blasting must be completed prior to blasting commences, with field noise verification taking place to modify mitigation measrues as necessary, and an interim conservative exclusion zone must be used for pile driving activities during the field noise verification program.	Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Marine and Freshwater Resources Management Plan. This plan will describe BMPs and mitigation measures that will be implemented during construction and operation of the LNG facility to avoid or reduce potential adverse effects of Project activities on marine mammals. The plan will include details on the following: Prior to the start of marine construction, acoustic modelling of in-water blasting will be done to verify assumptions and predictions made in this assessment and refine mitigation measures, as necessary.Field verification will be undertaken at multiple locations to confirm predicted extents of underwater noise levels over the full range of predicted values for in-water blasting and impact pile driving.A marine mammal monitoring program will be developed and implemented to enforce an exclusion zone during in-water impact pile driving and around the in-water blasting area.Aurora LNG is willing to collaborate in regional programs planned and developed by government and in conjunction with other proponents, regarding regional management of effects of underwater noise and vessel strikes on marine mammals in the RAA.
2599.1	round 1	Gitga'at First Nation	4.10	Marine Wildlife - Marine Mammals	NMFS 2016 should be reviewed and the proponent should justify why their assessment is still appropriate with the new guidelines. Or conduct new assessment with use of the guidelines. [NMFS (National Marine Fisheries Service). 2016. Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. 178 pp.]	As discussed on p.4.10-33/34 of the Application, the 2016 NOAA peak SPL and SEL24h thresholds (which are only applicable to assessment of auditory injury) were not available at the time of modelling. The Application therefore focuses on the three approaches that were considered in the acoustic modelling and assessment of injury. The methods used by Southall et al. (2007) and Wood et al. (2012) differ somewhat from the new NOAA guidance (NMFS 2016) in terms of how the peak SPL and SEL24h metrics are weighted for different marine mammal hearing groups, and are thus not directly comparable. Further details on the different thresholds, including discussion of 2016 NOAA guidance, is presented in the Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting (Appendix P of the Application). An assessment applying the 2016 NOAA peak SPL and SEL24h thresholds (which are only applicable to assessment of auditory injury) is not anticipated to alter the conclusions presented in the Application. References: [NMFS] National Marine Fisheries Service. 2016. Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Threshold Levels for Onset Permanent and Temporary Threshold Shifts. U.S. Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-55. 178 pp. http://www.nmfs.noaa.gov/pr/acoustics/Acoustic%20Guidance%20Files/opr-55_acoustic_guidance_tech_memo.pdf. Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene, Jr., D. Kastak, D.R. Ketten, J.H. Miller, et al. 2007. Marine mammal noise exposure criteria: Initial scientific recommendations. Aquatic Mammals 33(4): 411-521. Wood, J., B.L. Southall, and D.J. Tollit. 2012. PG&E offshore 3 D Seismic Survey Project EIR-Marine Mammal Technical Draft Report. SMRU Ltd.
2600.1	round 1	Gitga'at First Nation	4.10	Marine Wildlife - Marine Mammals	There was little information on how chronic exposure to disturbance may affect survival, reproduction, and habitat use of marine mammals. Please provide further assessments for each species.	For the purposes of the Application, 'change in health' focused on potential physical injury resulting from underwater noise or in-water blasting. Increased levels of stress, which may in turn cause physiological responses such as diminished reproductive effort, avoidance behaviour, and effects on foraging patterns and foraging success, were considered in the assessment of change in behaviour in marine mammals (see Section 4.10.5.3). The assessment of cumulative effects, including change in behaviour as a result of acoustic disturbance, can be found in Section 4.10.6 of the Application. A significant adverse residual effect is defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA. As a result, Aurora LNG maintains that the assessment of potential residual effects on marine mammals is complete.

2601.1	round 1	Gitga'at First Nation	4.10.6.6	Marine Wildlife - Marine Mammals	Using Nexen's definition, why isn't a significant effect for all marine mammals concluded (because a high magnitude effect is predicted)?	As defined in the Application, a significant adverse residual effect is defined as one that threatens the long-term persistence of a marine mammal species or local population in the RAA. A high magnitude characterization of a residual effect is defined as "A measurable change from existing conditions, that is above environmental and/or regulatory guidelines, and has potential to affect the long-term persistence of any marine mammal population in the assessment area." A high magnitude residual effect on marine mammals was concluded for change in behaviour as a result of construction activities. Residual effects of change in behaviour resulting from impact pile driving of multiple simultaneous piles are expected to be of high magnitude, as the thresholds considered predicted a broad range of values depending on the location and species of interest. Residual effects from this activity will extend into the LAA as multiple irregular events over the medium-term. While effects on marine mammals are expected to be reversible following completion of marine construction, and potentially between activities, it is noted that return to pre-Project conditions may be delayed by a few months to a few years. This result would be particularly true for any marine mammal species that abandons the area of behavioural disturbance during the marine construction period. This effect will occur in a disturbed area of active human development and will combine with other marine construction activities for an overall residual effect of change in behaviour on marine mammals during the construction phase. Results from marine mammal surveys conducted for the Aurora LNG Project (see the Marine Mammals TDR, Appendix N) and for the PNW LNG project (Stantec 2016) suggest that most species of marine mammal in the RAA show fairly broad distributions, and/or seasonal higher density areas in more than one location. For example, humpback whales were observed throughout the RAA, with seasonal (fall/winter) areas of higher relative abundance predicted both in the coastal waters around Kinahan Islands (primarily on the southern side) and between Triple and Melville Islands (Stantec 2016). During impact pile driving, sound levels above the species-specific behavioural disturbance threshold were predicted to overlap with a portion of the higher density area for humpback whales around Kinahan Islands, but not to extend around the southwestern side. This suggests that suitable alternative habitat for humpback whales will continue to exist in this area as well as around Triple Islands during Project construction. During operations, underwater noise above behavioural disruption thresholds will overlap both of these higher predicted relative density areas; however, this effect will be transient (i.e., <1-2 hrs per 24-hr period) during Project-related LNG carrier transit. In contrast to predicted 'hot spots' for humpback whales, highest density areas for harbour porpoises were consistently observed in the waters south of Digby Island, in Porpoise Channel, around Ridley Island, Lelu Island and the northeast coast of Stephens Island. This porpoise high use area shows a large degree of overlap with sound levels above the species-specific behavioural disturbance threshold during marine construction activities. Based on the distribution and habitat use of marine mammals in the RAA and understood species-specific behavioural responses to underwater noise, this residual effect is not anticipated to threaten the long-term persistence of most marine mammal species or local populations in the assessment area. The likelihood of change in behaviour for marine mammals, including species listed on Schedule 1 of SARA, is considered high for the Project's construction and operations phases but the residual effect is predicted to be not significant for all species except harbour porpoise. Given demonstrated avoidance responses by harbour porpoise during previous pile driving studies, the residual effect of change in behaviour may threaten the long-term persistence of this local population of harbour porpoise in this area and is therefore considered to be significant.
2602.1	round 1	Gitga'at First Nation	4.11.3, Appendix Q	Marine Wildlife - Marine Birds	The Application, including the assessment of potential environmental effects on marine birds and the Marine Bird Technical Data Report (Appendix Q) does not provide a level of detail on marine bird population trends, threats, and Aboriginal reliance on the species group that is required to support the environmental assessment of a development project of this nature in the North Coast of British Columbia. Further assessments are required.	To support the assessment of effects to marine birds, the current status of marine birds potentially occurring within the LAA and RAA was considered. The status of species of management concern was described in Table 2 of Appendix Q and Table 4.11-7 of the Application, and represents species that have shown either declining populations or trends in recovery but are currently not considered secure. Marine birds not listed in these tables are considered not at risk (i.e., have stable or increasing populations). A summary of traditional use of marine birds is provided in Section 4.11.3.2.
2603.1	round 1	Gitga'at First Nation	4.11.3, Appendix Q	Marine Wildlife - Marine Birds	The technical data report only provides a high-level overview of the marine bird ecology in the RAA and is deficient in the following areas: • The Proponent followed standardized protocols for the collection of marine bird data, but only report on species occurrence data. • The report authors make inferences between these data and species abundance and richness, without the support of statistical analysis and/or population models on relative abundance and/or densities. • The technical data report does not present information on the population status (e.g., stable, increasing, decreasing) of marine birds that occur in the LAA and RAA. • Specific data and information of the seasonal abundance (density or total number) of marine birds in the LAA and RAA is not provided. • An indication of habitat quality (either in a sense within the LAA/RAA or compared to other regions that are used to fulfill those same life-history requirements) for various life functions or marine bird species in the LAA and RAA is not provided.	Appendix Q of the Application provided a summary of the seasonal presence, abundance, richness, and distribution of marine birds from stationary shoreline count and vessel-based survey data completed for the Project. These were placed into context with presence, abundance, and richness information provided for other projects within the RAA. Please refer to Tables 1-2, and 1-3 for a detailed summary of the total number of marine birds observed during Project field studies. The technical data report specifically characterizes abundance (i.e., the total number of individuals observed), relative frequency of species detection (i.e., the percentage of total observations), and species richness (i.e., the number of species observed). For vessel-based surveys, the average number of species and individual birds per transect is also reported with a measure of error (i.e., standard deviation) to facilitate seasonal comparison of marine bird presence within the RAA. Characterization of residual effects to marine birds can be reasonably determined through the existing evaluation of Project specific and regional data in combination with information available in scientific literature and professional judgement and experience. To support the assessment of effects to marine birds, the current status of marine birds potentially occurring within the LAA and RAA was considered. The status of species of management concern was described in Table 2 of Appendix Q and Table 4.11-7 of the Application, and represents species that have shown either declining populations or trends in recovery but are currently not considered secure. Marine birds not listed in these tables are considered not at risk (i.e., have stable or increasing populations). Aurora LNG was limited in drawing comparisons in marine bird habitat associations and their relative importance, with other regional datasets due to the methods used (in those other datasets) to collect or present those data (i.e., site specific habitat information was not collected or not presented). However, information on seasonal abundance, richness, and distribution of marine birds is still considered in combination with life history information on species and species groups, to provide context or the relative importance of marine habitats within the LAA for breeding, foraging, roosting, and staging activities compared to those available in the region.
2604.1	round 1	Gitga'at First Nation	4.11.2.4	Marine Wildlife - Marine Birds	The evaluation of potential effects is based primarily on a qualitative assessment. For the assessment of the change in marine bird habitat, the Proponent states that this was based on a quantitative measure, but this measure only documents the areal extent of the marine habitat that will be lost or altered by the construction of the project facilities. This effect does not account for the value that this habitat provides for the various life requisites of marine birds.	Section 4.11.5.2 of the Application provides a combined quantitative and qualitative discussion of the direct change in habitat for marine birds as a result of Project activities and infrastructure as well as indirect change resulting from sensory disturbance. A description of the habitats, the species (or species groups) expected to be affected by change in those habitats, and their value to support foraging, staging, roosting, or breeding activities is described in 'Project Mechanisms for Change in Habitat' therein. A more detailed discussion of species presence and use of habitats within the PDA and LAA is found in Appendix Q and summarized in Section 4.11.3.
2605.1	round 1	Gitga'at First Nation	4.11.5.2	Marine Wildlife - Marine Birds	While the Proponent has quantified the amount of habitat impacted, the Application makes weak inferences regarding the importance of this habitat to marine birds. Habitat associations are not specifically addressed in the Project-specific field surveys.	Marine habitat associations for individual species, or species groups, are described in detail in Appendix Q. Species observed to be associated with nearshore marine habitats within the LAA during Project field studies are described in Sections 4.1.3 and 4.2.3 of Appendix Q. Section 4.2.3 of Appendix Q provides additional information on species observations and associations on farshore marine habitats. Tables 2-1 and Table 3-1 of Appendix Q provide a break down of detection for individual species, across habitat types sampled during Project field studies. Species' habitat associations were used in Section 4.11.5.2 to characterize effects of change in habitat from construction and operation of marine infrastructure (e.g., foraging and roosting opportunities).
2606.1	round 1	Gitga'at First Nation	4.11.5.2	Marine Wildlife - Marine Birds	The Proponent stated that results from the Project-specific field surveys showed that marine bird abundance was highest at the mouth of Delusion Bay, which is directly adjacent to the project development area (footprint), but it has not characterized the importance of the habitat in Delusion Bay for marine birds. The Proponent also makes inferences that the results of the field studies are consistent with existing regional data, with specific regard to marine bird abundance, and not habitat associations. While sources are identified in the literature review section of the Marine Bird Technical Data Report (Table 1 in Appendix Q), the specific references that describe known marine bird abundance in the area are not cited.	Section 4.1.3 of the Application provides a description of the findings, indicating that bird abundance and richness was generally similar across points (with exceptions to stations reporting higher numbers of individuals and species described therein). Table 2-1 of Appendix Q of the Application provides a summary of individual species reported at each shoreline stationary count. Compared to other locations, counts completed in Delusion Bay (i.e., MBDI09 and MBDI10) recorded fewer individual birds and species but nonetheless indicate that habitats at those locations support use by shorebirds, ducks, grebes, loons, gulls, corvids, and eagles (for example). Aurora LNG was limited in drawing comparisons in marine bird habitat associations with other regional datasets due to the methods in which some of those regional records were collected and presented in publicly-available reports (i.e., not all include site-specific information to draw habitat associations). However, information on seasonal abundance, richness, and distribution is still valuable in combination with life history information on species and species groups, to provide context on the importance of marine habitats within the LAA relative to those available in the region. Table 1-1 of Appendix Q of the Application provided a detailed summary of historical marine bird occurrence records within the RAA by species and dataset. Citations for each data source were provided as footnotes to the table and correspond to citations provided in Section 6 of Appendix Q (Literature Review).
2607.1	round 1	Gitga'at First Nation	4.11.5.2	Marine Wildlife - Marine Birds	On page 4.11-27, it is stated that "Given that most marine birds present in the LAA and RAA have secure populations (no reference provided) and have access to other suitable marine habitats, marine birds are expected to demonstrate a moderate degree of resilience to change in habitat availability as a result of the Project." In making this determination, the Proponent has not provided evidence that "most marine bird populations" are secure, nor has it provided information to describe suitable marine bird habitats in the region.	Section 4.11.3 and Appendix Q of the Application outline the methods and findings for characterizing existing conditions for marine birds. Both parts of the Application considered whether marine birds had secure populations by providing a review of their conservation status. Species of management concern include species known to, or with potential to, occur within the RAA that are considered of interest from a conservation perspective (i.e., federal or provincial species or subspecies at risk). Information on species of management concern, including occurrence records, species accounts, management plans, or other guidance documents, was compiled from the BC CDC (BC CDC 2017) and the Species at Risk Public Registry (Environment Canada 2016) and are referenced in the Application. The remaining marine bird species are considered to have secure federal or provincial conservation status (i.e., are designated Not at Risk or on the BC Yellow List). Marine habitat associations for individual species, or species groups, are described in detail in Appendix Q of the Application. Species observed to be associated with nearshore marine habitats within the LAA during Project field studies are described i Sections 4.1.3 and 4.2.3 of Appendix Q. Section 4.2.3 of Appendix Q provides additional information on species observations and associations on farshore marine habitats. Tables 2-1 and Table 3-1 of Appendix Q provide a break down of detections for individual species, across habitat types sampled during Project field studies. Information on species presence, richness, abundance, and distribution was used to inform the assessment and characterization of potential Project effects. References: British Columbia Conservation Data Center (BC CDC). 2017. BC Species and Ecosystems Explorer. BC Ministry of Environment, Victoria, BC. Available: http://a100.gov.bc.ca/pub/eswp/. Accessed: March 2017. Government of Canada (GOC). 2017. Species at Risk Registry. Available at: https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1. Accessed: March 2017.
2608.1	round 1	Gitga'at First Nation	4.11.5.2	Marine Wildlife - Marine Birds	The Proponent states that the primary mitigation for the loss and alteration of marine bird habitats is the Conceptual Fish Habitat Offsetting Plan that is aimed to offset the loss of marine fish and habitat. As its name implies, this plan is conceptual and will need approval by Fisheries and Oceans Canada. There is an obvious lack of information in this plan regarding marine birds. The Application has not provided details such as how and when marine birds would utilize new habitats, how the types and amounts of habitat lost compare to the new habitat that will be created, and time lag between building of new habitat features and becoming functional habitat.	The conceptual fish habitat offsetting plan provides information on the types and quantities of habitats expected to be destroyed or altered that would ultimately lead to serious harm to fish (Section 9, Appendix V of the Application). The type, quantity, and location of habitat affected is explicitly considered in the design of habitat offsetting along with the ecological roles of those habitats, within that specific environmental context. Offsets will be designed in keeping with DFO's guidelines by selecting in-kind offsets over out-of-kind offsets where appropriate (see Section 10.4 and 10.5 of Appendix V; DFO 2013). In-kind offsets are intended to replace the same quantity and quality of habitat that is being destroyed or altered as a result of the Project. In turn, in-kind offsets will provide replacement habitat for fish communities as a mechanism to counterbalance serious harm to fisheries affected by the Project. Because in-kind offsets will be developed to replace the quantity, quality, and function of fish habitat removed or altered by the Project, they are expected to provide similar compensatory marine bird habitat (inclusive of habitat types and the marine prey species they support). Once built, the effectiveness of the offsets will be monitored to confirm they are performing as designed. Reference: Fisheries and Oceans Canada (DFO). 2013. Fisheries Productivity Investment Policy: A Proponent's Guide to Offsetting. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/offsetting-guidecompensation/index-eng.html. Accessed: March 2017.
2609.1	round 1	Gitga'at First Nation	4.11.5.2	Marine Wildlife - Marine Birds	The Proponent makes the over simplistic assumption that marine birds will use this new habitat without providing any evidence to support this case. In this regard, no discussion was provided to quantify the abundance of marine birds in the habitat that will be lost or the expected timeframe (e.g., short-term or long-term) for both creating this habitat and ensuring that it becomes a functional habitat for marine birds.	Marine bird shoreline stationary counts were located in areas of the LAA adjacent to proposed Project infrastructure (e.g., the MOF, marine terminal, trestle and berths) to characterize seasonal abundance, richness, habitat associations. A detailed summary was provided in Appendix Q of the Application. The conceptual fish habitat offsetting plan provides information on the types and quantities of marine habitats expected to be destroyed or altered as a result of Project activities and infrastructure (Section 9, Appendix V of the Application). The type, quantity, and location of habitat affected is explicitly considered in the design of habitat offsetting along with the ecological roles of those habitats, within that specific environmental context. Offsets will be designed in keeping with DFO's guidelines by selecting in-kind offsets over out-of-kind offsets where appropriate (see Section 10.4 and 10.5 of Appendix V; DFO 2013). In-kind offsets are intended to replace the same quantity and quality of habitat that is being destroyed or altered as a result of the Project. In turn, in-kind offsets will provide replacement habitat for fish communities as a mechanism to counterbalance serious harm to fisheries affected by the Project. Because in-kind offsets will be developed to replace the quantity, quality, and function of fish habitat removed or altered by the Project, they are expected to provide similar compensatory marine bird habitat (inclusive of habitat types and the marine prey species they support). Once built, the effectiveness of the offsets will be monitored to confirm they are performing as designed.
2610.1	round 1	Gitga'at First Nation	4.11.5.3	Marine Wildlife - Marine Birds	The Proponent has stated it will increase employee awareness regarding the potential for mortality and/or injury to marine birds caused by lit infrastructure and that some staff will be provided information on how to handle and release birds that are grounded. These measures are typically more challenging to implement unless standards are in place and key staff (e.g., environmental monitors) are specifically trained to take on the responsibility for dealing with birds that are found on site. It is also challenging to ensure that all project staff are reporting occurrences of marine birds.	Aurora LNG is committed to monitoring potential effects of the Project on bird and bat mortality, and promoting an environment of awareness and compliance among Project personnel. To facilitate compliance with Project mitigation measures, educational materials provided to employees and contractors will include information on procedures for documenting and reporting bird injury or mortality, and handling and release of stranded birds. The on-site Environmental Monitor or Monitors will be responsible for providing access to educational materials, training and advising staff, maintaining an accurate record of injury and mortality events, and communicating this record to applicable regulatory authorities at a prescribed interval. Complete details will be outlined in the Wildlife Management Plan.
2611.1	round 1	Gitga'at First Nation	4.11.5.4	Marine Wildlife - Marine Birds	The Proponent provided an overly simplified conclusion that marine birds observed near the marine terminal and MOF have been observed to use shoreline or nearshore habitats throughout the LAA and are expected to move to other similarly suitable habitats present in the LAA or RAA during Project construction. The Proponent provides no details as to why or when marine birds are using habitats throughout the LAA and RAA - please provide evidence on this inference. Also, there can be an energetic cost associated with marine bird avoidance of Project activities, or displacement from preferred habitats, but the Proponent has not provide a measurement or details on these energetic costs in the effects assessment.	A discussion of marine bird abundance, richness, and seasonal distribution, and use (e.g., foraging, staging, roosting) is found in several locations in the Application, including Appendix Q, Section 4.11.3, and Section 4.11.5.2. The determination that marine birds observed using habitats near the marine terminal and MOF have been observed to use shoreline and nearshore habitats throughout the LAA and are expected to move to similarly suitable habitats is supported by Project and regional data, literature, and professional judgement from prior experience. These materials provide information on the overall distribution and use of habitats within the LAA. Section 4.11.5.4 provides reference to supporting information in Appendix Q. The energetic cost associated with marine bird avoidance or displacement due to Project activities was assessed in Section 4.11.5.4. As indicated therein with reference to supporting literature, behavioural responses are known to be species-specific. Although flushing distances have been measured for some species under specific conditions (e.g., marbled murrelet response to high-speed recreational vessel traffic), the energetic expenditures associated with those movements are not widely available, nor are they easily placed into appropriate context with the nature of Project-specific disturbance effects. In absence of detailed information, a qualitative approach was used to evaluate change in behaviour (including the energetic cost of avoidance or displacement). See Sections 4.11.5.1 and 4.11.5.4 for further details.

2612.1	round 1	Gitga'at First Nation	9 and 4.11	Marine Wildlife - Marine Birds	The Proponent has concluded that the accidental releases of hydrocarbons into the marine environment would have Significant residual and cumulative effects on marine birds, but these conclusions are limited to one sentence in the application. The Proponent has not made the connection between these types of accidents and the chronic effect of oiling that is a common occurrence and threat in coastal waters. In addition, O'Hara and Morgan (2006) concluded that the density of ship traffic (i.e., ship movements per year through an area) can be used as a predictor of mortality risk to marine birds, and therefore; an increase in ship traffic can be expected to elevate the risks of operational spills. This can have cumulative impacts on marine bird populations, and as such, must be assessed further. [O'Hara, P.D. and K.H. Morgan. 2006. Do low rates of oiled carcass recovery in beached bird surveys indicate low rates of ship-source oil spills? Marine Ornithology 34:133-140.]	Section 9.0 Accidents or Malfunctions assesses potential residual effects on marine birds as a result of small-scale and large-scale on-shore hazardous spills, vessel grounding or collision, and releases from LNG carriers (while loading). A description of potential effects of hydrocarbon releases was provided in Sections 9.8, 9.9, and 9.10. As noted in these sections, the potential for exposure and the extent of residual effects for small and large-scale spills depends on the volume and location of the spill, the toxicity of the hazardous substance, the speed of response and containment, in combination with the seasonal presence, abundance, and distribution of different marine bird species. Depending on the nature of the interaction (considering the factors described above), exposure to hazardous materials, including hydrocarbons, could result in acute or chronic effects. The mechanisms for exposure and resulting acute or chronic effects to marine birds are described in each subsection, as applicable. Accidental releases were considered to be have a significant effect to marine birds if a spill were to result in acute mortality or long-term chronic exposure to the extent caused population level effects. Aurora LNG has committed to several preventative measures designed to limit chronic hydrocarbon releases and are not expected to contribute to existing cumulative effects of chronic oiling. See Sections 9.8, 9.9, and 9.10 for details. Project accidents or malfunctions that are considered most likely to result from the Project in combination with other Projects and physical activities within the RAA were associated with vessel-to-vessel collisions. The likelihood of such an event was considered highly unlikely, however, in consideration of mitigation and response measures (see Section 9.11). Although chronic spills can contribute to hydrocarbon inputs into marine environments, they typically stem from small, regularly occurring illegal discharges that go unreported. O'Hara and Morgan (2006) acknowledge there are limitations in drawing conclusions on the extent of oil-induced mortality in western Canada due to geographic and weather factors that potentially bias results. The authors recognize that a much lower proportion and density of birds recovered from beached bird surveys showed evidence of oil contamination relative to studies in eastern Canada and elsewhere globally (Burger 2002, O'Hara and Morgan 2006). Earlier summaries of beach bird surveys found oil birds were predominantly recorded on Vancouver Island, with no detection on the north or central BC coast (Burger 2002). However, recognizing that acute and chronic oil spills poses a threat to marine birds, Aurora LNG has committed to reporting releases or discharges of substances not authorized under the Environmental Management Act, as established by the Spill Reporting Regulation (BC 2008) as part of the preventative and response measures outlined in Section 9. Aurora LNG has also committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injury or mortality related to Project activities; where possible, Project personnel will be required to describe the cause of mortality (including oil exposure, where possible]). Reference: Burger, A.E. 2002. Beached Bird Surveys in British Columbia, 1986-1997. Prepared for: the Nestucca Trust Fund. 48 pp. Government of British Columbia (BC). 2008. Environmental Management Act. Spill Reporting Regulation. Available at: http://www.bclaws.ca/Recon/document/ID/freeside/46_263_90. Accessed: March 2017. O'Hara, P.D. and K.H. Morgan. 2006. Do low rates of oiled carcass recovery in beached bird surveys indicate low rates of ship-source oil spills? Marine Ornithology 34:133-140
2613.1	round 1	Gitga'at First Nation	4.11	Marine Wildlife - Marine Birds	While the Application acknowledged the four Important Bird Areas in the region, the Proponent failed to address their importance in the effects assessment; impacts to these must be assessed.	Appendix Q of the Application provides a discussion of the important bird areas located in proximity to the Project and notes that these areas provide important habitat used by congregating marine bird species, and have also documented high concentrations of individual species and colonial nesting sites. Three IBAs are in close proximity to the Project, only one (BC124) overlaps with the LAA, on the west side of Digby Island. Please refer to Section 2 of Appendix Q for further details. The locations of the important bird areas, and the species they support (including seasonal presence and abundance) were considered, alongside data from Project field studies and regional datasets to characterize potential mechanisms for interaction between Project activities or infrastructure and marine birds. They were also identified as an administrative boundary in Section 4.11 of the Application. Accordingly, the assessment of residual effects of change in habitat, change in mortality, and change of movement on marine birds considered the value of these regional habitats in the potential for residual Project effects described in Section 4.11.5 and their contribution to cumulative effects in Section 4.11.6.
2614.1	round 1	Gitga'at First Nation	4.11	Marine Wildlife - Marine Birds	The Proponent has not provided detailed information on marine bird movements, habitat associations, and the delineation of key habitats in the LAA. The Proponent concluded that marine infrastructure (including the marine terminal, MOF, and pioneer facility) were not expected to limit access to key breeding, foraging, staging, or roosting habitats for marine birds, but the locations of these areas were not clearly described in the Application. Please provide more information.	A discussion of marine bird abundance, richness, and seasonal distribution, and use (e.g., foraging, staging, roosting) is found in several locations in the Application, including Appendix Q, Section 4.11.3, and Section 4.11.5.2. Sections 4.1.3 and 4.2.3 of Appendix Q provides additional information on species observations and associations with nearshore and farshore marine habitats observed during Project field studies. Tables 2-1 and Table 3-1 of Appendix Q provide a break down of detections fo individual species, across habitat types sampled during Project field studies; these habitat delineations are also illustrated in Figures 3 to 6 of Appendix Q. Additional key marine bird habitats (e.g., parks, important bird areas, colonial nesting sites) are depicted in Figure 1 of Appendix Q and Figure 4.11-1 of the Application. Information on species presence, richness, abundance, and distribution was used to inform the assessment and characterization of potential Project effects in Section 4.11. As noted in Section 4.11.2, the assessment of change in behaviour considers potential changes in marine bird movement due to the introduction of physical or perceived barriers to habitats and resources. The determination that marine birds observed using habitats near proposed Project marine infrastructure are expected to move to similarly suitable habitats is supported by Project and regional data showing observed to use shoreline and nearshore habitats throughout the LAA in combination with literature and professional judgement from prior experience. Please refer to Section 4.11.5.4 for more details.
2615.1	round 1	Gitga'at First Nation	4.11	Marine Wildlife - Marine Birds	At this time the Marine Riparian zone appears insufficient in width, and the location of the flaring structures could impact Delusion Bay. Please justify why the zone is considered acceptable.	Section 1.2.5.1 of the Application describes the proposed flare system design. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26). As per mitigation 4.7.20, maintenance flaring events will be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. Additionally, the 30 m marine riparian buffer will be maintained during all phases of the Project to retain shoreline habitats and limit noise and light dispersal, and is expected to further reduce potential for disturbance to marine species using shoreline and nearshore habitats in Delusion Bay.
2616.1	round 1	Gitga'at First Nation	5.1	Economic Conditions	The northwest coast has always been a thriving region based on natural resource abundance (not just diversified economy).	Aurora LNG acknowledges this comment.
2617.1	round 1	Gitga'at First Nation	5.1	Economic Conditions	Economic effects of the Project are expected to affect the reserve community of Hartley Bay who depend directly on services in Prince Rupert.	Aurora LNG acknowledges this comment.
2618.1	round 1	Gitga'at First Nation	5.2.1	Economic Conditions	The introduction implies positive economic benefits of the Project and does not introduce potential negative effects; e.g., the Project could increase the costs of infrastructure and services for the surrounding reserve communities such as Hartley Bay.	The assessment of change in activities for commercial businesses affected by Project spending (Section 5.2.5.2) addresses labour costs, which could affect costs of infrastructure and services to reserve communities. As noted in Section 5.2.1, potential effects on cost of living is addressed in Section 13.
2619.1	round 1	Gitga'at First Nation	5.2.2.2	Economic Conditions	Table 5.2-1 lists labour drawdown and that potential effect of 'change in activities for commercial businesses affected by Project spending' was added. In addition, change in activities can potentially draw resources away from Aboriginal communities such as Hartley Bay and thereby impacting local economies (e.g., eco-tourism, and fishing lodges).	Aurora LNG agrees that labour drawdown could affect commercial businesses, such as eco-tourism and fishing lodges. Mitigation 5.2.4 (paying market wage rates) is expected to help mitigate this.
2620.1	round 1	Gitga'at First Nation	5.2.2.4	Economic Conditions	What about the measureable parameter of impacts on local community economics (e.g., eco-tourism, conservation, commercial fishing, etc.)?	Data on the economic value of commercial fishing is provided in sections 5.2-45 to 5.2-47 of the Application. Effects on eco-tourism and conservation is broadly considered in the assessment of effects on commercial businesses affected by Project spending. Effects on marine tourism is also addressed in Section 6.5 – Marine Use and Navigable Waters.
2621.1	round 1	Gitga'at First Nation	5.2.2.4	Economic Conditions	The increase in land value in Prince Rupert and regionally (in Terrace) from the Project and cumulatively with other Projects, can prohibit local Aboriginal communities from generating their own economies as a Nation. With the exception of a few direct contracts and individual jobs, First Nations outside the Project area may not be in any position to develop businesses if land, services and goods are inflated.	Potential adverse effects related to upward pressure on wages are addressed in Section 5.2.5.2 – Assessment of Change in Activities for Commercial Businesses Affected by Project Spending, particularly on pages 5.2-70 and 5.2-71. Section 13.5.4 addressed potential for Project interactions with the cost of living in the LAA.
2622.1	round 1	Gitga'at First Nation	5.2.2.5	Economic Conditions	Hartley Bay must be included in the LAA of all components (not just marine) as Gitga'at has a direct reliance on Prince Rupert, and because the Project may draw workers away from economic ventures in Hartley Bay (e.g., eco-tourism, local construction, and commercial fishing), among other things.	The spatial boundaries used in the assessment were defined in the final approved AIR.
2623.1	round 1	Gitga'at First Nation	5.2.3.2 and 5.2.3.3	Economic Conditions	All sub-sections and tables in this section must include all Tsimshian reserve communities, including Hartley Bay. For example for the subsection 'Education and Training', the number of individuals with apprenticeships, trade certificate, or diploma when compared to the LAA and RAA populations would likely be lower if all Tsimshian reserve communities were considered. The Aboriginal trades and education may be based on non-Tsimshian Aboriginal people. Using accurate data from all Tsimshian communities is important; however, because these are missing, the Proponents support for education and training among all Tsimshian communities may not be equal.	Aboriginal communities for which baseline information in Section 5.2 is provided include those located within the LAA and the RAA, as described in Table 5.2-3. While it is understood that the communities identified in the LAA and RAA are part of the Tsimshian cultural group, the general criteria for inclusion within the LAA is potential to experience direct Project effects (generally due to proximity to the Project). General criteria for inclusion within the RAA is potential to experience cumulative effects.
2624.1	round 1	Gitga'at First Nation	5.2.3.2	Economic Conditions	It is not clear in Figure 5.2-4 what the breakdown of the Aboriginal population is for the LAA and RAA, and what the Tsimshian population is compared to other non-Tsimshian Aboriginal groups. And further, what the breakdown of population is for each Tsimshian Nation.	A breakdown of the Aboriginal population of the LAA and RAA is provided in Table 5.2-7. Disaggregated information is provided for the LAA population while an aggregate of the RAA (inclusive of Aboriginal and non-Aboriginal populations) is provided. Figure 5.2-4 is based on labour force data for the LAA and RAA, as employed by occupation, from information provided in Table 5.2-16. Information provided in Table 5.2-16 is not disaggregated by Aboriginal group or by LAA community.
2625.1	round 1	Gitga'at First Nation	5.2.3.2	Economic Conditions	Throughout the sub-sections, it is not clear who is included in "Aboriginal"; it would be helpful to have a breakdown of Aboriginal groups.	Aboriginal Groups with reserves in the RAA are identified in Table 5.2-8.
2626.1	round 1	Gitga'at First Nation	5.2.3.2	Economic Conditions	Table 5.2-24 is incomplete - what about commercial fishing, fish processing, and tourism, all of which are important industries for Gitga'at.	Tables 5.2-23 and 5.2-24 include a sample of employers in the LAA and RAA, and are not intended as comprehensive lists. Several fish processing and tourism operators are identified in Table 5.2-23.
2627.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	For Project Mechanisms for Change in Labour Supply and Demand, Construction - the statement that "the unemployment rate in the LAA will decline" may not be accurate because the LAA may not contain enough trained individuals for the required construction jobs.	Aurora LNG assumes that some otherwise unemployed individuals in the LAA will take up Project construction positions, and thereby drive the unemployment rate down. While the precise number of individuals with construction related skills that may be unemployed at the start of Project construction is unknown, this has been estimated by multiplying the LAA labour force with occupations in trades, transport, equipment operations and related occupations (a total of 1,280 persons) with the unemployment rate (approximately 10.3% as of July 2016 for North Coast end Nechako Economic Regions). Based on this estimate, approximately 130 persons within the LAA with construction related occupations are currently unemployed, and potentially able to take up Project employment.
2628.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34, Mitigation 5.2.1 , Mitigation Mechanism - what about capacity support to ensure Tsimshian people are trained prior to job and procurement opportunities are needed. There has to be direct engagement with communities and support to build an effective workforce, including direct and indirect jobs, and development of job retention skills.	In Mitigation 5.2.5, Aurora LNG proposes to "Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation."
2629.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34, Mitigation 5.2.1, Expected Success/Risks and Uncertainty - what is meant by "within reason"? Also, there is risk and uncertainty that if jobs are given to groups that Aboriginal communities are not involved with (e.g., Union groups) then Aboriginal workers may not have employment opportunities. Therefore, the Proponent must work directly with Aboriginal communities.	Aurora LNG will contract the construction of the Project to one or more prime contractors, who will in turn work with numerous sub-contractors. While Aurora LNG will set out policies and requirements with respect to local hiring and local content, it will ultimately be the contractors and sub-contractors responsibility to hire most of the construction workforce. Aurora LNG will work directly with Aboriginal Groups to facilitate Project employment opportunities.
2630.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34 and Table 5.2-37, Mitigation 5.2.2, Mitigation - providing information is not enough but rather providing support is needed.	Mitigation 5.2.2. aims to support the role that employment agencies and economic development organizations have in planning and preparing for large construction projects. Aurora LNG will undertake considerable planning and preparation for the Project including human resources planning . In Mitigation 5.2.5, Aurora LNG proposes to "Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation."
2631.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34 and Table 5.2-37, Mitigation 5.2.2, Rationale - what about commitments from the Proponent?	Mitigation 5.2.2. aims to support the role that employment agencies and economic development organizations have in planning and preparing for large construction projects. Aurora LNG will undertake considerable planning and preparation for the Project including human resources planning. In Mitigation 5.2.5, Aurora LNG proposes to "Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation."
2632.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34 and Table 5.2-37, Mitigation 5.2.2, Expected Success/Risks and Uncertainty - success will depend on the Proponent continually providing support for education and training, and to ensure that impacts to current economies (such as commercial fishing and eco-tourism) are negligible.	Support for education and training is provided in Mitigation 5.2.5: Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation. Mitigation 5.2.2 does not address effects on commercial fishing and ecotourism, rather it helps planners plan for change in demand for construction labour.
2633.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34, Mitigation 5.2.3, Mitigation - what about mitigations for older workers with experience but not with Grade 12?	Older workers with applicable skills/experience but without Grade 12 will not be excluded from consideration. The objective of Mitigation 5.2.3 is to help prevent younger people from leaving school prematurely to take employment.
2634.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34 and Table 5.2-37, Mitigation 5.2.5, Mitigation - who is responsible for costs associated with this mitigation?	Specific details with respect to this mitigation, such as how Aurora LNG will work with relevant organizations to increase opportunities for Aboriginal and local community members to receive appropriate training, will be developed as part of Aurora LNG's human resources planning. Aurora LNG will have overall accountability for this mitigation.
2635.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34 and Table 5.2-37, Mitigation 5.2.5, Rationale - what best management practices?	Under the "Rationale for Selection" column "best management practice" refers to measures that Aurora LNG feel are appropriate for achieving identified outcomes. With respect to Mitigation 5.2.5 the identified outcome is to enhance the capacity of the local workforce.
2636.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Table 5.2-34 and Table 5.2-37, Mitigation 5.2.5, Expected Success/Risks and Uncertainty - more information is needed on how this conclusion on success can be made. Also, the success will depend on the commitment from the Proponent on providing support to train Tsimshian people.	The predicted success, that there will be a moderate to high likelihood that the mitigation will be effective, assumes that there will be interest and willingness on the part of community members to engage in the appropriate training to be qualified for consideration for a project position. While Aurora LNG does not guarantee that persons who undergo training will be able to secure a position, because of the large size of the Project, and demand for qualified workers, the odds of an appropriately trained individual securing employment are high. Aurora LNG will work with training and education facilities to develop and help fund training programs to support Project needs. The details of this support and the training will be developed as the Project moves into detailed planning.
2637.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Indirect and Induced Employment - What about other indirect opportunities created as a result of a strain on existing facilities (e.g., nurses, social workers)? The Proponent must not limit indirect jobs from the industry only; they must consider indirect jobs as a result of the impacts on limited resources that currently exist.	Aurora LNG is uncertain about what the commenter is requesting.

2638.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Construction Summary - the statement that "Project demand for 5,000 workers at peak construction will largely have beneficial effects within the LAA and RAA through direct, indirect and induced employment" may be extrapolated if the local and regional working population is untrained and if the Proponent does not effectively promote and support employment and training within the LAA and RAA.	Aurora LNG will seek to maximize local hiring during construction and operations, as stated in the Application. Mitigation 5.2.5 indicates Aurora LNG will work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation.
2639.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Construction Summary - it appears that the statement "Adverse effects will be minimized through the housing of workers in a closed-access camp as indirect and induced employment created in the LAA from the spending of FIFO workers will be reduced" contradicts earlier statements that workers in camps can contribute to the local economy.	It is stated under "Project-Mechanisms for Change in Labour Supply and Demand" that spending by direct and indirect workers will result in induced employment. However, this was intended to mean spending by direct and indirect workers that reside in the LAA, not FIFO workers.
2640.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	Operations, Direct Employment - local hiring during operations must be maximized and this includes a commitment from the Proponent to support training and education of Tsimshian people prior to the operation phase.	Aurora LNG will seek to maximize local hiring during operations, as stated in the Application. Mitigation 5.2.5 indicates Aurora LNG will work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation.
2641.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	Table 5.2-40, Mitigation 6.4.1 - what about engagement with affected holders within the RAA due to the cumulative impacts from all projects?	Aurora LNG has identified numerous mitigation measures for addressing potential adverse effects on resource-based and subsistence economies in Table 5.2-40. Aurora LNG maintains that with application of these measures, the Project contribution to cumulative effects on resource-based primary and subsistence economies will be low. However, ongoing engagement by Aurora LNG with Aboriginal Groups could also include discussion of cumulative effects.
2642.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	Table 5.2-40, Mitigation 6.5.1, Mitigation - what about non-routine and emergency medical travel for Gitga'at people from Hartley Bay?	Mitigation 6.5.1 refers to the use by the Project's LNG carriers of the Coast Guard Marine Communication and Traffic System (MCTS) to provide notice of planned arrival time at Triple Island. It does not address medical-related travel.
2643.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	Table 5.2-40, Mitigation 6.5.1, Expected Success/Risks and Uncertainty - the risk and uncertainty is not entirely associated with the mitigation being mandatory or not. As people become more economically independent, boating will become more popular which will limit the moorage space in Prince Rupert required for service delivery and medical to communities such as Hartley Bay.	Aurora LNG seeks clarification on how the concern identified in this comment relates to Mitigation 6.5.1. Mitigation 6.5.1 specifies that: "Project-related marine traffic, including LNG carriers, will use the Coast Guard Marine Communication and Traffic System (MCTS) to provide notice of planned arrival time at Triple Island. Aurora LNG will encourage Aboriginal Groups and stakeholders to use the system to plan their routing and scheduling."
2644.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	Table 5.2-40, Mitigation 6.5.2, Mitigation - the Marine Activities Plan must be developed specifically to meet the needs of marine-based communities such as Hartley Bay that rely on Prince Rupert for food and freight delivery, and medical.	The objective of the Marine Activities Plan is to identify and develop various tools to communicate the Project's marine-related activities with other marine users and to be able to develop and document potential mitigation measures to address potential adverse effects. Aurora LNG will engage with regulators and Aboriginal communities during the development of this plan.
2645.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	It is not clear what species were considered for Commercial Fishing? On p. 5.2-83 it appears that salmon and shrimp are the only species. If this is the case, all commercial species important to Gitga'at and residents within the region should be assessed.	Section 6.5: Marine Use and Navigable Waters assesses potential effects on marine fisheries. See Tables 6.5-8, 6.5-10, and 6.5-11 for full details. The commercial, recreational, and Aboriginal fisheries considered in the assessment include the following: Salmon (all species)Groundfish (rockfish, lingcod, halibut, etc.)Small pelagics (herring, etc.)Invertebrate (crab, prawn, urchin, geoduck, etc.)
2646.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	"The Project is predicted to have a low economic effect on subsistence economic activities…" but even "low" effect can have a large effect on Aboriginal communities as economics transcends cultural and social aspects of Tsimshian peoples lives.	Aurora LNG acknowledges that Gitga'at First Nation are concerned that the predicted low economic effect on subsistence economic activities may be disproportionately felt by Aboriginal communities. However, Aurora LNG maintains that through the application of the proposed mitigation measures, Project adverse effects will not be significant.
2647.1	round 1	Gitga'at First Nation	5.2.6.3	Economic Conditions	The statement "In the cumulative effects scenario the implementation of mitigation measures and government sponsored training initiatives will reduce the likelihood of adverse residual effects on labour supply and demand" puts too much reliance on government sponsored training rather than Proponent sponsored training. Please clarify how much reliance will be on government sponsored training.	This statement acknowledges that government-sponsored training initiatives, such as those discussed in Section 5.2.6.3 will play a role in addressing cumulative effects on labour supply and demand, as will the initiatives proposed by Aurora LNG and other project proponents. There is no special reliance placed on the role of government-sponsored training. Aurora LNG intends to work with with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation.
2648.1	round 1	Gitga'at First Nation	5.2.6.3	Economic Conditions	Will Aurora LNG dictate to successful bidders where to purchase materials and supplies?	Aurora LNG will not require that its contractors use particular suppliers. However, it will require that work packages be developed that consider the capacity and capabilities of local and regional businesses, to enable local firms to compete for Project contracts.
2649.1	round 1	Gitga'at First Nation	5.2.7.1	Economic Conditions	The mitigations measures in the entire Section 5 can only be effective if the Proponent commits to supporting Tsimshian communities in obtaining sufficient training and education for employment and procurement opportunities.	In Mitigation 5.2.5, Aurora LNG proposes to "Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation."
2650.1	round 1	Gitga'at First Nation	5.2.7.2	Economic Conditions	The summary conclusions made in this section are vague with minimal solutions and commitments. The Proponent must commit to supporting Tsimshian communities in obtaining sufficient training and education required for Project employment and procurement opportunities.	The intent of Section 5.2.7.2 is to provide a determination of significance for potential cumulative effects on economic conditions. Mitigation #5.2.5 indicates that Aurora LNG will identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation.
2651.1	round 1	Gitga'at First Nation	5.3.1	Economic Conditions	Table 5.3-1 - due to comments above for each potential effect, we do not agree with the Proponents conclusions at this time.	Aurora LNG acknowledges this comment and refers Gitga'at First Nation to the responses provided to the comments above.
2652.1	round 1	Gitga'at First Nation	1.4.1	Proposed Project Overview	The information presented in the application summary and in the project benefits section in the application (e.g., s.1.4.1) suggests that Project will have very substantial economic benefits. To the reader lacking a skill set in major project economics – which may include many final government decision-makers and stakeholders – the take-away message is that this Project is very good for the economy. However, the assessment conducted for and presented in the application is one of gross benefits, not net benefits, and can reasonably be expected to be a large if not huge exaggeration of the Project's actual incremental benefits. The proponent used the method of economic impact analysis (using input-output analysis and associated techniques) to estimate the Project's benefits, consistent with BC EAO requirements at present, but these methods are widely known to be incapable of estimating actual net benefits of development. Economic impact analysis ignores opportunity costs and treats all expenditures as benefits, and ignores many other costs of projects that can readily be examined in financial terms such as incremental financial burdens on government (e.g., Vining, A. R. and A. E. Boardman (2007). The Choice of Formal Policy Analysis Methods in Canada. In: Policy Analysis in Canada: The State of the Art. L. Dobuzinskis, M. Howlett and D. Laycock. Toronto, University of Toronto Press: 48-85; Barclay, J. (2009). Predicting the Costs and Benefits of Mega-Sporting Events: Misjudgement of Olympic Proportions? Economic Affairs 29(2): 62-66.). As a consequence, project expenditures are treated as benefits when they are real costs to the economy, and employment benefits, GDP stimulus, and impacts on government revenues are exaggerated. Just as wildlife biologists strive in EA to estimate a project's residual (i.e., net) adverse effects by examining how the project's adverse effects will be reduced by mitigation, so to should proponents be required to estimate net economic benefits. Please provide an analysis of the net economic benefits of the project. Also, it appears that due to the tiered approach to consultation, inequitable access to economic benefits from this Project has resulted. Gitga'at requests further discussion with Nexen to reconcile these differences.	As identified in Section 1.4 of the AIR, economic impacts of the Project are estimated based partly on the results of an input-output modeling exercise (using the Statistics Canada Interprovincial Input-Output Model). Input-output modelling is a well-established method for estimating economic impacts of incremental expenditures (i.e. economic shocks). However, a discussion of the theoretical basis of this approach is beyond the scope of the Application. Aurora agrees that Section 1.4 presents benefits (actually, economic impacts) on a "gross" basis, which is how input-output modelling works. However, Aurora LNG disagrees with the statement that "As a consequence, project expenditures are treated as benefits when they are real costs to the economy, and employment benefits, GDP stimulus, and impacts on government revenues are exaggerated." Aurora LNG acknowledges the potential for adverse economic social and economic effects. These are addressed in detail in Section 5.2 - Economic Effects, Section 6.2 – Visual Quality, Section 6.3 Infrastructure and Services, Section 6.4 Marine Use and Navigable Waters, and Section 6.5 – Community Health. Within these sections of the Application, Aurora LNG has identified numerous mitigation measures designed to address and manage the identified adverse socio-economic effects. Beyond such mitigation measures, the Project will result in increased local/regional, provincial, and federal government revenues (see Section 1.4.5 of the Application). How these governments choose to spend such revenue will be their own prerogative. However, because this revenue was generated by economic activity based primarily on financial inflows into British Columbia, the increase in government revenue is incremental and thus beneficial to residents of local communities in British Columbia, and Canada. Aurora LNG disagrees with the statement that "employment benefits, GDP stimulus, and impacts on government revenues are exaggerated." First, these estimates were derived using the SCIPIOM model based on best estimates of the extent of Project expenditure within Canada. The SCIPIOM model is based on the input-output structure of the entire Canadian economy, based on Statistics Canada data. Within this structure, goods and services are only modeled if there is an economic basis for doing so. In other words, if a good or services cannot be procured within Canada, the model will "leak" it to outside of Canada. Second, Aurora LNG considered whether and to what extent that equipment, goods, and services needed for various project phases were available in Canada, and applied reasonable assumptions with respect to domestic procurement. For example, out of a total capital cost of nearly $28 billion it is estimated that approximately 30% ($8.3 billion) will occur in Canada. Finally, the estimates provided from the analysis would be theoretically "exaggerated" if the Canadian economy were running at 100% capacity, with no potential for expansion, and in a condition of full employment. However, this was not the condition as of November 2016 when the Application was filed (in November 2016 the unemployment rate for British Columbia and Canada were 5.8% and 6.9%). It was therefore, reasonably assumed that the Canadian economy could absorb the $8.3 billion in incremental capital expenditure over the six year construction period (by comparison, British Columbia's 2015 GDP was nearly $250 billion and Canada's 2015 GDP was nearly $2 trillion). Aurora LNG understands that there are limitations to the input-output modelling technique, and that the estimates provided by this approach are indicative rather than precise. It is also acknowledged that at the current early stage of Project planning, expenditure information used in the analysis are preliminary, as noted in Application Section 1.4.2. However, Aurora LNG maintains that the jobs, economic stimulus, and additional government revenue provided by the Project will substantially benefit communities within the north coast, as well as British Columbia overall. Sources: Unemployment rates in Canada: http://economicdashboard.alberta.ca/Unemployment#interprovincial
2653.1	round 1	Gitga'at First Nation	1.4.4.1 and 1.4.3.2	Proposed Project Overview	The proponent provides estimates of proportions of employment that will flow to locals, residents of BC, residents of elsewhere in Canada, and foreigners (e.g., s.1.4.3.2 (p1-55), s.1.4.4.1 (p1-58)). However, no rationale or explanation for how such estimates were generated which is important because the geographic distribution of employment on the Project plays a key role in understanding Project Benefits as well as adverse effects on multiple VCs (e.g., Economic Effects VC, Services and Infrastructure VC, etc.). Please explain how estimates of proportions of employment flowing to locals, residents of BC, etc. were generated, including any assumptions that were made in generating these estimates.	Aurora LNG's predicted break-down of operating labour by BC residents (estimated at 64% of operating labour), other Canadian residents (16%), and imported labour (20%), is based on consideration of the skills needed to operate an LNG plant, overall understanding of the labour market, and anticipated potential to "train-up" workers for operational positions. Operating and maintaining an LNG plant requires highly trained and experienced personnel. Aurora LNG anticipates that a substantial proportion of its operating workforce will consists of BC residents, whose skills will be developed through technical training programs and hands-on experience at overseas LNG plants. Nevertheless, because of the limited LNG operating expertise available in Canada, Aurora LNG anticipates that a proportion of its workforce will be hired from outside Canada. This proportion should decline over time, as more "homegrown" LNG expertise is developed.
2654.1	round 1	Gitga'at First Nation	1.4.4.2	Proposed Project Overview	It would seem logical that if a project is going to be assessed for the effects that it will cause – both positive and negative – that a common boundary, or scope, is identified. But this is not the case when you compare how Project benefits are estimated and Project adverse effects are assessed. By using economic impact analysis (specifically the technique of input-output analysis), the scope of Project benefits is extended throughout and even beyond the Canadian economy. Most Project jobs will flow to people outside the region: as stated in s.1.4.4.2 (p1-64), the proponent estimates that 81% (18,600 PY) of total operations employment of the Project (22,900 PY) "will be associated with natural gas exploration, production, and transportation in Canada and the other 19% will be associated with facility operation". So the proponent counts jobs in north-east BC or wherever gas wells are developed as job benefits of the Project, yet impacts on wildlife, water, communities, and other things in north-east BC (or elsewhere) are ignored. This is a lopsided analysis that favours the Project. If the Project can reasonably be expected to stimulate new natural gas development then these other jobs might be incremental (but this case hasn't been made), but then so to should the EA examine environmental impacts of expanded gas development there. Please revise the benefits section to report on only the benefits solely attributable to the proposed Aurora LNG facility and shipping, i.e., benefits matched with the scope of the Project as defined in s.1.2 (p1-3), or otherwise please provide the analysis to indicate that the Project will stimulate incremental upstream natural gas development to justify inclusion of economic benefits associated with upstream development in the tally of Project benefits and then revise the EA to include all of the environmental and other impacts associated with this additional upstream development.	The scope of Section 1.4 (Project Benefits) is based on the requirements specified in Section 1.4 of the AIR. The AIR specifies that the employment estimates are to include: "the number of people that are expected to be hired locally, provincially, nationally, or internationally" and "generated indirect and induced employment by project phase." Natural gas will be purchased during the operations phase, and for this reason the economic impact assessment includes the effects of this expenditure. Tables 1-15, 1-16, and 1-17 distinguish indirect and induced employment effects between those associated with the facility, and those associated with the gas supply. The spatial scoping boundaries for assessing effects on environmental, socio-economic, and heritage VCs are identified in tables 3-3 and 3-4 of the AIR.
2655.1	round 1	Gitga'at First Nation	1.4.4.4	Proposed Project Overview	The proponent notes in s.1.4.4.4 (p1-66) that there is high unemployment in the region and that the Project provides the opportunity for the unemployed to enter (or re-enter) the workforce. The proponent notes that the Project will help develop individuals' skill sets that could then be used in other employment elsewhere. Later, in Table 5.2-34 (s.5.2.5.1 (p5.2-60)), the proponent proposes mitigation measure 5.2.5 entailing working with training authorities in the region and other labour stakeholder groups to address skill gaps amongst Aboriginal and other locals. This is constructive towards maximizing local benefits and minimizing leakage of benefits out of the region, but skill gaps is but one challenge impeding local take-up of employment with the Project; other challenges include mobility, conflicts with traditional lifestyles, racism and lack of cultural awareness among non-Aboriginals, and health conditions (some of these things are noted later in s.6.6.5.3 (p6.6-68)). Regardless, in the benefits section of the application which showcases the Project's purported benefits, the proponent doesn't seem to recognize the wider variety of challenges to gaining employment that many people in the study area face which diminish the local employment benefits of the project. Please edit the benefits section to be transparent with respect to the variety of challenges that people face with gaining major project employment, and please revise the associated analyses of potential local employment benefits accordingly.	The scope of the benefits section, as defined by Section 1.4 of the AIR, does not include an assessment of employment challenges, as requested by the commenter. As noted in the comment, these topics are addressed elsewhere in the Application. Aurora LNG has proposed a number of mitigation measures that are expected to help facilitate local employment and help address potential employment challenges, including: Mitigation 5.2.1 - Inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases. Develop work packages that consider the capacity and capabilities of local and regional businesses Mitigation 5.2.2 - Provide information to employment agencies and economic development organizations to help them plan for increased demand for construction labour. Mitigation 5.2.3 - Require that all of workers (not inclusive of summer students) 19 years and younger complete grade 12 or have an appropriate equivalency in order to prevent young people from leaving school prematurely. Mitigation 5.2.5 - Identify potential shortages of workers with specific skill requirements, and work with training and education facilities, Aboriginal Groups, and local communities to increase opportunities for Aboriginal and local community members to obtain training required for Project participation. Mitigation 6.3.3 - Require all staff and contractors to undertake worker orientation, including communication of expected behaviours when transiting to/from local communities (a worker code of conduct) and cross-cultural awareness to help build awareness and respect of local concerns and customs to reinforce the importance of respectful conduct when in communities. Mitigation 6.3.4 - A Community Engagement Plan will be developed and implemented to facilitate ongoing and meaningful community engagement, including monitoring, recording, and addressing community complaints and concerns. Mitigation 6.3.11 - Engage with local communities and Aboriginal Groups to address community concerns associated with the Project.
2656.1	round 1	Gitga'at First Nation	1.4.4 and 5.2.5.1	Proposed Project Overview	The estimates of local employment provided in s.5.2.5.1 (e.g., p5.2-62) highlight the small number of Project jobs that may flow to existing locals, and how the vast majority of employment benefits will flow to non-locals working on a fly-in/fly-out basis or in-migrants with the necessary skills. Gitga'at, decision-makers and other local stakeholders need to know the small number of jobs that are estimated to flow to locals, especially given that most of the rest of the employment can be expected to occur anyway because Canada has a well-functioning economy with low unemployment. Please revise the benefits section of the application to indicate such important findings or direct the reader to material elsewhere in the application (such as s.5.2.5.1) highlighting the limitations of local economic benefits so that readers of the benefits section have a complete understanding and can put the benefits information into context.	The majority of construction jobs will, by necessity, go to workers from outside the region because labour requirements during construction far exceeds the predicted available construction workforce. This is explained in Section 5.2.5.1 under the heading "Construction/Direct Employment" under "Characterization of Residual Effects for Change in Labour Supply and Demand" on page 5.2-61. The number of direct construction jobs estimated in Table 5.2-35 should not be regarded as a cap on local hiring potential, but rather an estimate based in consideration of the estimated labour force involved in construction-related occupation. Aurora LNG is proposing a number of mitigation measures aimed at facilitating local employment.

2657.1	round 1	Gitga'at First Nation	5.2.2.5	Economic Conditions	The boundary of the LAA is too restrictive in that the proponent doesn't seem to recognize the tight economic linkages between communities in the region. Hartley Bay, for example, is tightly linked to economic activities in the Prince Rupert area by way of: (1) employment, i.e., Gitga'at people may move to Prince Rupert for work, or live in both locales, or send earnings back to family in Hartley Bay; and (2) costs of goods and services, e.g., housing construction and economic development in Hartley Bay are affected by competition for construction labour which is shaped largely by economic development in Prince Rupert, Terrace, and Kitimat. It is therefore not enough to include communities like Hartley Bay in the RAA; such communities should be in the LAA so that the EA fully covers the direct economic effects of the Project. Please revise the LAA to include communities like Hartley Bay that are strongly linked to conditions in Prince Rupert, and please revise the assessment accordingly.	Aurora LNG's understanding of Gitga'at First Nation's comment requesting the inclusion of Hartley Bay in the LAA to be: Members who either move to Prince Rupert for work, live in both Prince Rupert and Hartley Bay, as well as those members who work in Prince Rupert and send money to family members in Hartley Bay could experience adverse residual effects of the ProjectMembers living in Hartley Bay who draw upon goods and services in Prince Rupert, Terrace and Kitimat could experience adverse effects related to changes in the cost of goods and services due to the Project Regarding the assessment of Economic Conditions (Section 5.3) and Infrastructure and Services (Section 6.3), communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2). With respect to cumulative effects, as assessed in Sections 5.2 and 6.3, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions and infrastructure and services. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.
2658.1	round 1	Gitga'at First Nation	5.2.2.5	Economic Conditions	However, the proponent notes that they examine significance of project direct effects, as well as cumulative effects, for the RAA, which does include a larger set of communities than the LAA. The question then begs: if significance of project direct effects is determined for the RAA, mustn't effects assessment and existing conditions therefore be conducted for the RAA? And then what is the point of the LAA? Please explain how Project direct effects are properly examined when different spatial boundaries are used for different steps in the process.	The use of LAA and RAA are conventions to help define the scope of the assessment. Generally, more economic effects are anticipated within the LAA because it includes communities that are closer to the Project. However, through the process of the assessment it was determined that both Project and cumulative effects are predicted to occur within the RAA, as indicated in tables 5.2-41 and 5.2-43.
2659.1	round 1	Gitga'at First Nation	5.2.2.7	Economic Conditions	On p5.2.11 (s.5.2.2.7) the proponent provides definitions of low, medium, and high likelihood. Each definition relies on the terms 'unlikely', 'likely', and 'highly likely' in the likelihood definitions, but what do these terms mean to the proponent? It is good practice to define expressions of probability in quantitative terms, such as the IPCC does in its climate change science communications (see Intergovernmental Panel on Climate Change (2010). Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change. 4pp + Annexes. http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf), so that it is clear to all how the terms are being used and to ensure consistency among users of the terms. Please define what is meant by the terms unlikely, likely, and highly likely.	A qualitative approach is used to describe the likelihood of residual Project effects on community health based on professional judgement and experience of the assessor. A definitive or quantitative approach to defining these terms (i.e., 0-15% chance of occurrence) is not practical. In general, the term 'unlikely' in this instance means that adverse effects between the Project and community health are not predicted to occur. The term 'likely' in this instance means adverse effects between the Project and community health are probable as it may be difficult to avoid or mitigate residual effects. The term 'highly likely' in this instance means adverse effects will occur as residual effects cannot be practically avoided or mitigated.
2660.1	round 1	Gitga'at First Nation	5.2.2.8	Economic Conditions	This threshold is problematic for three reasons. One, as written, effects are significant simply if they are distinguishable from current conditions. What does it mean for effects to be 'distinguishable'? Does this simply mean measurable, or must the effects be not just measurable but more substantial to some degree? The threshold is therefore too ambiguously defined leaving the door open for a wide range of interpretation. Further, a literal interpretation of the threshold is that there simply needs to be a residual effect on this VC for there to be a significant residual effect on this VC – virtually guaranteed! Second, the threshold has no clear connection to stakeholder values, including Gitga'at's. What, specifically, do stakeholders care about with respect to changes to economic conditions? The threshold should be tied to specific economic conditions that stakeholders/Gitga'at care about so to allow for an analysis that hones in on what matters to people. Significance is fundamentally grounded in acceptability, and the threshold should therefore make this connection. Third, the threshold is redundant in that the latter part of the definition refers to mitigation when the assessor at this point (of determining significance) should've already separated out residual effects from non-residual effects. Please clarify what would make a residual effect significant to stakeholders and revise the subsequent analysis accordingly.	Absent any well established quantitative thresholds for determining a significant economic effect (or most other socio-economic effects) the determination of significance is based on a assessment of whether there is a material and adverse change in the condition of the valued component,with incorporation of mitigation and management measures. "Distinguishable" in the context of the economic significance threshold definition, means distinct from current conditions or trends. In other words, the condition can be reasonably attributed to the Aurora LNG project rather than due to other economic factors, such as seasonal variations or structural changes affecting the economy (including such factors as in-migration, out-migration, closure and opening of other businesses and projects). The significance definition allows us to first characterize effects post mitigation, and based on this characterization determine if the significance threshold has been passed. If it is evident that there will be material un-mitigated residual adverse economic effects attributable to the Project then it may be considered significant. However, this conclusion will need to be made with appropriate consideration of the local economic context. For example, businesses may be both positively affected (through increased commercial activity) and adversely affected (through higher labour costs) by the presence of the Project.
2661.1	round 1	Gitga'at First Nation	5.2.2.8	Economic Conditions	In Table 5.2-5 (s.5.2.2.8 (p5.2-12)) the definitions of moderate and high magnitude effects use the term risk, which is the scale of an impact in consideration of its probability. As such, the definitions introduce probability, when probability is discussed elsewhere in the likelihood (ss.5.2.2.7, 5.2.5.1, 5.2.5.2, and 5.2.5.3) and confidence (s.5.2.8) sections. Please explain how the assessor examines uncertainty in the effects characterization, likelihood categorization, and confidence parts of the assessment, and how each segment of this examination of uncertainty is used to build the broader argument.	The intent of the word "risk" in Table 5.2-5 is in regards to the consequences and probability of an adverse effect occurring. Serious risk indicates that there is a high probability of an adverse consequence. Likelihood refers to the likelihood of the residual economic effects occurring based on the criteria definitions in Section 5.2.2.7. The likelihood determinations are based on Aurora LNG's understanding of current and anticipated economic conditions, and anticipated residual effects in consideration of mitigation measures. The prediction confidence section (Section 5.2.8) recognizes that there may be uncertainties in the residual effects characterization because of uncertainties in future economic conditions.
2662.1	round 1	Gitga'at First Nation	5.2.2.8	Economic Conditions	It is important that ambiguous terms are clearly defined to ensure everyone has a common understanding of what is being referred to, and so the use of terms like "serious risk", "unlikely", and "likely" in Table 5.2-5 (s.5.2.2.8 (p5.2-12)) should be defined. Please define what is meant by "serious", "unlikely", and "likely". It may help to refer to quantitative thresholds such as that used by the IPCC when discussion climate change (see Intergovernmental Panel on Climate Change (2010). Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change. 4pp + Annexes. http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf).	A qualitative approach is used to describe the likelihood of residual Project effects on community health based on professional judgement and experience of the assessor. A definitive or quantitative approach to defining these terms (i.e., 0-15% chance of occurrence) is not practical. In general, the term 'unlikely' in this instance means that adverse effects between the Project and community health are not predicted to occur. The term 'likely' in this instance means adverse effects between the Project and community health are probable as it may be difficult to avoid or mitigate residual effects. The term 'highly likely' in this instance means adverse effects will occur as residual effects cannot be practically avoided or mitigated.
2663.1	round 1	Gitga'at First Nation	5.2.2.8 and 5.2.5.3	Economic Conditions	The concept of reversibility does not make sense for effects on some primary resource users. In s.5.2.5.3 (p5.2-83), the proponent concludes that impacts on commercial trappers will be reversible upon Project closure. This qualification of the impacts of the Project seems meaningless given that traplines are typically held by individuals, and the duration of the Project – several decades from construction through decommissioning – could effectively eliminate trapping for many trappers' active years. Please justify the qualification of impacts on trappers as reversible and if appropriate revise your definition and/or your use of the concept of reversibility for this VC.	Reversibility is defined in regards to the entire Project life-cycle. In other words, at the end of the Project's economic life, it will be decommissioned and the area restored to a natural condition. The duration of effects are characterized in the "Duration" criteria.
2664.1	round 1	Gitga'at First Nation	5.2.3.2	Economic Conditions	On p. 5.2-15, a population decline of -87.3% in Hartley Bay is listed, however, this is based on incorrect information. Aurora LNG should not knowingly conduct assessments in an EA with incorrect information. Aurora LNG must consult Gitga'at in estimating an accurate number and revise the effects assessment accordingly. This comment applies to all areas in the Application where the census data is referenced.	Statistics Canada reported the population of Kulkayu 4 (Hartley Bay) as 157 in 2006 but in 2011 reported the population as 20. This decrease seems unlikely and is identified as 'likely incorrect' in Table 6.3-5 (and should have been noted). The change in population does not affect the effects assessment or the conclusions of the assessment. Rather, changes in population would be characterized as being greater in magnitude (i.e., a greater percent change) assuming a population of 20. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2665.1	round 1	Gitga'at First Nation	5.2.3.2 and 5.2.5.3	Economic Conditions	Baselines are the 'no-project' scenario from which project direct, as well as cumulative effects of other projects and activities, get measured. As such, it's very important to have a good sense of VC conditions. However, the baselines developed in the Project's EA application frequently provide insufficient context from which to characterize effects and determine their significance. For example, in s.5.2.3.2, very little understanding is demonstrated for the decline in commercial fishing in the area. On p5.2-48, the value of the shrimp fishery is noted to have declined over the last decade, "primarily due to a decline in the catch volume". No doubt, economic value of the catch will decline when catch volume declines, as value is a product of catch volume and price. So according to the proponent, price didn't have much to do with a drop in value, but why then has catch volume declined? Might it be the increase in marine shipping and industrialization in the area that the proponent has noted to have occurred, or other things? The baseline information provided for commercial fishing, as well as other dimensions of the Economic Conditions VC, requires greater depth of analysis to provide the adequate context to know if further adverse effects on commercial fishing by the Project will lead to significant impacts or not. This lack of context bears out in the effects assessment on commercial fishing (s.5.2.5.3 (p5.2-84)) where the proponent concludes that the Project will cause only "low" impacts that will be "reversible" upon Project closure – sometimes all it takes is a straw to break the camel's back, and sometimes the camel's back may already be broken. Please revise the baseline to demonstrate a deeper understanding of the factors affecting the decline in commercial fishing in the area, and revise effects assessment and significance determinations accordingly.	A comprehensive examination of all factors underpinning past and current economic conditions within the LAA is beyond the scope of the assessment. Rather, the Application seeks to describe baseline economic conditions and then predict potential effects based on anticipated interactions of the Project. However, a comparison of historical shipping data with salmon catch shows no correlation between shipping volume and salmon catch success (see the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO).
2666.1	round 1	Gitga'at First Nation	5.2.4	Economic Conditions	It was good to read in s.12 of the application that impacts on traditional harvesters depend not just on real impacts to the environment (such as measurable pollution) but also perceived impacts on the environment (such as perceived changes in environmental quality), but then in Table 5.2-32 (s.5.2.4 (p5.2-54)) the proponent did not identify LNG production as a source of real and/or perceived environmental impact on change in resource-based primary and subsistence economies. Please explain why neither real nor perceived impacts of LNG production on subsistence harvesters was examined in s.5.2 of the application.	Table 5.2-32 broadly identifies whether various Project activities interact with the economic effects considered in Section 5.2. LNG production per se was not identified as an interaction, though the effects related to the employment of individuals in LNG production was identified. Perceived effects are addressed in Section 12 – Aboriginal Consultation.
2667.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	As with employment benefit numbers presented in s.1.4 of the application, the proponent does not explain in s.5.2.5.1 (p5.2-56) how it estimated the proportions of employment that will flow to locals, residents of BC, residents of elsewhere in Canada, and foreigners. No rationale or explanation is provided explaining how such estimates were generated, and this is important because the geographic distribution of employment on the Project plays a key role in understanding Project Benefits as well as adverse effects on multiple VCs (e.g., Economic Effects VC, Services and Infrastructure VC, etc.). Please explain the method used and any assumptions adopted to estimate how many jobs in each phase will flow to locals, non-locals, including in-migrants and FIFO workers.	Aurora LNG's predicted break-down of operating labour by BC residents (estimated at 64% of operating labour), other Canadian residents (16%), and imported labour (20%), is based on consideration of the skills needed to operate an LNG plant, overall understanding of the labour market, and anticipated potential to "train-up" workers for operational positions. Operating and maintaining an LNG plant requires highly trained and experienced personnel. Aurora LNG anticipates that a substantial proportion of its operating workforce will consists of BC residents, whose skills will be developed through technical training programs and hands-on experience at overseas LNG plants. Nevertheless, because of the limited LNG operating expertise available in Canada, Aurora LNG anticipates that a proportion of its workforce will be hired from outside Canada. This proportion should decline over time, as more "homegrown" LNG expertise is developed.
2668.1	round 1	Gitga'at First Nation	5.2.5.1	Economic Conditions	The proponent seems to assume that if other major projects planned to mitigate adverse effects in certain ways and the Aurora LNG project implements the same mitigation measures that mitigation will be effective. For example, the CEA assumed that other LNG proponents in the region implement similar mitigations as proposed by Aurora LNG and that all of these actions will be effective: "Noted in their applications for an environmental assessment certificate, proponents of the Pacific NorthWest LNG Project and the LNG Canada Export Terminal propose similar mitigation measures to address adverse residual effects related to employment as those proposed in Table 5.2-34 Based on these considerations, mitigation measures proposed by Aurora LNG and other project proponents are therefore predicted to manage to an acceptable level cumulative adverse effects on labour supply and demand within the RAA (p5.2-91)." Similar statements are made in the mitigation sections of other VCs, yet neither of the two other LNG projects mentioned have yet to be implemented, and thus there presumably is no data from these other projects' mitigation programs to support the notion that the planned mitigation measures will be effective. Please provide further evidence to indicate why decision-makers and stakeholders should have confidence that mitigation measures used by other projects and planned for Aurora LNG will be effective.	The statement "acceptable level" is based on the assumption that other project proponents, as well as Aurora LNG will, in good faith and based on regulatory requirements and certificate conditions, implement proposed mitigation measures and work with local communities to address adverse socio-economic effects. The commenter is correct in pointing out that no LNG projects have been constructed along the North Coast in BC, so the actual effectiveness of mitigation measures has yet to be determined. Aurora LNG predicts that there is a low likelihood of the cumulative effects scenario occurring (i.e. multiple LNG projects being built concurrently – see Section 5.2.8 – Prediction Confidence). However, if the cumulative effects scenario does occur then the cumulative effect on labour and economy during construction is predicted to be of high magnitude.
2669.1	round 1	Gitga'at First Nation	5.2.5.3	Economic Conditions	In s.5.2.5.3 (p5.2-85) the proponent predicts that the Project will not affect seaweed and shellfish harvesting because the area affected "represents a small proportion of such areas available within the region". This logic is faulty because natural resources are unequally distributed across space, and ease of physical but also political access (i.e., traditional governance structures) to natural resources is also not uniform across space.	The quoted excerpt in the comment is about one aspect of the factors considered to determine that shoreline harvesting sites will not incur significant adverse effects from Project-related shipping traffic (see Section 6.5.4.2 of the Application). Shipping traffic will not disrupt fish and fish habitat or shoreline harvesters because wake waves from LNG carriers or support vessels will be well within the size range of naturally occurring waves (the mean monthly average of naturally occurring waves is 0.14 to 1.8 m in height). Wakes waves at the source-vessel (e.g., LNG carrier or escort tug) are predicted to be up to 0.4 m in height when travelling at 12 knots. Wake waves attenuate as they travel outward, reducing in size until they reach a shoreline. By the time the wake waves reach potential shorelines harvesters (providing an LNG carrier travels past a site during a low tide period when active harvesters are present), the waves will be even smaller (than the predicted 0.4 m height at the source vessel) and well within the size range of naturally-occurring waves (Oceanic Consulting Corporation 2014). In consideration of the relatively small size of wake waves compared to those naturally occurring in the region, seaweed and shellfish harvesters are not expected to be displaced by Project-related vessel traffic regardless of how harvesting sites are distributed within the area.

2670.1	round 1	Gitga'at First Nation	5.2.6.5	Economic Conditions	The CEA of Project effects on resource-based primary and subsistence harvesting concluded that the CEs of the Project and other project's large vessel shipping would have low to moderate adverse effects throughout the RAA continuously for medium- to long-term duration, that would (eventually) be reversible (Table 5.2-43, p5.2-97). This conclusion is based upon the prediction that if all projects considered in the CEA go ahead there will be a fourfold increase in large vessel shipping (s.6.5.6) and the conclusion – based upon a comparison of historical shipping and salmon catch that was supposedly presented in s.6.5.6.4 of the application, and a 2007 study that found the economic contribution of ocean transport increased while that of the seafood industry remained the same over the 2002 to 2005 period (s.5.2.6.5 (p5.2-95)) – that shipping traffic has little effect on commercial fish harvesting. The proponent suggests a variety of other factors may affect fishing. Please clarify where the comparison of shipping and salmon catches is provided in the application as nothing on the topic was found in our review of s.6.5.6.4. Please indicate why Gitga'at, decision-makers, and other stakeholders should put faith in the conclusion that a fourfold increase in large vessel shipping would have only a moderate impact (defined as a "measureable change but unlikely to pose a serious risk to the VC or to represent a management challenge" (Table 5.2-5 on p5.2-12)) on commercial fishing given that the sole empirical data that the CEA on this VsC appears to rest upon is a comparison of shipping with salmon catch that is not seemingly actually provided in the application and a 2007 study that only provided a very coarse examination of trends in shipping and seafood industry economic activity over a very short time period.	Aurora LNG is developing an errata document that will correct the erroneous reference to Section 6.5.6.4. The errata document will be filed with the BC EAO. The assessment of Marine Use and Navigable Waters suggests that shipping traffic at the Port of Prince Rupert may increase up to four-fold if all past, present, and reasonably foreseeable projects are built. However, because most fisheries do not overlap with the main shipping route or use gear or practices that preclude interactions with shipping traffic, residual effects on marine fisheries, and subsequently resource-based primary and subsistence economies, will be minimized. In consideration of the existing economic and marine conditions in Prince Rupert, the potential Project effects, and the extensive mitigation measures proposed by Aurora LNG (e.g., Tables 5.2-40 and 6.5-14), the potential cumulative effects on marine use and navigable waters and economic conditions were each predicted to be not significant. The Prince Rupert Port Authority (PRPA), Marine Communication and Traffic Services (MCTS)—a branch of the Canadian Coast Guard, Transport Canada (TC), and Royal Canadian Mounted Police (RCMP) will help manage shipping traffic using proven protocols and safety systems to minimize the potential effects on commercial, recreational, and Aboriginal (CRA) fishers and other mariners. As a comparison, the Port of Prince Rupert is predicted to operate at approximately 80% of the large, commercial shipping traffic volume that is currently experienced at Port Metro Vancouver. The information on shipping traffic and salmon catch is provided in the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO. Consequently, Aurora LNG is confident in the assessment and conclusion that, with the proposed mitigation, the potential Project effects on marine fisheries and on resource-based primary and subsistence economies will not be significant.
2671.1	round 1	Gitga'at First Nation	5.2.7.1	Economic Conditions	In s.5.2.7.1 (p5.2-98) the proponent concludes that the Project may cause some residual effects that are "distinguishable from current conditions and trends" but that these effects will be managed by planned mitigation and therefore are not significant. It is confusing to follow the logic that led the proponent to this conclusion. In effect, the proponent's logic is the following, based upon how they structured their analysis: (1) the effect is significant if it can be measured and mitigation doesn't address it, i.e., if there are measurable residual effects ('significance threshold' – see s.5.2.2.8 (p5.2-11)); (2) there are ways the Project might affect the VC ('project mechanisms' – see s.5.2.4 (p5.2-43)); (3) there are residual effects, and some residual effects are moderately to highly likely because mitigation might not totally work ('summary of residual effects' – s.5.2.5.4 (p5.2-87)); (4) but the residual effects are not significant because mitigation will work ('significance of effects' – s.5.2.7.1 (p5.2-98)). The same 'logic' is followed for the CEA on this VC. Please explain how you conclude both that there will be residual effects (i.e., mitigation won't be totally effective, and thus by your significance threshold's definition there are significant effects) yet your significance determination concludes that mitigation will totally address adverse effects. In other words, please reconcile the statement on p5.2-98 that there will be adverse residual effects but that these are predicted to be not significant.	Absent any well established quantitative thresholds for determining a significant economic effect (or most other socio-economic effects) the determination of significance is based on a assessment of whether there is a material and adverse change in the condition of the valued component,with incorporation of mitigation and management measures. "Distinguishable" in the context of the economic significance threshold definition, means distinct from current conditions or trends. In other words, the condition can be reasonably attributed to the Aurora LNG project rather than due to other economic factors, such as seasonal variations or structural changes affecting the economy (including such factors as in-migration, out-migration, closure and opening of other businesses and projects). The significance definition allows us to first characterize effects post mitigation, and based on this characterization determine if the significance threshold has been passed. If it is evident that there will be material un-mitigated residual adverse economic effects attributable to the Project then it may be considered significant. However, this conclusion will need to be made with appropriate consideration of the local economic context. For example, businesses may be both positively affected (through increased commercial activity) and adversely affected (through higher labour costs) by the presence of the Project. The application does not state that mitigation measures will "totally" address adverse effects, as indicated by the commenter. Rather, it is stated in Section 5.2.7.1 that adverse effects are expected to be managed by identified Project mitigation measures, as well as identified government programs, policies, and plans. Applicable government government programs, policies, and plans are identified in Section 5.2.2.1, and through the combination of these plans as well as Project specific mitigation measures, residual adverse effects on economic conditions will be not significant.
2672.1	round 1	Gitga'at First Nation	6.2.2.8	Visual Quality	Gitga'at has concerns regarding the threshold for significance. 1) Why use the Partial Retention VQC as the threshold as opposed to Retention or Modification VQCs? No justification is provided. 2) Why is the presence of VQ planning objectives among local authorities a criterion for significance? Would this not imply that the visual quality VC could have just been scoped out of the EA altogether if no planning objectives were present? Furthermore, it assumes that if no planning objectives were present, then visual quality is of no concern to any other groups who had input into the plans, which is almost certainly not the case. It also assumes that there are no groups external to the local planning process that are concerned about visual quality, which is not true given the Gitga'at's interests in the area. As such, we request that this criterion be omitted from the assessment.	The significance threshold used in the assessment of effects on visual quality incorporates a number of elements. These are: - The post-development EVC exceeds Partial Retention. - The average existing EVC was either Preservation, Retention or Partial Retention - The viewpoints from which the change is viewed are of moderate to high importance - Visual quality is documented as an important planning objective for government authorities in the LAA. These thresholds incorporate both quantitative and qualitative elements. The first two elements relate to existing visual condition (EVC) in the post-development and baseline conditions. EVC is a measure of the degree of visual disturbance that is present. This element indicates that if the project is causing the EVC to exceed partial retention (i.e. over 7% disturbance) in an area for which disturbance is less than 7% then this could result in a significant effect. A higher threshold for potential significant effect was not used because then even with substantial project-induced change to visual quality the effect would not be significant. The third element relates to importance. While there is a degree of subjectivity in quantifying "importance", the criteria considered include the number, type, and intensity of receptors that may be affected, including residences, scenic highways, tourist locations, and recreational areas. The fourth element, planning context, recognizes that the assessment of visual quality should not be based on measurable criteria only, but should incorporate the extent to which government agencies (local, regional, provincial) seek to protect visual quality as a policy objective. This element allows for the possibility that significance determination can be made even in situations where change in visual quality based on measured elements (e.g. EVC) does not warrant it. Conversely, if protection of visual quality in an area is not considered an important policy objective by relevant government and regulatory authorities then this is also relevant when making a significance determination.
2673.1	round 1	Gitga'at First Nation	6.2.5	Visual Quality	The justifications to exclude the shipping route from the assessment are not convincing. First, while the Project's LNG vessels will not add a "new visual element" to the viewscape, they are expected to triple the current shipping traffic through the PRPA, which is significant (if it is not considered significant, it should be explained why that is the case). Second, the Pacific Northwest LNG EA concluded that the effects of the project were not significant on the basis that there were no planning objectives specific to visual quality in any local development plans. As indicated in the previous comment, Gitga'at does not agree that this is an appropriate criteria to evaluate significance. Additionally, the Pacific Northwest LNG EA indicated that along with the terminal, the LNG vessels created a residual effect that triggered a cumulative effects assessment. No comparable CEA would be possible if shipping is scoped out of the assessment. Given the large increase in shipping traffic the Project will bring, a cumulative effects assessment including shipping is warranted. Gitga'at continues to request that an assessment of shipping on visual quality be included.	As discussed in Section 6.2.2.4 of the Application, the effects from shipping were not carried forward in the visual quality assessment because Project shipping will not result in a new visual element within the LAA (because the Prince Rupert Port is already regularly visited by large marine traffic), and based on the EAC Application results for the PNW LNG project (which is proposing to use similar sized ships, shipping frequency, and shipping route as for Aurora LNG) it was concluded that Project shipping will not introduce new visual elements or be visibly prominent from most viewpoints along the proposed shipping route.
2674.1	round 1	Gitga'at First Nation	6.2.3\6.2.5	Visual Quality	There seems to be a disconnect with respect to the assessment methodology and the determination of significance. The assessment goes to great lengths to describe the current and post-development EVC for each VSU affected by the project, but the final determination of significance is based only on the average change in EVC over the entire LAA. It is clear from table 6.2-14 that each of the three VSUs located on Digby Island will undergo significant changes to EVC, yet that is not considered at all in the significance determination. Given that the bulk of the analysis in the assessment is specific to the VSUs, the potential changes to EVC in those VSUs should be included as a criteria in the determination of significance.	The assessment considers the change to visual quality within the LAA, not change specifically from the assessed viewpoints. The four viewpoints that were analysed show potential effects from a number of different locations, including several locations located close to the facility. These viewpoints could be expected to be affected more than those located further away within the LAA. The assessment weighted the potential effects on the assessed viewpoints, but also considered the likely change to visual quality within the LAA overall. This balance is evident in Table 6.2-14 of the Application, which presents change in EVC both to individual visual sensitivity units, as well as to the overall view from each viewpoint.
2675.1	round 1	Gitga'at First Nation	6.2.5.2	Visual Quality	Table 6.2-14 indicates that the % Alteration for the Project Condition for the overall view of VP01 is 1.9%, but the EVC is listed as Retention, when it should be Partial Retention. The same goes for VLI 292 for VP02. Additionally, the Existing Condition EVC for VLI 280 should be Partial Retention.	In Section 6.2.5.2, Table 6.2-14, Page 6.2-39, the EVC of the Overall View for VP01 in the Project Condition should be changed to "Partial Retention" from "Retention." In the same table the EVC for VP02, VLI 292 should be changed to "Partial Retention" to "Retention." As well, the EVC for VPO2, VLI 280 should be changed to "Partial Retention" from "Retention." An errata document is being created that will capture this correction and it will be filed with the BC EAO.
2676.1	round 1	Gitga'at First Nation	6.2.3.2	Visual Quality	No information is presented on night time viewers of the landscape and/or night sky in order to establish context on any assessment of lighting effects. Are there any beaches or camp sites where the views of the night sky could be affected? Additional information is needed to assess the lighting effects.	It is acknowledged in Section 6.2.10 of the Application that the Project will contribute to skyglow in the Prince Rupert area. Depending on atmospheric conditions, the sky glow created by a combination of Prince Rupert, nearby industrial facilities, as well as the Project may be discernable from a considerable distance. However, the magnitude of sky glow generated from the Prince Rupert area at receptor locations located more than a few km away is likely limited by the relatively small size of the lit urban and industrial areas. Through the use of shielded and directional lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow will be minimized. Other lighting effects (glare and light spill) are more relevant to receptor locations within a direct line of sight to Project lighting. As discussed in Section 6.2.5.2 of the Application, the only residential receptors within a direct line of site of the Project are in Prince Rupert. There is a possibility that the Project will be visible from one campground - the Prince Rupert R.V. Campground, though topographical and/or vegetation screening are expected to limit the line of view towards the Project from this location. If the Project is visible from this location, it is anticipated that the change in visual quality will be similar to that for VP03 (Prince Rupert Residences), in that the Project will result in a small incremental change in a view already heavily modified by industrial development along the Prince Rupert waterfront.
2677.1	round 1	Gitga'at First Nation	6.2.3.2	Visual Quality	The selection of viewpoints did not include any considerations for use as light receptors. Of the four viewpoints selected, only VP03 was suitable as a light receptor, as it was the only one that people would actually visit at night. Additional receptors for the light assessment could have been identified that were appropriate for use in an assessment of lighting effects and were safe to access at night. We request that at least one additional view point as a light receptor be considered.	Other viewpoints were considered in the assessment of lighting effects, including potential receptor locations in Port Edward. However, because Port Edward does not have a direct view towards the Project, lighting effects were not assessed. Similarly, most streets in Prince Rupert run SW to NE, with most homes and commercial buildings oriented SE to NW (i.e. either looking back towards Mount Hays or looking across the harbour towards the Tsimshian Peninsula). Because the Project is located SE of Prince Rupert, and because of topographical shielding, it will not be visible to the majority of Prince Rupert residences. For this reason, VP03 was selected for assessing lighting effects, because it is the closest residential area within a direct line of site of the Project, and thus has the highest potential to experience adverse effects.
2678.1	round 1	Gitga'at First Nation	6.2.5.1	Visual Quality	The justification for the qualitative assessment of ambient light is based on the distance of VP03 from the Project, but no mention is made of the effect of sky glow, which could very well be apparent at that distance, especially under more rural conditions. A discussion of sky glow in the context of nighttime use of the surrounding landscape should be included in the justification of a qualitative assessment.	It is acknowledged in Section 6.2.10 of the Application that the Project will contribute to skyglow in the Prince Rupert area. Depending on atmospheric conditions, the sky glow created by a combination of Prince Rupert, nearby industrial facilities, as well as the Project may be discernable from a considerable distance. However, the magnitude of sky glow generated from the Prince Rupert area at receptor locations located more than a few km away is likely limited by the relatively small size of the lit urban and industrial areas. Through the use of shielded and directional lighting fixtures (mitigations 4.7.9 and 6.2.1) the Project's contributions to sky glow will be minimized. Other lighting effects (glare and light spill) are more relevant to receptor locations within a direct line of sight to Project lighting. As discussed in Section 6.2.5.2 of the Application, the only residential receptors within a direct line of site of the Project are in Prince Rupert. There is a possibility that the Project will be visible from one campground - the Prince Rupert R.V. Campground, though topographical and/or vegetation screening are expected to limit the line of view towards the Project from this location. If the Project is visible from this location, it is anticipated that the change in visual quality will be similar to that for VP03 (Prince Rupert Residences), in that the Project will result in a small incremental change in a view already heavily modified by industrial development along the Prince Rupert waterfront.
2679.1	round 1	Gitga'at First Nation	6.2.7.1	Visual Quality	It is not described anywhere how the average post-development EVC of the LAA was calculated, nor how that relates to Table 6.2-14, despite both items being critical to the assessment. Please include an explicit methodology regarding the calculation of average post-development EVC over the LAA.	The average post development EVC change resulting from the Project considered the change in views from assessed viewpoints, as well as potential visibility of the Project based on the viewshed analysis. The viewshed analysis shows that the Project will not be visible from most areas within the LAA (see Figure 6.2-5), and thus will not contribute to a change in visual quality for most of the LAA. Those areas where the Project is visible is represented by the four assessed viewpoints. Of the four viewpoints assessed, only VP02 (Mt. Hays) is expected to have an overall change in EVC that exceeds partial retention, and is attributable to the Project. For these reasons, it is concluded that the average post development EVC change in the LAA resulting from the Project will not exceed 7% (i.e. partial retention).
2680.1	round 1	Gitga'at First Nation	6.3.2.5	Infrastructure and Services	The boundary of the LAA is too restrictive in that the proponent doesn't seem to recognize the tight linkages between communities in the region. The quality of life in Hartley Bay, for example, is tightly linked to the services and infrastructure provided in the Prince Rupert area by way of for example: (1) health care, i.e., Gitga'at people travel to Prince Rupert and rely upon health care services there; and (2) housing, as many Gitga'at people live in Prince Rupert and are affected by costs of housing, and when Gitga'at people move back to Hartley Bay challenges arise in Hartley Bay given the insufficient volume of housing and the state of repair of many houses in the community. It is therefore not enough to include communities like Hartley Bay in the RAA; such communities should be in the LAA so that the EA fully covers the direct effects of the Project. Please revise the assessment to recognize the spatial extent of direct effects of major projects in the Prince Rupert area. It is also not simply enough to conduct assessments on an aggregated population.	Aurora LNG's understanding of Gitga'at First Nation's comment requesting the inclusion of Hartley Bay in the LAA to be: That member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectOut-migration of members from Prince Rupert to Hartley Bay due to changes in the affordability and/or availability of housing in Prince Rupert could increase demand for housing in Hartley Bay (of which limited capacity exists to absorb increased demand).Socio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following economic and social VCs: Sections 5.2 Economic Conditions, 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2) and 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 5.2, 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions, infrastructure and services, and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.

2681.1	round 1	Gitga'at First Nation	6.3.2.7	Infrastructure and Services	On p6.3-11 (s.6.3.2.7) the proponent provides definitions of low, medium, and high likelihood. Each definition relies on the terms 'unlikely', 'likely', and 'highly likely' in the likelihood definitions, but what do these terms mean to the proponent? It is good practice to define expressions of probability in quantitative terms, such as the IPCC does in its climate change science communications (see Intergovernmental Panel on Climate Change (2010). Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change. 4pp + Annexes. http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf), so that it is clear to all how the terms are being used and to ensure consistency among users of the terms. Please define what is meant by the terms unlikely, likely, and highly likely.	A qualitative approach is used to describe the likelihood of residual Project effects on infrastructure and services based on professional judgement and experience of the assessor. A definitive or quantitative approach to defining these terms (i.e., 0-15% chance of occurrence) is not practical. In general, the term 'unlikely' in this instance means that adverse effects between the Project and infrastructure and services are not predicted to occur. The term 'likely' in this instance means adverse effects between the Project and infrastructure and services are probable as it may be difficult to avoid or mitigate residual effects. The term 'highly likely' in this instance means adverse effects will occur as residual effects cannot be practically avoided or mitigated.
2682.1	round 1	Gitga'at First Nation	6.3.2.8	Infrastructure and Services	The significance threshold for this VC is defined as following: "A significant adverse residual effect on infrastructure and services would be an exceedance of available capacity, or a substantial decrease in the quality of a service provided, on a persistent and ongoing basis, which cannot be mitigated with current or anticipated programs, policies, or other mitigation measures (s.6.3.2.8 (p6.3-11))." This threshold is useful in that it provides a means by which Project impacts might be measured against: the notion that there are limits to the capacity of services and infrastructure, and that a minimum level of quality is necessary. However, the proponent doesn't define what a "substantial decrease" in quality means, nor how one might observe or infer that available capacity has been exceeded. These ambiguities weaken the proponent's, and everyone else's, ability to judge whether quality and capacity are acceptable or not. Please define the term 'substantial decrease' and explain how this is measured.	"Substantial" refers to a high magnitude measurable change from baseline conditions while available capacity is determined through baseline measures of service demand vs. planned and/or established operating thresholds or targets (see Section 6.3.3.2). Where thresholds or targets are not set by guidelines, management standards or regulations, a qualitative threshold was developed to present the limits of an acceptable change based on professional judgement and experience of the assessor. A definitive or quantitative approach to defining the term 'substantial decrease' (i.e., 0-15% decrease) is not practical for determining significance for infrastructure and services.
2683.1	round 1	Gitga'at First Nation	6.3.2.8	Infrastructure and Services	Furthermore, there is a logical error in the threshold: there could be a substantial decrease in quality of services and infrastructure but still be adequate quality (or the decrease could bring quality below what is acceptable, or the starting point for the decrease might already be below what is acceptable). The threshold must specify and communicate the minimum quality level that needs to be upheld. Along these lines, the proponent notes that acceptable change is guided by applicable legislation, regulatory guidance, other management standards, scientific literature, and/or professional judgment, but makes no reference to what Gitga'at and other stakeholders in the affected area think or feel. Please revise the threshold to specify the minimum quality necessary, and please incorporate stakeholder perspective on these minimum acceptable conditions. Please then revise your analysis accordingly.	"Substantial" refers to a high magnitude measurable change from baseline conditions while available capacity is determined through baseline measures of service demand vs. planned and/or established operating thresholds or targets (see Section 6.3.3.2). Where thresholds or targets are not set by guidelines, management standards or regulations, a qualitative threshold was developed to present the limits of an acceptable change based on professional judgement and experience of the assessor. A definitive or quantitative approach to defining the term 'substantial decrease' (i.e., 0-15% decrease) is not practical for determining significance for infrastructure and services. Regarding stakeholder perspectives, the influence of consultation (Section 6.3.2.2 of the Application) and traditional knowledge and traditional use incorporation (Section 6.3.2.3 of the Application) has been considered in the assessment and taken into consideration when determining the significance of predicted residual effects.
2684.1	round 1	Gitga'at First Nation	6.3.3.2	Infrastructure and Services	Gitga'at acknowledges the note/* on the "population segment" of Hartley Bay in 2011 is "likely incorrect"; however, Aurora LNG should not knowingly conduct assessments in an EA with incorrect information. Aurora LNG must consult Gitga'at in estimating an accurate number and revise the effects assessment accordingly.	As identified in Table 6.3-5, Statistics Canada reported the population of Kulkayu 4 (Hartley Bay) as 157 in 2006 but in 2011 reported the population as 20. This decrease seems unlikely and is identified as 'likely incorrect'. The change in population does not affect the effects assessment or conclusions of the assessment; rather, the changes in population would be characterized as being greater in magnitude (i.e., a greater percent change) assuming a population of 20.
2685.1	round 1	Gitga'at First Nation	6.3.3.2	Infrastructure and Services	It is clear with omissions throughout the Application that Aurora LNG does not have a good understanding on Gitga'at specific socio-economic conditions. For example, on p 6.3-63, the ferry running twice a week from Prince Rupert to Hartley Bay is not mentioned. The Application must be revised, which is important given that the route is through the area where air emission effects are predicted.	Aurora LNG acknowledges that the ferry running twice a week from Prince Rupert to Hartley Bay is not mentioned in Section 6.3.3.2. However, as Project workers will be transported from the Prince Rupert area to Digby Island via a Project-dedicated ferry, increased demand on the Prince Rupert to Hartley Bay ferry service is not expected. See Section 6.5 (Marine Use and Navigable Waters) for the assessment of change in marine navigation which applies to operation of this ferry service.See Section 4.2 (Air Quality) for a detailed discussion on predicted Project Air emissions.
2686.1	round 1	Gitga'at First Nation	6.3.5.1	Infrastructure and Services	In s.6.3.5.1 (p6.3-52), the proponent explains that their method is conservative for several reasons including that "[m]mitigation measures based on best practices and generally accepted forecasting address worst-case scenarios and are considered more than adequate for reducing an effect to acceptable levels." It is unclear if this is meant to communicate that there will not be any residual effects; we note that the proponent concludes (see Table 6.3-27 on p6.3-83) that there will be residual effects from the Project on the Services and Infrastructure VC. Please clarify the meaning of the quoted statement, and place the statement in the context of the broader method being used to assess residual effects.	A conservative approach (plausible worst-case scenario) was used to reduce the potential for underestimating the significance of an effect and err on the side of overstating an effect. The statement noted above, indicates that mitigation measures, using the conservative approach, are suitable for addressing worst-case scenarios and are more than adequate for reducing adverse effects. This statement is not meant to conclude that there are not residual effects.
2687.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	In s.6.3.5.2 (p6.3-53; also elsewhere in the application), the proponent notes that they will build a camp for construction workers, and that this camp will be "closed-access, meaning that Project employees will be encouraged to remain onsite… Failure to adhere to the camp policies will result in worker termination." The wording of the two sentences raises the question about what exactly will be the policy towards staying in camp. Please clarify the policy that construction workers will be subject to with respect to leaving the work camp.	A closed-camp policy will be implemented that will expect employees to remain onsite. However, Aurora LNG cannot force workers to remain onsite. Those that do choose to leave the site will be in breach of the policy and face employment disciplinary actions potentially including termination. Additional details on camp-related accommodation policies will be provided in the Worker Lodging Plan (mitigation 6.3.10).
2688.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	In Table 6.3-21 (p6.3-55), the proponent proposes a number of mitigation measures to address Project effects on services and infrastructure. The proponent writes that they expect the first mitigation – development of a social management plan – to be highly successful because of a new provincial government directive for LNG proponents to develop such plans and then monitor and report on results. The plan is not provided in the application but is promised following Project approval. Given that development of such plans to manage impacts of LNG development is a new measure with little testing in BC, and given that we are not able to see this plan at the present time, please indicate why Gitga'at, decision-makers and other stakeholders should have confidence in this mitigation measure.	Noted in Section 14.12 of the Application, the Social Management Plan (SMP) will follow guidance provided by the Ministry of Community Sport and Cultural Development (MCSCD 2014) and will be informed through SMP-specific engagement with various regulators, Aboriginal Groups, and other stakeholders. The description of the SMP provided in Section 14.12 provides a commitment from Aurora LNG and a framework from which further development of the SMP will occur. This level of detail is consistent with that of other applications and the AIR.
2689.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	The second mitigation measure proposed in Table 6.3-21 (p6.3-55) is for alcohol and drug testing (this same mitigation measure is also presented in Table 6.3-26 (p6.3-79)). The proponent concludes that the measure will be highly successful because of the commonality of such policies in the oil and gas sector, and that the measure has low risk and uncertainty "because of well-established corporate policies". This measure, like the first and eighth in the table, highlights two broader problems with many mitigation plans proposed by the proponent which are (1) lack of distinction between implementation success and effectiveness at addressing adverse effects, and (2) a lack of, or insufficient, evidence that the measure will be effective. Please provide evidence as to whether such policies actually work, despite their commonality.	The alcohol and drug policy (mitigation 6.3.2) has a high likelihood of establishing a common and thorough understanding of Aurora LNG's standards related to drugs and alcohol at the workplace and will reduce the potential personal risks and risks posed to nearby communities (see 'mitigation mechanism' under mitigation 6.3.2). Aurora LNG recognizes that the success of mitigating potential drug and alcohol-related effects on local residents will depend on the level of engagement and standards communicated to the workforce when they are not working. To reduce potential effects on nearby communities from workers while off-shift, Aurora LNG will require all staff and contractors to undertake a worker orientation (mitigation 6.3.3) that will include communication of expected behaviour when transiting to/from local communities (a worker code of conduct) and cross-cultural awareness to help build awareness and respect of local concerns and customs to reinforce the importance of respectful conduct when in communities (the expected success of this mitigation is moderate).
2690.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	Mitigation 6.3.5 (construction camp) - does this include the cruise ship camp that is also proposed? It is not clear in the Application if the effects of this camp (both socio-economic and environmental) have been assessed. If so, please provide where they are assessed. If not, please revise the Application to include the assessment.	Please see the "Floating Camp Review" technical memo which will be filed with the BC EAO.
2691.1	round 1	Gitga'at First Nation	Table 6.3-22	Infrastructure and Services	Mitigation 6.3.11 "engage with local communities and Aboriginal Groups to address community concerns associated with the Project", lists for expected success "this is a standard mitigation that has a moderate to high likelihood of success" - please provide effectiveness evidence to support this claim.	Regarding mitigation 6.3.11, this is a standard mitigation used in the oil and gas sector and as such has a moderate to high likelihood of success. Communication and engagement is known to be valuable in managing the relationships between Aurora LNG, Aboriginal Groups, communities, and stakeholders. This mitigation measure has a moderate degree of risk and uncertainty which relate to the willingness of residents and stakeholders to participate in the proposed engagement activities.
2692.1	round 1	Gitga'at First Nation	Table 6.3-26	Infrastructure and Services	Mitigation 6.3.16 "heliport for medivac transfers will be constructed. In the event of injury requiring evacuation of workers via air ambulance, Aurora LNG will coordinate with local and provincial health providers for evacuation to appropriate medical facilities" - will Aurora LNG have their own "air ambulance"? Also, what impacts to the accessibility of the heliport at the local and provincial health providers is expected?	As outlined in Section 1.2.5 of the Application, a heliport is proposed to enable emergency evacuation of injured personnel to appropriate medical facilities. It is not anticipated that Aurora LNG will own their own air ambulance. To limit the potential that Project-related patient transfers could affect services to resident populations, as noted in Mitigation 6.3.16, "...Aurora LNG will coordinate with local and provincial health providers for evacuation to appropriate medical facilities". This coordination would include all involved parties, not limited to Northern Health, Patient Transfer Network (PTN), and BC Ambulance Services (BCAS). In addition, the Health and Medical Services Plan (mitigation 6.3.13) will outline patient transfer and escalation procedures (as recommended by Northern Health in its best management guide).
2693.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	The 7th measure proposed in in Table 6.3-21 (p6.3-55) exhibits another problem with some mitigation measures, that of contradictions that seem to arise due to the proponent's discussions of both 'expected success' (i.e., which seems to mean the level of expected success in the face of uncertainty) and 'risk and uncertainty' for each mitigation measure. The measure entails informing local governments about Project-induced population change. The proponent concludes that as an established strategy "[t]here is a high degree of likelihood that the mitigation will be effective" yet "[t]here is moderate risk and uncertainty" that it won't work due to reliance on the local authority to do something with the information that the proponent provides. Please reconcile the statements on expected success and risk and uncertainty for measure 6.3.7 so that we have a clearer idea if, and why, the measure will be effective, and what the uncertainties and associated risks are if the measure fails.	The high degree of likelihood was determined as this measure is expected to be effective at mitigating adverse effects. However, there is uncertainty associated with this mitigation as it is up to the local authority to make the necessary changes or improvements which are not within the control of Aurora LNG. In addition to this mitigation measure, it is expected that the social management plan (Mitigation 6.3.1)will include an adaptive management framework. Aurora LNG's framework for adaptive management is as follows: management plans, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). This could help address unanticipated effects on community infrastructure and services.
2694.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	As with employment numbers presented in ss. 1 and 5.2 of the application, it is unclear how the proponent estimated the proportion and number of workers would in-migrate or work on a FIFO basis in s.6.3.5.2 (p6.3-60). Please explain the method used and any assumptions adopted to estimate how many jobs in each phase will flow to locals, non-locals, including in-migrants and FIFO workers.	Aurora LNG's predicted break-down of FIFO labour is based on consideration of the skills needed to construct, operate and maintain the LNG plant, overall understanding of the labour market, and anticipated potential to "train-up" workers for operational positions. Construction of various Project components as well as operation and maintenance of the LNG plant will require a highly trained and experienced workforce. Aurora LNG anticipates that a substantial proportion of its operating workforce will consists of BC residents, whose skills will be developed through technical training programs and hands-on experience at other construction sites and overseas LNG plants. Nevertheless, because of the limited LNG construction, operation and maintenance expertise available in Canada, Aurora LNG anticipates that a proportion of its workforce will be hired from outside Canada. This proportion should decline over time, as more "homegrown" LNG expertise is developed.
2695.1	round 1	Gitga'at First Nation	6.3.5.2	Infrastructure and Services	In s.6.3.5.2 (p6.3-63) the proponent points out that in-migrating workers and their families (i.e., who move to the Prince Rupert area) will contribute to the local tax base. This is a good point and helps address a gap in the benefits section of the application pertaining to the lack of information provided there on the net economic benefits of the project. As pointed out on p6.3-63, incremental burdens on services and infrastructure will be offset to some extent by incremental tax revenue. But the larger question arises as to what exactly are the estimated net effects on services and infrastructure. Please revise your assessment to provide a financial accounting of net effects on different levels of government by comparing tax revenues associated with the Project and tax burdens associated with the Project.	The level of detail provided in the Application is sufficient for an Environmental Assessment, which is considered a planning document. As such, a cost-benefit analysis comparing Project-residual effects on community, transportation, and health care infrastructure and services against estimated government revenues is not required or a requirement of the Application Information Requirements. However, with respect to the City of Prince Rupert, as noted and referenced throughout Section 6.3.3.2, cost estimates have been derived by the City regarding capital expenditures required to sustain current operations as well as capital expenditures required to support the LNG industry in northwestern BC (see the report City of Prince Rupert Preparing for Growth - KPMG Report). Reference KPMG .2015. City of Prince Rupert Preparing for Growth –KPMG Report. Available at: http://www.princerupert.ca/sites/default/files/Planning/MajorProjects/City%20of%20Prince%20Rupert%20-%20Preparing%20for%20Growth%20-%20KPMG%20-%20Jan%2022%2C%202015.pdf. Accessed: January 2016.
2696.1	round 1	Gitga'at First Nation	6.3.5.3	Infrastructure and Services	In the section on 'project mechanisms' in s.6.3.5.3 (p6.3-64) the proponent notes several ways in which the Project might affect accommodations, but this discussion omits one important pathway of effect: that during construction, despite the construction of a work camp to house construction workers, there may be pressure from Project staff or contractors on available accommodation in Prince Rupert. My understanding is that Kitimat experienced housing shortages and rent escalation in recent years despite the use of work camps (including a cruise ship to house workers). This pathway is explored in subsequent pages but it seems important to make clear in the 'project mechanisms' section that Project construction will put pressure on accommodation infrastructure. Please justify the omission of pressure on accommodations during construction or revise material accordingly to reflect the scope of the effects assessment.	The "Project mechanisms" acknowledges that Project-related demographic changes have the potential to affect the demand for accommodations throughout the life of the Project, including during construction. Adverse effects on accommodations during construction is not noted in the Project mechanisms; however, it is not omitted from the assessment of residual effects. Project mechanisms provide a general overview of key potential effects.
2697.1	round 1	Gitga'at First Nation	6.3.5.3	Infrastructure and Services	In s.6.3.5.3 (p6.3-67) the proponent notes that despite construction of a camp to house construction and (later) operations FIFO workers there will be pressure on accommodation infrastructure in the LAA communities (most notably Prince Rupert). This conclusion makes sense. However, it seems odd that the proponent only refers to hotels, motels, and possible future 'open lodge' worker accommodations as places where Project workers as well as indirect and induced employees will live prior to the construction of the Digby Island worker camp and new housing in Prince Rupert. Why are rental homes, rental suites, rental apartments, etc. excluded and assumed to not be used during the Project's early years? In the albeit limited discussion of rental housing stock in s.6.3.3.2 (p6.3-38) the proponent noted that rental prices have been rising since 2008 and rental vacancy was only 3.8% in 2015, suggestive of a tight rental housing market translating very possibly to many vulnerable households. Please explain why rental accommodations are omitted from consideration in the effects assessment.	During construction, an estimated 95% of the peak workforce is anticipated to be comprised of fly-in/fly-out (FIFO) workers, 3% current residents of the LAA/RAA and 2% in-migrating workers (100 workers). To clarify, short-term, early Project demand for housing from FIFO site-preparation workers will likely be accommodated by a floating camp, local hotels and motels or 'open lodge' worker accommodations because the amount of housing required will vary and the length of time that the accommodations will be required will be short term (i.e., limited to the duration of shifts). Once the construction camp is set up, FIFO site preparation workers will be lodged at the on-site camp. In the longer term, in-migrating workers (this considers workers [direct, indirect and induced] in-migrating during construction and operations) will increase demand for renter-occupied and owner-occupied accommodations. To reduce adverse Project effects on accommodations, Aurora LNG will implement a Worker Lodging Plan (see Section 14 Summary of Proposed Environmental and Operational Management Plans). The details of the Worker Lodging Plan will be developed prior to commencement of the Project phase to which it applies, consistent with any requirements outlined in EAC conditions.
2698.1	round 1	Gitga'at First Nation	6.3.5.3	Infrastructure and Services	The assessment on accommodation infrastructure seems divorced from what I would think is the most important housing issue in the study area – housing challenges experienced by vulnerable people. To its credit, the baseline material on housing explored core housing need, seniors housing issues, and other related topics, and thus recognized that there are vulnerable households in the area, and the proponent noted the connections between low income, costs of housing, and health in s.6.6.3.2 (pp 6.6-22 and 6.6-26). Yet the effects assessment of the Services and Infrastructure VC completely omits any discussion of how the Project may affect vulnerable households. Please explain the omission of discussion in this VC of potential Project effects on vulnerable households, and please estimate how the Project will affect housing for such households.	Section 13.5.4.5 of the Application acknowledges that vulnerable groups in Prince Rupert, such as low income households, will be affected by the increase in cost of living more severely than those that can participate in the economic benefits of the Project through high paying job opportunities. This section also notes that there will be indirect economic changes that cannot be managed directly through the proposed Project mitigation, especially during the construction phase. Aurora LNG will engage with local communities and Aboriginal Groups to address community concerns associated with the Project (mitigation 6.3-15). Aurora LNG will also develop and implement a community grievance process for addressing issues related to the Project (mitigation 6.4-8).
2699.1	round 1	Gitga'at First Nation	6.3.5.4	Infrastructure and Services	In s.6.3.5.4 (p6.3-76) the proponent predicts that, "with mitigation, the Project will result in low to high magnitude", continuous, reversible residual effects on transportation infrastructure in a low to moderate resiliency context. On the next page (p6.3-77) the proponent then says that adverse effects "can largely be avoided, and there is a low likelihood of residual adverse effects". This is very confusing because the two statements seem to contradict one another. Please clarify your conclusion of the Project's effects on transportation infrastructure.	The likelihood describes the probability of an adverse residual effect (in this case predicted to be low to high in magnitude) occurring on infrastructure and services and is determined based on an understanding of the potential effect and the mitigation available to reduce or avoid the predicted effect. A low likelihood was selected because, based on Project design (i.e., demand on transportation infrastructure and services), the expected success of proposed mitigation measures, the information obtained during consultation and engagement with service providers, and professional judgment of the assessor, adverse effects can be largely avoided or mitigated and it is therefore unlikely for residual effects (low to high in magnitude) to occur.
2700.1	round 1	Gitga'at First Nation	6.3.5.5	Infrastructure and Services	Mitigation measure 6.3.13 in presented in Table 6.3-26 (p6.3-79) indicates that the proponent will develop a Health and Medical Services Plan to reduce pressure of Project-related population growth on local health care. The proponent notes that they expect the success of the measure to be high, with low risk and uncertainty. However, as with other management plans that the proponent says in the application that it will create, we have no way of evaluating the plans nor knowing without seeing what is in them how effective they might be. Just as will other mitigation measures it is incumbent upon the proponent to demonstrate that they have a mitigation plan that can reasonably be expected to work. Please provide all management plans prior to requesting an EA application so that decision-makers and stakeholders can evaluate the plans.	The Health and Medical Services Plan (HMSP) will be developed with reference to Northern Health's "Health and Medical Services Plan Best Management Guide for Industrial Camps" (March 2015). The HMSP will complement the Social Management Plan (mitigation 6.3.1) by outlining health and medical policies, services and protocols to be implemented at the worker accommodation camp. The HMSP is an internal shared document between Aurora LNG and Northern Health. Development of the Social Management Plan, which includes consideration of health care infrastructure and services (the subject matter mitigated through the HMSP), will be informed through engagement with appropriate regulators, Schedule B Aboriginal Groups and other interested stakeholders.

2701.1	round 1	Gitga'at First Nation	6.3.5.6 and 6.3.6.3	Infrastructure and Services	In Table 6.3-27 (s6.3.5.6 (p6.3-83)) the proponent presents a summary of predicted residual adverse effects on services and infrastructure. The effects predicted include those of high magnitude, some are continuous and of long duration, some are within low resilience contexts, and some are given a high likelihood of occurring. Yet, in the CEA section for this VC (s.6.3.6.3 (p6.3-89)) the proponent notes that because other major project developers propose similar mitigation measures as that proposed for Aurora LNG, cumulative adverse effects are expected to be "managed to an acceptable level". This statement in the CEA section would seem to contradict the conclusions presented in Table 6.3-27. On p6.3-90 the proponent then seems to make a contradiction again by writing that the CEs of all development including the Project "are expected to be high in magnitude, extend throughout the RAA, will occur continuously over the long-term and occur within a socio-economic context that has low to moderate resiliency to change." The back-and-forth nature of the material occurs elsewhere in the application and makes the material challenging to understand because it is hard to reconcile the seemingly contradictory statements. This does everyone a disservice. Please explain why the effects of multiple major projects will be 'managed to an acceptable level' when it is stated that other projects will use mitigation measures similar or even identical to Aurora LNG and at the same time it is concluded that the Aurora LNG project will cause numerous adverse residual effects (i.e., despite planned mitigation).	The statement "acceptable level" is based on the assumption that other proponents, as well as Aurora LNG will, in good faith and based on regulatory requirements and certificate conditions, implement mitigation measures and work with local communities to address adverse socio-economic effects. The comment correctly notes that no LNG projects have been constructed along the North Coast in BC, so the actual effectiveness of proposed mitigation measures has yet to be determined. Aurora LNG predicts that there is a low likelihood of the cumulative effects scenario occurring (i.e. multiple LNG projects being built concurrently – see Section 5.2.8 – Prediction Confidence). However, if the scenario does occur, then the cumulative effect on labour and economy during construction is predicted to be of high magnitude.
2702.1	round 1	Gitga'at First Nation	6.3.6.4	Infrastructure and Services	The discussion in the second paragraph on p6.3-91 (in s.6.3.6.4) explains that the proponent predicts that CEs on housing of all of the major project development in the area "is not expected to affect the availability of housing over the long term" and that "[o]ver time, housing markets are expected to adjust in increased demand and correction of the housing market will mitigate potential adverse effects", but then in the last two paragraphs on the same page the proponent concludes that impacts on housing will occur over the long-term. Please clarify what the conclusion is with respect to the timeframe of impacts on housing.	Cumulative demand for accommodations will temporarily exceed available supply until the housing market can adjust to changes in market pressure. Over the longer term, the housing market is expected to return to a supply/demand balance; however, net effects (i.e., increased demand from baseline conditions) related to population change (i.e., increased population) will persist.
2703.1	round 1	Gitga'at First Nation	6.3.6.4	Infrastructure and Services	As noted on p10 of the CEA Agency's most recent guidance on characterization of residual adverse effects, reversibility is about recovery of effects "within a reasonable timescale" (CEA Agency, 2015. *Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012* . 11pp.). The timeframe of the CEs of the Project and other major projects on housing is on the order of one or more decades, a duration of which can have lasting and potentially permanent impacts on persons subject to housing challenges, and yet the proponent says explicitly (e.g., last two paragraphs of p6.3-91) and implicitly elsewhere that the impacts on housing are reversible. Please justify the conclusion that impacts on housing are reversible and whether this is a reasonable qualification in light of the nature of impacts of housing challenges on vulnerable households.	See table 6.3-4 for the definition of reversibility used in the assessment of infrastructure and services. The definition of reversibility from the referenced guide, updated July 2016, is as follows: "A reversible environmental effects is one where the VC is expected to recover from the environmental effects caused by the Project. This would correspond to a return to baseline conditions or other target (e.g., a population management objective, remediation target), through mitigation or natural recovery within a reasonable timescale. Reversibility is influenced by the resilience of the VC to imposed stresses and the degree of existing stress on that VC". With reference to the cited guidance from the CEA Agency, residual effects on accommodations are anticipated to be reversible (to anticipated management objectives [in this case understood to be reflective of historical trends]) following decommissioning (as the Project will have effects on accommodations during decommissioning). This characterization is made in recognition that effects will commence with construction and perpetuate, albeit of differing magnitude and for differing accommodations, until the completion of the last phase of the Project (decommissioning). While this characterization is (as noted in the comment) decades in duration, as characterized in Section 6.3.5.4, the housing market in the LAA and RAA is considered responsive to market pressures and over the long term will adjust for increased demand. It is therefore not likely that high-demand, limited supply housing conditions would perpetuate within the LAA and RAA for decades without an adjustment in supply. In other words, it is unlikely that effects would not reverse (in this case return to a level that is consistent with management objectives) within a reasonable timescale.
2704.1	round 1	Gitga'at First Nation	6.3.7.1	Infrastructure and Services	The proponent concludes that the Project itself won't cause a significant effect on health care given that the additional pressure that it (especially the in-migrating population associated with the Project) will not be persistent (s.6.3.7.1 (p6.3-97)), despite health care in the LAA already failing to meet demands of the existing population (s.6.3.3.2 (p6.3-18+)). Yet, the proponent concludes that with other major project development occurring, effects on health care (and housing) will be significant because it will be "ongoing", i.e., persistent (p6.3-97). Given that there will not realistically be a future to which the only change from present is that the Project proceeds, i.e., other development will also occur thus other pressures on top of the Project on services and infrastructure will also occur, the Project will necessarily contribute to causing significant effects on the VC. Please explain how one can find a conclusion of non-significance for Project effects on the services and infrastructure yet find a conclusion of significance for CEs on the VC when the Project would only occur alongside these other sources of CEs, i.e., when the only future that is realistic is one in which both the Project and other major projects contribute to CEs on this VC. The Project's contribution relative to other projects' contributions to CEs is a separate issue.	The assessment for Project effects and cumulative effects as included in the Application, follow the requirements of both the British Columbia Environmental Assessment Act (BCEAA) and the Canadian Environmental Assessment Act 2012 (CEAA 2012). The Project effects were assessed utilizing baseline data, which incorporates known existing effects associated with other, already established projects within the LAA, and where applicable, RAA. The assessment of Project residual effects aligns with the aforementioned guidance to determine the extent to which the Project could potentially affect health care infrastructure and services. This distinction is important (from that of cumulative effects) as it informs the development of Project-specific mitigation measures. That is, it would be unreasonable to expect any one proponent to mitigate all adverse effects on health care infrastructure and services. To this end, taking into consideration the Project's peak construction and operations workforce, the composition of these workforces comprised of fly-in/fly-out workers (95% during construction and 20% during operations), Project design (i.e., a closed-access camp) and proposed mitigation (e.g., an on-site medical facility), it is reasonable to conclude that Project-specific adverse effects on health care infrastructure and services are predicted to be moderate to high and short-term to long-term (depending on Project phase; see Table 6.3-27) but will not be significant (see Section 6.3.2.8 for the significance threshold for infrastructure and services and Section 6.3.7.1 for the determination of significance of Project residual effects). With reference to the reviewer's statement that "the only future that is realistic is one in which both the Project and other major projects contribute to CEs on this VC". If the reviewer is of the position that there are likely multiple projects that will be established within the RAA in the long term, then the Significance of Residual Cumulative Effects presented in Section 6.3.7.2 remains relevant. As stated in Section 6.3.7.2 and within the reviewer's comment, the difference of significance determination between Project residual effects and residual cumulative effects was principally driven by the potential for multiple projects (cumulative) to increase demand by way of an increase in population (estimated to be a 40% increase over baseline projections) within the RAA. Increased demand associated with this population increase is estimated to result in significant adverse effects (see Section 6.3.2.8 for the significance threshold for infrastructure and services and Section 6.3.7.2 for the determination of significance of residual cumulative effects).
2705.1	round 1	Gitga'at First Nation	6.5.2.6	Marine Use and Navigable Waters	The definition of moderate magnitude effects in Table 6.5-5 (s.6.5.2.6 (p6.5-12)) uses the terms 'lower activity level' and 'moderate areas of navigable waters'. The definitions of low and high magnitude effects also rely on ambiguous qualifiers that are open to interpretation. Please explain what these terms mean so that Gitga'at, decision-makers and other stakeholders are able to evaluate conclusions reached in the effects assessment. It might help to specify quantitative categories using units such as km2, or proportions of the LAA or RAA.	Residual effects are described using multiple characterizations (e.g., magnitude, geographical extent, frequency, etc.) with either quantitative (e.g., an area, distance, or count) or qualitative (e.g., low, medium, high) measures for each characterization. Wherever possible and reasonable, quantitative measures are preferred to promote understanding of the potential effects. However, where quantitative federal or provincial standards/thresholds, or industry guidelines are lacking, qualitative descriptions must be used to describe potential effects. The characterizations, descriptions, and definitions used for Marine Use and Navigable Waters are provided in Table 6.5-5. The intent of Table 6.5-5 is to provide a conceptual overview of the characterizations and how they are used to inform and illustrate the effects assessment. Additional context and supporting detail is provided in the accompanying text discussions.
2706.1	round 1	Gitga'at First Nation	6.5.2.8	Marine Use and Navigable Waters	The significance threshold for this VC is defined as "one where the Project-activities are not compatible with established marine use plans or policies, or where the Project will create a change or disruption that widely restricts or degrades present marine uses to a point where the activities cannot continue at current levels and for which this change cannot be mitigated (s.6.5.2.8 (p6.5-14)). This threshold is arbitrary in that it is not clear how it is connected to Gitga'at values. While marine use plans and policies may embody Gitga'at values, it is presumptuous to assume that current levels of use are acceptable to Gitga'at. Significance is fundamentally about Gitga'at values, and so significance thresholds must be connected in some way to Gitga'at values, whether known or judged. Elsewhere in the application the proponent seems to recognize that the baseline for primary resource-based activities may be compromised – p1-51 (s.1.3.2) with regards to steady growth in industrial and other use of the region, and p6.6-41 (s.6.6.3.2) with regards to industrial development and traditional harvesting – but the significance threshold and significance determinations don't reflect this important context. Please justify the presumption made in the threshold that current levels of marine use and activities are acceptable to Gitga'at, and as necessary please revise the threshold and subsequent effects assessment and significance determination accordingly.	A determination of significant residual Project effects for Marine Use and Navigable Waters is one where the proposed Project activities are not compatible with established marine use plans or policies, or where the Project will create a change or disruption that widely restricts or degrades present marine uses to a point where the activities cannot continue at current levels and for which this change cannot be mitigated (see Section 6.5.2.8). Key elements of this threshold are explained further:"Not compatible" indicates that the Project completely eliminates the option to practice a marine activity."change or disruption that widely restricts or degrades present marine use" indicates that the potential Project effect has a large geographical extent or severely reduces the ability to practice a marine activity relative to the existing conditions."Cannot continue at current levels and for which this cannot be mitigated" indicates that the current marine practices cannot continue even with mitigation. The assessment used extensive data, including: literature, government reports, other Environmental Assessment Applications from similar projects in the region, and Traditional Use and Knowledge studies. Issues specific to Aboriginal Groups were assessed in Part C of the Application. Data were obtained from Fisheries and Oceans Canada (DFO), the Pacific Pilotage Authority (PPA), the British Columbia Marine Conservation Analysis (BCMCA) online database (see Section 6.5.3 for more information on the information sources, and the "Effects of Lost Fishing Time" technical memo for further assessment of marine fisheries). The assessment made conservative assumptions to improve prediction confidence. A discussion of the assumptions made and prediction confidence are provided in Sections 6.5.5.1 and 6.5.8, respectively. Overall, Aurora LNG is confident in their understanding of the baseline conditions, the assumptions made, and the conclusion of no significant adverse effects on Marine Use and Navigable Waters.
2707.1	round 1	Gitga'at First Nation	6.5.3	Marine Use and Navigable Waters	The baseline information provided in s.6.5.3 provides a description of activities and players and designations but provides no context from which to understand future impacts; no information is provided on the adequacy of current marine uses and navigation conditions to stakeholders nor the factors that have contributed to current conditions. For example, the baseline does not relay historical and recent factors contributing to a decline in commercial fishing nor sentiments (i.e., value statements that are critical to understanding the significance of these changes) towards this decline among seafood industry stakeholders. Similarly, the historical, political, and economic factors shaping Aboriginals' harvesting and other marine activities is not explored, and no information is provided on Aboriginals' contentedness with current harvesting levels and conditions. This context is critical to interpretation of the Project's effects, as well as to the interpretation of the effects of other major project development. It is not enough to know what activities occur; quality effects assessment requires a grounding in the acceptability of VC conditions and knowledge of why VC conditions are the way they are. This gap in the baseline has erroneously resulted in the proponent concluding that the context for Project effects on these VsCs is 'high resiliency', as seen in Table 6.5-16 (s.6.5.5.4 (p6.5-63)) where the summary of predicted residual effects of the Project are presented. The proponent posits that the context for Project effects is high resiliency "on account of the experience of the [Prince Rupert Port Authority] and involvement of other agencies such as [Transport Canada, Canadian Coast Guard, and the Pacific Pilotage Authority]", the long shipping history in the area, and the size of available fishing space in the area (p6.5-62). No consideration seems to be given to the possibility that political, regulatory, economic, oceanographic, or other factors might create a very vulnerable context for further impacts on marine use in the area, and that the context might accordingly be 'low resiliency'. Please provide additional baseline material exploring the acceptability of current conditions for marine users, the broad array of factors that shape marine use conditions, and revise effects assessment accordingly.	The assessment used extensive data, including: literature, government reports, other Environmental Assessment Applications from similar projects in the region, and Traditional Use and Knowledge studies to understand the current marine use conditions in the Regional and Local Assessment Areas (RAA and LAA). Data were also obtained from Fisheries and Oceans Canada (DFO), the Pacific Pilotage Authority (PPA), the British Columbia Marine Conservation Analysis (BCMCA) online database (see Section 6.5.3 for more information on the information sources). This information was more than sufficient to carry out the assessment as outlined in the Application Information Requirements (AIR). For example, as outlined in the AIR (Section 6.5), potential effects on marine navigation were to be assessed using an understanding of the physical characteristics of the channel (Table 6-7). Consequently, measurements of the marine infrastructure and their effect on channel dimensions were discussed. Similarly, potential effects on marine fisheries were to be assessed using an understanding of fishing locations (and their overlap with the shipping route), gear used, and shipping traffic volume (Table 6-7). This information was provided in the assessment. While additional information on the historical, political, and economic factors contributing to Aboriginal and other seafood stakeholder 'contentedness' would provide added context for the assessment, it is not required to assess the parameters described in the AIR. Resilience refers to the ability to accommodate a disturbance without adverse effects (Table 6.5-16). Marine use and navigable waters was assessed as 'high resilience' because it has many traits that make it able to withstand change (e.g., additional shipping traffic or construction of new marine infrastructure) without manifestation of significant adverse residual effects. For example, the Port of Prince Rupert has been in use since 1914 and was established as a federal port with a governing body (e.g., the Prince Rupert Port Authority [PRPA]) since 1997 (Section 6.5.3.2). The PRPA has extensive traffic management and safety systems in place to promote safe navigation in the port. In addition to the approximately 20 years of experience the port has managing vessel traffic, they are supported by the Marine Traffic Communications Services (MCTS), Pacific Pilotage Authority (PPA), Transport Canada (TC), and the Royal Canadian Mounted Police (RCMP) who also have extensive experience and expertise. These government and non-government agencies will promote and enhance navigational safety in the Port of Prince Rupert. Given the long history of use (e.g., by commercial shipping traffic, commercial, recreational, and Aboriginal (CRA) fishers and other shipping traffic), established international and national safe-navigation protocols (e.g., the Collision Regulations and those implemented by the PRPA, and the use and continual improvement of navigational technology), and the mitigation measures proposed by Aurora LNG (see Table 6.5-14), the marine use and navigable waters VC was assigned a status of 'high resilience' with respect to potential Project effects.
2708.1	round 1	Gitga'at First Nation	6.5.2.7	Marine Use and Navigable Waters	On p6.5-14 (s.6.5.2.7) the proponent provides definitions of low, medium, and high likelihood. Each definition relies on the terms 'unlikely', 'likely', and 'highly likely' in the likelihood definitions, but what do these terms mean to the proponent? It is good practice to define expressions of probability in quantitative terms, such as the IPCC does in its climate change science communications (see Intergovernmental Panel on Climate Change (2010). Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change. 4pp + Annexes. http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf), so that it is clear to all how the terms are being used and to ensure consistency among users of the terms. Please define what is meant by the terms unlikely, likely, and highly likely.	For the assessment of marine use and navigable water there is no empirical basis for assigning quantitative probabilities. Therefore, a qualitative approach is used to describe the likelihood of residual Project effects on marine use and navigable waters based on professional judgement and experience of the assessor. In general, the term 'unlikely' in this instance means that adverse effects between the Project and marine use and navigable waters are not predicted to occur. The term 'likely' in this instance means adverse effects between the Project and marine use and navigable waters are probable as it may be difficult to avoid or mitigate residual effects. The term 'highly likely' in this instance means adverse effects will occur as residual effects cannot be practically avoided or mitigated.
2709.1	round 1	Gitga'at First Nation	6.5.5.2	Marine Use and Navigable Waters	Mitigation measure 4.11.2 presented in Table 6.5-13 (s.6.5.5.2 (p6.5-51)) is that Project vessels including LNG carriers will not exceed a speed of 16 knots. However, the proponent writes that "[t]his mitigation will *promote* safe operating speeds" (italics added), "[t]his mitigation is in*support* " of collision regulations (italics added), and that "this mitigation *can* be enforced" by the Prince Rupert Port Authority. The proponent expects a "[h]igh likelihood of success". The various language used suggests that Project vessel speeds will not necessarily be 16 knots or less, and thus calls into question how effective the mitigation measure will actually be. This issue of implementation success vs. effectiveness is one common to many mitigation measures presented in the application. Please clarify whether the port authority does enforce speeds and provide evidence pertaining to the success of such enforcement at controlling the speeds of vessels in the port authority's jurisdictional boundaries.	The Prince Rupert Port Authority (PRPA) will be responsible for enforcing vessel speed limits within the PRPA-boundaries (see Figure 6.5-4 to see the boundary). For additional information, see the "Port Information Guide" for the Port of Prince Rupert. Available at: http://www.rupertport.com/port-information-guide.pdf. Port pilots will also play an important role in maintaining safe passage of LNG vessels. For additional discussion on the effectiveness of the proposed mitigation measures, see the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
2710.1	round 1	Gitga'at First Nation	6.5.5.2	Marine Use and Navigable Waters	As with other VCs, mitigation of Project effects on this VC relies in part on management plans that are yet to be developed by the proponent. For example, a Marine Activities Plan will be developed to facilitate communication between the proponent and other marine users during construction (Table 6.5-14 in s.6.5.5.3 (p6.5-57)). The proponent writes that "[t]his mitigation will provide a strong marine safety and awareness platform for the region." While the proponent acknowledges "medium" risk and uncertainty due to the need to get input and participation in the plan by multiple stakeholders, the broader issue is that these management plans cannot be taken to be effective until we are able to see the plans and evaluate them. Please provide the Marine Activities Plan so that decision-makers and stakeholders can review and evaluate this mitigation measure's potential effectiveness.	As with other environmental management plans, the marine activities plan is not part of the EAC Application, but will be prepared prior to commencement of construction if the Aurora LNG project is certified. This way, the plan will benefit from the more detailed planning and design information, as well as from ongoing engagement with regulators, Aboriginal Groups, and stakeholders.
2711.1	round 1	Gitga'at First Nation	6.5.5.3	Marine Use and Navigable Waters	Other mitigation measures proposed in Table 6.5-14 (s.6.5.5.3 (p6.5-57) also lack evidence of the measures' effectiveness. For example, mitigation measure 6.5.5 proposes workshops with mariners to promote safe navigation, and apparently past workshops enjoyed good participation rates from local mariners, but the question begs: did the workshops translate into safer or otherwise improved use of marine space? Please provide evidence as to why the proposed mitigation measures in Table 6.5-14 will be effective.	Aurora LNG cannot provide evidence for mitigation effectiveness because they have yet to be implemented, and no current project has implemented the same set of measures similar to what is proposed in Table 6.5-14. As described in Section 6.5.3.3, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to describe how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG will engage with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders in the development of this plan. It's expected that the safe-shipping workshops, TERMPOL study, and participation on the Prince Rupert Port Authorities' Marine Construction and Coordination Committee could lead to recommendations regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention. Additional information on the nature of the Marine Activities Plan will be shared as the plan is developed.
2712.1	round 1	Gitga'at First Nation	6.5.6.2	Marine Use and Navigable Waters	On p6.5-66 (s.6.5.6.2), and again on p6.5-69, the proponent states that Project will contribute approximately 8% to the total large vessel traffic predicted for the region as a whole, but on p6.5-67 (s.6.5.6.3) the proponent states that the Project will contribute approximately 12.5% to the predicted increase in traffic going into Prince Rupert. Please reconcile these two numbers so it is clearer what the contribution of the Project will be on future large vessel traffic.	The difference in contribution (i.e., the percentages presented) is a result of dividing the Project total shipping volume by a different denominator--first for the regional traffic (which includes traffic going to Kitimat, for example), and second, only for traffic bound for Prince Rupert (see Section 6.5.6 for further explanation).
2713.1	round 1	Gitga'at First Nation	6.5.6.3	Marine Use and Navigable Waters	The proponent presents information on shipping traffic in the ports of Vancouver, Nanaimo, and Victoria on p6.5-67 (s.6.5.6.3). The proponent argues that despite higher shipping levels in Vancouver, the Port of Vancouver "still functions safely while offering sustainable [commercial, recreational, and Aboriginal] fishing and marine recreation and tourism opportunities." This assertion that all is well in Vancouver is not backed up by any evidence. Please provide evidence to support your assertion that the relatively high marine traffic volumes in the Port of Vancouver are acceptable to marine users there including harvesters and recreational users.	See the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.

2714.1	round 1	Gitga'at First Nation	6.5.9	Marine Use and Navigable Waters	On p6.5-73 (s.6.5.8) the proponent indicates that it is only moderately confident in its predictions of the Project's effects on marine fisheries and other marine uses, yet the proponent feels that no follow-up monitoring of the Project's effects on marine fisheries and other uses is necessary (s6.5.9 (p6.5-74)). The proponent does indicate that it will develop a Marine Activities Management Plan as part of its mitigation program, but from what is written in s.6.5.9 it would appear that no monitoring or remediation in the event that effects are more than predicted in the EA are planned as part of the Plan. It would seem responsible to monitor actual effects in any situation where there is not high confidence in EA predictions, and such monitoring would serve the precautionary orientation of EA. Prediction accuracy, lack of follow-up monitoring, and lack of translation of what is learned in monitoring of EA predictions is a widely-noted problem in EA (e.g., Bjorkland, R. (2013). Monitoring: The missing piece: A critique of NEPA monitoring. Environmental Impact Assessment Review 43: 129-134.; BC Auditor General (2011). An Audit of the Environmental Assessment Office's Oversight of Certified Projects. Victoria, BC, Office of the Auditor General of British Columbia. 25pp.; Briggs, S. and M. D. Hudson (2013). Determination of significance in Ecological Impact Assessment: Past change, current practice and future improvements. Environmental Impact Assessment Review 38(0): 16-25.}. Please justify further why no follow-up monitoring is proposed or needed.	As described in Section 6.5.3.3 of the Application, Aurora LNG will develop a Marine Activities Plan (Mitigation 6.5.2) to outline how the Project's marine activities will be managed to avoid or reduce effects on current marine users and other stakeholders. Aurora LNG proposes to develop this plan in consultation with regulatory agencies, Aboriginal Groups, marine users, and other interested stakeholders. In general, follow-up is indicated when there is a low level of confidence in the residual effects prediction and/or sufficiency of key mitigation measures; that is not the case with this VC. The Marine Activities Plan will incorporate and adaptive management framework. Aurora LNG's framework for adaptive management is as follows: the marine activities plan, where appropriate, will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plan will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the plan will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended). Similarly, the safe-shipping workshops, TERMPOL study, and participation on the Prince Rupert Port Authorities' Marine Construction and Coordination Committee could lead to recommendations for the Marine Activities Plan regarding such issues as ship design/operation, terminal design, navigational routes, risks and accident avoidance, and pollution prevention). Additional information on the nature of the Marine Activities Plan will be shared as the plan is developed.
2715.1	round 1	Gitga'at First Nation	6.5.4.2	Marine Use and Navigable Waters	The Application determined that wake waves generated by LNG carriers and escort tugs are not likely to cause adverse effects on Aboriginal and commercial marine harvest. This was determined based upon a report produced for LNG Canada that predicted that wake generated by LNG carriers and escort tugs travelling at 12 knots will be less than 0.4 m high (at the source vessel), which is within the size range of naturally occurring waves in the region. They provide an example that wave height in Douglas Channel experiences a maximum height was 3.4 m with an averaged 0.14 m. The Application then screens out vessel wake in the assessment because it is expected that mariners and shoreline harvesters will be accustomed to dealing with project-related wake waves.While the magnitude vessel wake waves maybe well within the range of normal wave conditions, the predicted wave conditions are not provided for Chatham Sound. More information is required.	Environment Canada and Fisheries and Oceans Canada monitor 17 buoys that record weather data. However, none of the buoys are located in Chatham Sound. Of these buoys, two were used in Section 6.5.4.2 to represent the potential range of wave heights experienced in the Project area. The South Hecate Strait buoy is located in relatively deep water (approximately 228 m) in an exposed area with high fetch, where Hecate Strait meets Queen Charlotte Sound. The mean monthly average wave height recorded at this buoy is 1.8 m, while the historical maximum is 13.7 m. The Nanakwa Shoal buoy, in Douglas Channel, is located in relatively shallow water (approximately 22 m) in a confined area with less potential for east-west fetch. Mean monthly average wave height at this buoy is 0.14 m and the historical maximum is 3.4 m. Specific wave height information for Chatham Sound is not available through the buoy monitoring system noted above. However, the weather buoy in South Hecate Strait is relatively more exposed than Chatham Sound, while the Douglas Channel buoy is in a much more confined location. The exposure and fetch of Chatham Sound are less than the area of the South Hecate Strait buoy, yet greater than the Douglas Channel buoy location. It is therefore reasonable to assume that average wave height experienced in Chatham Sound will fall somewhere between that seen at South Hecate Strait and that seen in Douglas Channel. The assessment in Section 6.5.4.2 states that a wave height range of 0.14 m and 1.8 m is assumed to be the average natural wave height typically observed in the Project area.
2716.1	round 1	Gitga'at First Nation	6.5.4.2	Marine Use and Navigable Waters	The assessment does not consider wave frequency or timing. Increased wave frequency could increase the likelihood of shoreline and intertidal erosion, thus impacting habitat for intertidal species (i.e., harvested invertebrates and algal species). Where the timing of waves and intertidal harvesting overlap, vessel wake can have a detrimental disturbance effect on harvesting practices as harvesters must accommodate for vessel wake. In addition, there has been no vessel wave study and wake wash impact assessment conducted in the Application. A more sophisticated analysis (magnitude, frequency, timing) is required to reduce uncertainties in the assessment, and provide a more rigorous framework for comparison with both the ambient storm wave climate and the wake associated with shipping traffic.Therefore, it is premature to conclude that there will be no adverse effects on shoreline/intertidal habitats and intertidal harvesting, much less to conclude that there is no pathway for effects to occur as was done in the Application. Further assessment is required.	Potential changes to marine fish habitat resulting from vessel wake generated by Project-related vessels are discussed under the 'change in habitat' effect (Section 4.9.5.2, Marine Fish and Fish Habitat). Based on the results of the assessment, wake effects resulting from vessels associated with the Project are not expected to adversely affect marine fish habitat. Therefore, wake effects were not considered further within the Marine Fish and Fish Habitat assessment. If it is conservatively assumed that intertidal harvesters working on shore are using both low tide periods in a day (this is unlikely, as the two low tides in a day are not often the same tidal height and, therefore, one is more suitable for harvesting than the other), and harvesting can be undertaken for two hours during each low tide (i.e., one hour on each side of each low), then approximately 17% (4/24 hours) of each day is available for intertidal harvesting. The potential for intertidal harvesters to interact with Project-related shipping effects is temporally restricted on a daily basis. For approximately 83% of each day, wake from Project-related shipping will not interact with intertidal harvesters Section 6.5.4.2 of the Application describes that the mean monthly average natural wave height in the area is assumed to be between 0.14 m and 1.8 m. The potential maximum wave height (immediately adjacent to the source vessel) of 0.4 m, produced by LNG carriers and escort vessels at 12 knots, is within the range of the mean monthly average wave height in the Project area. The modeled wake height of LNG carriers (and other vessel types) indicates that wake-related waves attenuate as they travel further from the source vessel (Oceanic Consulting Corporation 2014). This means that the actual wave height when it reaches the shoreline is lower than the wake height at the source vessel, and well within the natural wave height range currently experienced by shoreline harvesters. Additional large vessel traffic may alter the frequency of vessel generated wake but this is not expected to measurably change the wave activity in the area. Moreover, Project-related vessels will travel along the existing and established shipping route currently used by larger marine traffic (e.g., container ships, cargo ships, breakbulk ships, ferries) to enter and exit Prince Rupert harbour. The predicted wake-related wave height 300 m from the centreline of travel of a large, loaded LNG carrier traveling 12 knots (and that modeled for 14 knots) is similar to those predicted for ore carriers, cruise ships, and BC Ferries vessels (Oceanic Consulting Corporation 2014), all of which call at the Port of Prince Rupert. Project-related wake effects are not expected to differ from the variable wave heights and conditions already experienced by shoreline harvesters, relating to natural weather patterns and large vessel traffic. Reference: Oceanic Consulting Corporation. 2014. Kitimat Ship Wake Study. Prepared for: LNG Canada Development Inc.
2717.1	round 1	Gitga'at First Nation	6.5.5.3	Marine Use and Navigable Waters	The Application determined that increased vessel traffic is not likely to cause adverse project-related effects or cumulative effects on Aboriginal and commercial marine harvest activities. The Application assumed that a commercial or Aboriginal seine or gillnet fisher that has to retrieve gear due to a passing LNG carrier might lose up to 30 minutes of fishing time (and associated catch) if the gear is retrieved and no fish are retained. A worst-case, unmitigated, and unlikely scenario is that a fisher might lose a total of one hour of fishing time per day because of interacting with both LNG carrier transits. Overall, the Application predicted that is unlikely that fishers will have to stop fishing for any of the daily LNG carrier movements with the proper implementation of the proposed mitigation measures. As mentioned in other comments, more information (including evidence of effectiveness) is required for listed mitigations. Also, the assessment failed to acknowledge that specific fisheries (i.e., salmon) are only open during limited periods of time, measured in hours. Therefore, the loss of one hour of fishing effort can have a significant effect on harvest, sustenance, and economic gain. Mitigation measures should include scheduled vessel sailings outside of these time-sensitive fishery periods to not impact Aboriginal or commercial fisheries. This mitigation measure has been applied in other ports.Therefore, it is inappropriate to conclude that there will be no adverse effects on Aboriginal and commercial marine harvest until appropriate mitigation measures have been proposed to reduce the effect.	See the "Effects of Lost Fishing Time" technical memo which will be filed with the BC EAO.
2718.1	round 1	Gitga'at First Nation	6.5.5.3	Marine Use and Navigable Waters	The Application failed to adequately assess the interactions between vessel activity and Aboriginal harvest activities in two instances. First, the Application did not consider that Aboriginal fishing occurs throughout the LAA and RAA, even though it previously was stated in the sections that Aboriginal fishing occurs throughout the area and in the Gitga'at's Traditional Use and Occupancy Study. As such there is a spatial overlap between most fisheries. Second, the act of moving traps and long lines to accommodate vessel traffic is an interaction. Regardless if shipping traffic could safely pass over the buoy, the vessel traffic must be considered by the fisher. As such there is an interaction in the harvest of Pacific Herring, prawn, shrimp, and Dungeness Crab. Fishers may have to relocate to less productive locations due to navigating around vessel traffic.Therefore, it is premature to conclude that there will be no adverse effects on Aboriginal and commercial marine harvest until spatial overlap and fisheries types are adequately considered and assessed. Also, visual quality impacts were not assessed (see visual comments).	The Application conservatively assumes that Aboriginal harvesting areas occur, at a minimum, where commercial fishing does. The Application also understands that the same gear types and techniques are used interchangeably between commercial and Aboriginal harvesting. In these ways, the assessment was conservative in determining the geographical extent and nature of Aboriginal fisheries. However, issues specific to Aboriginal Groups are assessed in Part C of the Application. Aurora LNG maintains that as a result of the location of the fishing areas or gears or techniques used, and in consideration of the proposed mitigation measures, that Project-related shipping will not cause significant adverse effects to fisheries for Pacific herring, prawn, shrimp, and Dungeness crab. Nonetheless, Aurora LNG is open to receiving additional information regarding Aboriginal harvesting locations or techniques. Please see Section 6.2 for the effects assessment of Visual Quality.
2719.1	round 1	Gitga'at First Nation	6.5.2.1	Marine Use and Navigable Waters	The environmental and economic consequences of species invasions are well known in the US and Canada. However, the Application does not discuss any potential for the introduction of invasive species into the LAA and RAA. The Application does mention that the Canadian Shipping Act and the associated Ballast Water Control and Management Regulations (BWCMR) exist, but there was no formal assessment. The regulations require vessels to exchange ballast at least 50 nautical miles west of Haida Gwaii or Vancouver Island. These areas are quite far offshore so unless there is noncompliance with the regulations, this measure should reduce the likelihood of introduction of invasive species. However, the BWCMR only require a 95% exchange rate of ballast so that 100% elimination of the potential for the introduction of exotics is not required nor mentioned in the Application. In addition, the effectiveness of mid-ocean ballast exchange depends entirely on compliance and the method of ballast treatment. Pui Gwun Lo (2009) pointed out several caveats regarding the effectiveness of mid-ocean ballast exchange. Hull fouling is another means for invasive species to be introduced into the LAA and RAA. Hull fouling involves organisms such as barnacles or mussels attaching themselves to ship hulls and either encountering structures in a new port or releasing larvae into the water. Therefore, invasive species must be assessed in the Application.	Sections 6.5.2.1 and 6.5.6.4 of the Application identify the legislation and regulations pertaining to the control and management of ballast water. As per Mitigation Measure No. 4.5.7 (Section 4.5.15.3, Table 4.5-26, of the Water Quality assessment), vessels transiting to and from the Aurora LNG marine terminal will adhere to the Vessel Pollution and Dangerous Chemicals Regulations and the Ballast Water Control and Management Regulations under the Canada Shipping Act (2001). The Ballast Water Control and Management Regulations are aimed at avoiding the introduction of invasive species to local waters, and outline a number of mandatory ballast water management procedures related to ballast water management plans, ballast water exchange and treatment, reporting requirements, compliance and enforcement, and research. Project-related international shipping will be required to adhere to these regulations. The Prince Rupert Port Authority (PRPA) is a standing member of the Green Marine Program, which encourages international ship owners to implement anti-fouling measures to reduce the risk of aquatic invasive species introductions from hull-attached organisms. The PRPA also monitors the potential establishment of invasive species as part of the Plate Watch program. To date, no aquatic invasive species have been documented in the Prince Rupert harbour as part of this program. Because the above identified mandatory management procedures for preventing the introduction of aquatic invasive species are well established and effective, a separate assessment of invasive species is not warranted.
2720.1	round 1	Gitga'at First Nation	6.6.2.3	Community Health	Gitga'at's Traditional Use and Occupancy Study is not listed for "Sources of Project specific information provided by Aboriginal Groups".	Reference to Gitga'at's Traditional use and Occupancy Study should be listed under Section 6.6.2.3 of the Application. This document is referenced in Section Section 6.6.3.2 with respect to Gitga'at First Nation harvested foods. The following should be included in the bullet list of traditional knowledge/traditional use studies: Draft Preliminary Report: Gitga'at First Nation Traditional Use and Occupancy Study for the Aurora LNG Project, Prince Rupert Harbour Region (Inglis Consulting. 2016) The following reference should also be added to Section 6.6.11: Inglis Consulting. 2016. Draft Preliminary Report: Gitga'at First Nation Traditional Use and Occupancy Study for the Aurora LNG Project, Prince Rupert Harbour Region. Prepared for Gitga'at First Nation. Prepared for Aurora LNG Project. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2721.1	round 1	Gitga'at First Nation	6.6.2.5	Community Health	For "change in community health and wellness", Hartley Bay must be assessed and included within the LAA. There are unique impacts to Hartley Bay, e.g., accessibility in Prince Rupert, specifically over-crowding of moorage space for emergencies and unavailability and increasing costs of hotels to accommodate patients seeking medical care.	Aurora LNG's understanding of Gitga'at First Nation's comments requesting the inclusion of Hartley Bay in the LAA to be: That member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectSocio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following social VCs: 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in infrastructure and services and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.
2722.1	round 1	Gitga'at First Nation	6.6	Community Health	How many unionized jobs verses non-unionized jobs will there be? And what is the wage disparity between unionized jobs and non-unionzed? Many Tsimshian workers are not union members, so what will Aurora LNG do to ensure that Tsimshian workers have equal opportunities.	The level of detail requested by this comment is out of the scope of an Environmental Assessment. The potential roles required for the Project are listed in Section 1.4.4 (Employment) of the Application. Aurora LNG anticipates that a percentage of jobs will be filled by unionized workers. Aurora LNG is an equal opportunity employer and will consider all qualified applications appropriately.
2723.1	round 1	Gitga'at First Nation	6.6.3.2	Community Health	Composite Socio-Economic Index Rankings - It is important to consider that 60% of youth in care are Aboriginal despite that Aboriginal youth only make up 9% of the total child and youth population in British Columbia. Please assess this.	Aurora LNG understands that Aboriginal People are more vulnerable to changes in community health and wellness due to disparity in baseline conditions. As noted in the comment, BC Stats' composite socio-economic index provides just a few of many measures that validate this understanding, such as youth in care. Recognizing that vulnerable populations, such as Aboriginal People, are more likely to realize disproportionate effects, as noted in Section 6.6.5.2, qualified characterizations are provided to account for this difference (where appropriate).
2724.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Health Status - discussion should be separated based on Project phases because employment opportunities are greatly different among the phases, i.e., construction jobs vs. operation jobs vs. decommissioning jobs.	The Project residual effects on health status are predicted to be similar for each of the Project phases. However, the magnitude of the residual effects are predicted to differ for each phase of the Project. For example, residual adverse effects on income and social status, social support networks, social environments, and personal health practices and coping skills could lead to adverse effects on health status. These adverse effects may occur during any phase of the proposed Project. However, adverse effects on health status are predicted to be greater in magnitude during construction when there is predicted to be a rapid increase in the LAA's population As per Table 6.6-22, the magnitude is predicted to be moderate to high during construction, low to moderate during operation, and moderate to high during decommissioning and abandonment.
2725.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Health Status - negative effects on employed individuals can also occur, and employment can exacerbate impacts if substance abuse already exists and effective and adequate services are not in place. Please assess this.	As discussed in Section 6.6.5.3 of the Application, adverse health effects may occur, on employed individuals, through increased levels of stress and anxiety from employment-related stressors (e.g., deadlines, workloads, new responsibilities). This could contribute to drug and alcohol misuse and unhealthy lifestyle choices. Increased levels of individual and household income could also increase accessibility to drugs and alcohol and unhealthy lifestyle choices. To reduce the potential magnitude of adverse effects on health status an employee assistance program (mitigation 6.6.1) will be available to workers directly employed by the Project.

2726.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Health Status - further discussion on vulnerable populations is required, including single parents and elderly populations.	The assessment of change in community health and wellness recognizes that vulnerable populations could be disproportionately affected by adverse Project effects. For the purpose of this assessment, vulnerable populations include: children and youth, women, seniors, Aboriginal persons, individuals and households on fixed incomes, individuals and households classified as low-income earners (as by Statistics Canada Statistics Canada [2015]), marginally-housed individuals (includes individuals or households in core housing need as defined by CMHC [2014]; similar to at-risk homelessness as defined by the Canadian Observatory on Homelessness [2012]), and individuals classified as homeless (includes individuals whom are absolutely homeless [unsheltered], individuals staying in overnight shelters [emergency sheltered] and individuals whose accommodation is temporary or lacks security of tenure [provisionally accommodated] [Canadian Observatory on Homelessness 2012]).
2727.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Income Inequality - other social factors can increase inequality regardless of wages, e.g., availability of daycare and high cost of living, and these need to be assessed and considered in the EA. These need to be assessed in the Application.	Aurora LNG recognizes that numerous social factors could influence income inequality regardless of wages. Some of these social factors (e.g., age, sex, Aboriginal identity, living conditions) have been captured in the disaggregated consideration of effects on vulnerable populations (see Section 6.6.5.2 for a definition of vulnerable populations). However, Aurora LNG acknowledges that not all possible social factors affecting income inequality are assessed in the Application. To assess all possible variations of social factors affecting income inequality would be impractical. Aurora LNG is confident that a sufficiently conservative approach has been taken to the development of proposed mitigation measures (that mitigation measures are more than adequate to mitigate predicted Project effects) and as such any potential mis-characterization due to technical limitations (i.e., assessing all variations of all possible social factors influencing income inequality) would be accounted for through the mitigation. With respect to cost of living, this topic is discussed through case study analysis in Section 13.5.4 of the Application.
2728.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Social Environments - social demographic changes can lead to the marginalization of First Nation people and impact workplace performance and reduce opportunities to participate in relevant cultural activities like feasts and clan gatherings.	Noted in Section 12.5.9 of the Application, Aurora LNG understands the Gitga'at First Nation concerns related to the participation of Gitga'at First Nation members in Project-related employment opportunities, which may cause members to be less available to participate in cultural activities or culturally relevant employment. These potential effects are considered in the Community Health assessment (see Section 6.6 of the Application). Prince Rupert, where over two-thirds of Gitga'at First Nation members reside, is included in the Community Health LAA. Although Hartley Bay is not included in the Community Health LAA, the potential effect mechanisms assessed in the Community Health assessment would apply to any Hartley Bay residents who choose to pursue Project-related employment opportunities. It is acknowledged in the Community Health assessment that a change in population, employment, and income could affect social determinants of health. For example, depending on a person's pre-employment situation, Project employment could increase or decrease the amount of time a person has to spend with family and community members or engaged in community events. To reduce the potential magnitude of adverse Project effects on social support networks, an employee assistance program will be made available to workers directly employed by the Project (mitigation 6.6.1). Aurora LNG will also implement its Indigenous Peoples policy (see Section 12.5.9.6 (subsection 'Mitigation Measures') which recognizes the importance of cultural practices, and fostering opportunities for Indigenous Peoples and communities to participate in economic and social benefits of Aurora LNG's projects.
2729.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Personal Health Practices and Coping Skills - inadequate support systems can lead to poor work habits and job retention. Please assess this.	Aurora LNG employees will be provided with access to an employee assistance program (mitigation 6.6.1) to reduce the risk of poor work habits, job stressors, and job retention concerns. The program will promote holistic worker health from a physical, mental, cultural and social perspective. However, success of this mitigation measure depends on the extent to which Aurora LNG employees take advantage of the program. To reduce this risk and encourage Project employees to take advantage of the programs, awareness materials and messaging will be provided to the workforce as part of general communications.
2730.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Mitigation for Change in Community Health and Wellness - what about communities that will be impacted by an outward migration due to the Project?	Aurora LNG acknowledges that circumstances evaluated throughout Section 6 of the Application could result in the out-migration of particular sub-populations (e.g., pressures on vulnerable populations) from some areas; however, the effects of outward migration were not explicitly assessed.
2731.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.6.1 - Employee assistance programs are not always culturally relevant. These programs must be offered in-person (rather than over the phone) and must be culturally relevant. The Proponent should support Aboriginal communities own support systems and services. What about support for family members? Will Aurora LNG provide relevant discretionary cultural days? Also how will Aurora LNG ensure that this mitigation measure is "effective over the medium to long term"?	Aurora LNG employees will be provided with access to an employee assistance program (mitigation 6.6.1). At this point Aurora LNG cannot commit to the structure or delivery of the program as it will be administered through a third party with included programs and details established during contractual negotiations. As with most employee assistance programs, family members of employees will also have access to the program.
2732.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.6.2 - More support is needed for health prevention and promotion. On reserves this is through the First Nation Health Authority and the Federal Environmental Health Officer - how are these organizations being engaged/consulted by Aurora LNG?	The infection control policy (mitigation 6.6.2) will be included in the Health and Medical Service Plan (HMSP; mitigation 6.3.13) and will outline infectious disease control procedures not limited to prevention measures and outbreak response. The development of the policy will be informed through Northern Health's Infection Control Plan Best Management Guide for Industrial Camps. The HMSP describes on-site health and medical facilities, procedures to follow regarding medical escalations and detail health and wellness programs available to workers. The HMSP will be based on Northern Health's Health and Medical Services Best Management Plan Guide. Development of the HMSP will take into consideration information obtained during engagement with relevant stakeholders (e.g., the First Nation Health Authority), Working Group members (e.g., Northern Health) and Aboriginal Groups.
2733.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 4.4.2 - how is 10 p.m. considered "daytime hours"? Notices should be distributed through Canada Post so that families and individuals are aware to protect their children and pets. This comment is applicable to all VCs where this mitigation is listed.	The definition of daytime hours (7 am to 10 pm), utilized in the Aurora LNG Application, is based on the BC OGC noise guideline. This daytime definition is consistent with the daytime period definition by both Health Canada and the World Health Organization noise guidance. As per mitigation 4.4.1, high disturbance noise activities will be scheduled to occur during daytime hours. In response to concerns received, Aurora LNG will endeavor to schedule high disturbance activities to occur before 8 pm, where possible. Regular construction activities will be scheduled over a 24 hour period as required to complete specific tasks or meet schedules. Aurora LNG will be developing a Noise Management Plan that will include a description of requirements for notifying local residents of high disturbance noise activities, and outlining how noise complaints will be addressed. Aurora LNG will engage with appropriate regulatory agencies, the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended), and other key stakeholders regarding the development of this plan.
2734.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 4.4.9 - how will residents be notified?	A Noise Management Plan (mitigation 4.7.2) will be developed and implemented and will describe the procedures, to be implemented during normal operations of the LNG facility, to avoid causing excessive noise on human and wildlife receptors and to adhere to any noise conditions of the EAC and the LNG Facility Permit. The plan is expected to describe the requirements for notification of local residents regarding scheduled construction works, and a process outlining how noise complaints will be addressed.
2735.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 5.2.1 - more information and clarity is needed on this mitigation. From our experience with other major project developments, Proponents must have control or a mandate to instruct the successful general contractors on job and training opportunities, especially for unionized worksites. How will the contractor advertise jobs? There must be a commitment to support either an employment agency or have all jobs listed through existing employment sites like Hecate Strait. In addition, daily job availability must be faxed and emailed to each Band Office. The Proponent and general contractors must not only use their websites as Aboriginal workers will be excluded.	Aurora LNG acknowledges the mitigation recommendations, including the request for additional details regarding Mitigation 5.2.1, suggested by Gitga'at First Nation. Aurora LNG will continue to engage with Aboriginal Groups on such measures as Project design and employment needs are more defined..
2736.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 5.2.2 - information must be provided to Bands as well.	Aurora LNG acknowledges the mitigation recommendation of providing information to Band Offices as suggested by Gitga'at First Nation.Aurora LNG is currently reviewing specific feedback on proposed mitigation measures received from Aboriginal Groups and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
2737.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 5.2.3 - older workers may be excluded if they do not have Grade 12 so worker experience and worker experience must be considered as equal to Grade 12.	Mitigation measures 5.2.3 is proposed as follows: "Require that all of workers (not inclusive of summer students) 19 years and younger complete grade 12 or have an appropriate equivalency in order to prevent young people from leaving school prematurely." As proposed, caveats have been made for older workers that may not have completed grade 12 ".... or have an appropriate equivalency...". While Aurora LNG cannot commit to what 'appropriate equivalency' may constitute at this time (as this will be determined on a case-by-case basis with consideration of employment tasks, roles and responsibilities), Aurora LNG will take into consideration that 'equivalency' can also be demonstrated/informed through the review of worker experience.
2738.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 5.2.4 - in cases where Aboriginal workers are not part of a union, Aboriginal workers must be given equal opportunity for jobs.	Aurora LNG is an equal opportunity employer and will consider all qualified persons for Project-related employment. With respect to unionized work, Aurora LNG and its contractors must adhere to established contractual agreements with any union(s).
2739.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 5.2-5 - Proponent must support Gitga'at in obtaining adequate training and equal opportunities, including providing support for required services such as daycare and travel.	Aurora LNG acknowledges the mitigation recommendation suggested by Gitga'at First Nation. Aurora LNG will continue to engage with Aboriginal Groups regarding such measures as the Project design and employment programs become more defined.
2740.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.3.2 - the Proponent must also support community based treatment centres in the region, and increase existing services capacity. Also the Proponent should offer support incentives such as percentage of wages for workers through a health and wellness program or otherwise the problem will continue as workers may fear losing their jobs.	Aurora LNG acknowledges the mitigation recommendations suggested by Gitga'at First Nation. Aurora LNG will continue to engage with Aboriginal Groups regarding such measures as the Project design and employment programs become more defined.
2741.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.3.3 - the Proponent should provide community engagement sessions prior to worker orientations so prospective workers are aware of the job and workplace requirements.	Aurora LNG acknowledges the mitigation recommendation suggested by Gitga'at First Nation. Aurora LNG will continue to engage with Aboriginal Groups regarding such measures as the Project design and employment programs become more defined. As per Mitigation 5.2.1, Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases and develop work packages that consider the capacity and capabilities of local and regional businesses.
2742.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.3-4 - in addition, successes, challenges and gaps should be communicated so each community can address any issues within their jurisdiction. Also, the Proponent should have adequate outreach support workers to promote this within each community.	Aurora LNG acknowledges the mitigation recommendations suggested by Gitga'at First Nation. Aurora LNG will continue to engage with Aboriginal Groups regarding such measures as the Project design and employment programs become more defined.
2743.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.3.10 - this Plan must also include the need for local foods within camp as to meet the dietary requirements of Tsimshian people.	Aurora LNG acknowledges the mitigation recommendations suggested by Gitga'at First Nation. Aurora LNG will continue to engage with Aboriginal Groups regarding such measures during the development of relevant management plans.
2744.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Table 6.6-18, Mitigation 6.3-13 - the First Nations Health Authority, the Northwest Inter-Nation Family and Community Services, and the Friendship Centre (the Friendship Centre provides services to off-reserve members) must also be involved.	The Health and Medical Services Plan (HMSP; mitigation 6.3.13) will be developed with reference to Northern Health's "Health and Medical Services Plan Best Management Guide for Industrial Camps" (March 2015). The HMSP will complement the Social Management Plan (mitigation 6.3.1) by outlining health and medical policies, services and protocols to be implemented at the worker accommodation camp. The HMSP is an internal shared document between Aurora LNG and Northern Health. Development of the Social Management Plan, which includes consideration of health care infrastructure and services (the subject matter mitigated through the HMSP), will be informed through engagement with interested stakeholders (including the groups outlined in the comment), Working Group members and Aboriginal Groups.
2745.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Communicable Diseases and STIs - support and involvement must be extended to local health prevention services providers, the Northwest Inter-Nation and Community Services and the Friendship Centre.	To reduce averse Project effects on communicable disease and STIs, Aurora LNG will implement an infection control policy (mitigation 6.6.2). The policy will be included in the Health and Medical Service Plan (HMSP; mitigation 6.3.13) and will outline infectious disease control procedures not limited to prevention measures and outbreak response. The development of the policy will be informed through Northern Health's Infection Control Plan Best Management Guide for Industrial Camps. The HMSP will describe on-site health and medical facilities, procedures to follow regarding medical escalations and detail health and wellness programs available to workers. The HMSP will be based on Northern Health's Health and Medical Services Best Management Plan Guide. Development of the HMSP will take into consideration information obtained during engagement with relevant stakeholders, Working Group members (e.g., Northern Health) and Aboriginal Groups.
2746.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Communicable Diseases and STIs - overcrowding is already a reality so how will this be addressed?	Section 6.6.5.3 acknowledges that within the LAA, population change associated with the Project could have an adverse effect on the availability and affordability of accommodations which could displace vulnerable populations and increase the number of persons living in inadequate housing conditions (e.g., overcrowded). Adverse Project effects on accommodations will be mitigated through the use of onsite camp facilities to lodge the Project's workforce as well as measures to address Project effects on housing identified in Table 6.3-22 of the Application. The infection control policy (mitigation 6.6.2) that will be included in the Health and Medical Service Plan (HMSP; mitigation 6.3.13) will outline infectious disease control procedures not limited to prevention measures and outbreak response at the accommodation camp. The development of the policy and HMSP will be informed through Northern Health's best management guides.
2747.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Income and Social Status - the Proponent must commit to training and employment opportunities. The Proponent must support social housing so that unemployed residents have the means to afford an appropriate standard of living.	Aurora LNG will inform local residents and Aboriginal Groups of job and procurement opportunities during all Project phases (Mitigation 5.2.1) and will provide information to employment agencies and economic development organizations to help then plan for increased demand for construction labour (Mitigation 5.2.2). The provision of social or non-market housing is the responsibility of local, regional and provincial governments and Project-specific mitigation measures have not been proposed. As noted in Section 5.2, Aurora LNG will contribute to the local tax base; government income that could be used to support such initiatives.
2748.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Social Support Networks - If workers are absent from important cultural events, this can have a severe impact on cultural and family obligations and overall traditional social systems. In addition to the adverse effects listed, this could also lead to depression and suicide, including once the Project is complete, and cultural ways are lost. Further assessment is required.	Noted in Section 12.5.9 of the Application, Aurora LNG understands the Gitga'at First Nation concerns related to the participation of Gitga'at First Nation members in Project-related employment opportunities, which may cause members to be less available to participate in cultural activities or culturally relevant employment. These potential effects are considered in the Community Health assessment (see Section 6.6 of the Application). Prince Rupert, where over two-thirds of Gitga'at First Nation members reside, is included in the Community Health LAA. Although Hartley Bay is not included in the Community Health LAA, the potential effect mechanisms assessed in the Community Health assessment would apply to any Hartley Bay residents who choose to pursue Project-related employment opportunities. It is acknowledged in the Community Health assessment that a change in population, employment, and income could affect social determinants of health, in-turn affecting health status (including mental health). For example, depending on a person's pre-employment situation, Project employment could increase or decrease the amount of time a person has to spend with family and community members or engaged in community events and/or result in changes in personal health practices and coping skills. These changes could affect stress and anxiety and mental health. To reduce the potential magnitude of adverse Project effects on social support networks, an employee assistance program will be made available to workers directly employed by the Project (mitigation 6.6.1). Aurora LNG will also implement its Indigenous Peoples policy (see Section 12.5.9.6 (subsection 'Mitigation Measures') which recognizes the importance of cultural practices, and fostering opportunities for Indigenous Peoples and communities to participate in economic and social benefits of Aurora LNG's projects.
2749.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Social Support Networks - employee assistance programs must be culturally appropriate and relevant. Please describe how Aurora LNG will ensure this.	Aurora LNG employees will be provided with access to an employee assistance program (mitigation 6.6.1). At this point Aurora LNG cannot commit to the structure or delivery of the program as it will be administered through a third party with included programs and details established during contractual negotiations. As with most employee assistance programs, family members of employees will also have access to the program.
2750.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Presence of Workers - families adjusting to new community or readjusting through employment changes due to the Project phases, can cause stressors to the family and on children in new schools. Please assess this.	Potential effects to family dynamics is provided in the assessment of "social support networks". For example, it is noted that prolonged absences could strain family relationships and contribute to feelings of isolation. Under this scenario, adverse effects on family dynamics could adversely affect rates of domestic violence, juvenile and youth crime, and alcohol and drug use. To reduce the potential magnitude of adverse Project effects on social support networks, an employee assistance program (mitigation 6.6.1) will be made available to workers directly employed by the Project.

2751.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Crime - it is incorrect to assume that "…the degree of interaction between the Project workforce and community residents will be limited" - not all workers will be in camp, all workers have to travel to and from camp, etc. Please revise and re-assess.	The closed-access camp will limit worker interactions with local communities. For the 95% of workers anticipated to be employed on a fly-in/fly-out basis during construction and 20% during operations this conclusion applies (Aurora LNG anticipates that a logistics policy requiring workers to be returned to their home communities following the completion of their work shifts will be implemented). To reduce adverse effects related to the activities of current residents (3% at peak construction, 12% peak during operations) employed with the Project and in-migrating workers (2% at peak construction and 68% during peak operations) to the LAA/RAA Aurora LNG will implement a worker code of conduct including a worker orientation (mitigation 6.3.3) and a Community Engagement Plan (mitigation 6.3.4). Mitigation 6.3.3 is predicted to reduce adverse effects of in-migrating and non-local workers on LAA communities by clearly communicating expected behaviours of all workers when they are transiting to/from the Project, on Digby Island, and visiting nearby communities while Mitigation 6.3.4 will provide a mechanism from which community grievances can be addressed. Workers found to be willfully violating the code will be subject to disciplinary measures, potentially including termination. It is therefore expected that the degree of interaction between the Project workforce and community residents will be intentionally limited and will reduce the likelihood of criminal activities associated with the Project workforce from occurring.
2752.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Crime - due to the adverse effects listed such as potential for domestic violence and youth and juvenile crime, more capacity for support services is required, including mental health services, school counseling services, and family support services. Please describe what and how Aurora LNG plans on addressing these.	The Project will monitor changes in crime incidents within the LAA as part of the Social Management Plan (mitigation 6.3.1), and will take additional measures, if necessary, to address crime activities attributable to the Project workforce.
2753.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Personal Health Practices and Coping Skills - eliminating traditional diets may lead to diabetes in Aboriginal populations. What will Aurora LNG do to prevent this.	Effects to Gitga'at First Nation's harvesting-related Aboriginal interests is discussed in Section 12.5.9.5 of the Application. In summary, the Project is predicted to interfere with Gitga'at First Nation's ability to harvest resources within the PDA. However, Aurora LNG believes that the resources harvested by Gitga'at First Nation members within or adjacent to the PDA (i.e., clams, mussels, and cockles) are widely available elsewhere in the region (including other areas near Prince Rupert) and closer to Hartley Bay. As such, diets are not expected to measurably changes from current conditions. Aurora LNG is committed to continued consultation with Gitga'at First Nation to understand and further reduce any potential adverse Project effects on Gitga'at First Nation's harvesting-related activities.
2754.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Personal Health Practices and Coping Skills - it states "Individuals successful in securing employment with the Project will have access to employee assistance programs (Aurora LNG will also encourage its contractors to make available similar programs)…", instead of "encourage", it should be "required".	The term "encourage" was chosen as at this time it is premature to establish such contractual conditions.
2755.1	round 1	Gitga'at First Nation	6.6.2.5	Community Health	As with other VCs, the LAA (see Table 6.6-3 on p6.6-7 in s.6.6.2.5) is too restrictive as it does not capture the full spatial area in which important Project effects may occur. Small communities excluded from the LAA used for assessing changes to community health and wellness, such as Hartley Bay, are strongly linked to Prince Rupert and the other major communities in the region by virtue of impacts on employment (e.g., Gitga'at members from Hartley Bay may take up employment on the Project with consequent effects on their families in Prince Rupert and/or Hartley Bay), population exchange and connection between the communities (i.e., families spread between communities), and the reliance of people in the smaller communities on services provided only in the larger communities. As the proponent notes in the application (s.6.6.5.5), some social determinants of health are expected to be affected by the influx of people associated with the Project (and other future development). Such impacts will extend to Hartley Bay and other nearby communities outside of the proponent's LAA by virtue of the tight linkages between the communities. Please revise the LAA to include communities like Hartley Bay that are strongly linked to conditions in Prince Rupert, and please revise the assessment accordingly. It is also not simply enough to conduct assessments on an aggregated population.	Aurora LNG's understanding of Gitga'at First Nation's comments requesting the inclusion of Hartley Bay in the LAA to be: Members who either move to Prince Rupert for work, live in both Prince Rupert and Hartley Bay, as well as those members who work in Prince Rupert and send money to family members in Hartley Bay could experience adverse residual effects of the ProjectMembers living in Hartley Bay who draw upon goods and services in Prince Rupert, Terrace and Kitimat could experience adverse effects related to changes in the cost of goods and services due to the ProjectThat member's quality of life could be adversely affected due to changes in infrastructure and services (e.g., accommodations [inclusive of hotels and motels] and health care) in Prince Rupert due to the ProjectOut-migration of members from Prince Rupert to Hartley Bay due to changes in the affordability and/or availability of housing in Prince Rupert could increase demand for housing in Hartley Bay (of which limited capacity exists to absorb increased demand).Socio-economic changes within Prince Rupert could affect the health and wellbeing of Gitga'at First Nation members due to tight linkages between Hartley Bay and Prince Rupert. Regarding the assessment of the following economic and social VCs: Sections 5.2 Economic Conditions, 6.3 Infrastructure and Services and 6.6 Community Health, communities included in the LAA are those where it is reasonably expected that direct interactions with the Project could occur, potentially resulting in adverse effects that could be predicted/estimated. It is recognized that Hartley Bay, as well as other communities within the region (e.g., Terrace and Aboriginal communities in the Terrace area) have economic and social ties to Prince Rupert. However, Aurora LNG maintains that there is much less potential for the Project to directly affect socio-economic conditions in Hartley Bay, compared to communities within the LAA. Aurora LNG recognizes that there could be indirect effects on Gitga'at members living in Hartley Bay – such as those identified above – but maintains that it is difficult to distinguish such phenomena from those resulting from other socio-economic changes occurring in the region (e.g. adverse effects are difficult to predict/estimate), and are therefore adequately addressed in cumulative effects assessments. For these reasons, Hartley Bay was not included within the LAAs for the socio-economic VCs noted above, but included in the RAA. As delineated and applied, the LAA and RAA for Sections 5.2, 6.3, and 6.6 also align with those used in similar applications within northwest BC. Specific to residual effects, it is important to note that effects assessed at the LAA level could also be realized by residents outside the LAA who may work within, draw upon, or visit the LAA. For example, Gitga'at members living in Hartley Bay who draw upon hotels, motels and health care services (among other considerations) from Prince Rupert could realize adverse effects associated with the Project as characterized at the LAA level. This rationale holds for other individuals, not just members of Gitga'at First Nation, within the RAA (and further) who may draw upon infrastructure and services within Prince Rupert. Due to potential direct Project interactions with Gitga'at First Nation harvesting locations, Hartley Bay is included in the LAA for the residual effect assessments 'change in resource-based primary industries and subsistence economies' (Section 5.2) and 'change in harvested foods' (Section 6.6). With respect to cumulative effects, as assessed in Sections 5.2, 6.3, and 6.6, cumulative residual effects are predicted to extend to the RAA (which includes Hartley Bay). This includes changes in economic conditions, infrastructure and services, and community health. Characterizations provided at the RAA level account for indirect effects noted by Gitga'at First Nation and would apply to members living in Hartley Bay. In summary, as per the methodology outlined in the AIR, Hartley Bay has not been added to the LAA as the community is outside of the spatial extent to which Project-related activities are anticipated to result in a direct, predictable and measurable adverse change in the referenced socio-economic VCs. The concerns identified in relation to Gitga'at First Nation members who live, work, draw upon services or visit communities within the LAA are already assessed within the socio-economic VCs as characterized at the LAA level. Aurora LNG believes that the concerns identified by Gitga'at First Nation in relation to the economic, employment and infrastructure and service linkages between Hartley Bay and Prince Rupert are therefore also assessed at the LAA level in aggregate-population form. Characterizations provided at the RAA level for Project and cumulative effects apply to members of Gitga'at First Nation members residing in Hartley Bay and cover concerns related to indirect socio-economic and cumulative effects from the Project. As part of its engagement with Gitga'at First Nation during development of the Social Management Plan, Aurora LNG will discuss specific socio-economic concerns and issues that may affect Gitga'at First Nation members, including residents of Hartley Bay.
2756.1	round 1	Gitga'at First Nation	6.6.2.5	Community Health	The following references provided on p6.3-10 (s.6.6.2.5) are not listed in the bibliography: Health Canada (2014), Canadian Institute of Health Research (2013), Veerman et al. (2007), and Kemm (2003). Please revise the bibliography accordingly and provide stakeholders with an amendment.	The Canadian Institute of Health is not directly referenced; the referenced publication is associated with Statistics Canada 2013a. This reference is included in Section 6.6.11. The following references should have been included in Section 6.6.11: Health Canada. 2004. Canadian Handbook on Health Impact Assessment: Volume 2: Approaches and Decision-Making: Health Canada. Kemm, J. 2003. Perspectives on Health Impact Assessment. Bulletin of the World Health Organization(81 (6)), 387. Veerman, J. L., Mackenbach, J. P., & Barendregt, J. J. 2007. Validity of Predictions in health Impact Assessment. Journal of Epidemiology and Community Health, 2015(61 (4)), 362-366. doi: 10.1136/jech.2006.047840 An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2757.1	round 1	Gitga'at First Nation	6.6.2.6	Community Health	In Table 6.6-5 (s.6.6.2.6 (p6.6-11)), the definitions of moderate and high magnitude differ with respect to effects on regional population health but not with respect to harvesting and country food consumption. Please clarify the difference(s) between these two magnitude categories.	Differing magnitude definitions are provided in Table 6.6-5 for regional population health (see bullet 'a'), volume of harvested foods (see bullet 'b), and country food consumption (see bullet 'c') for low, moderate and high magnitude characterizations.
2758.1	round 1	Gitga'at First Nation	6.6.2.6	Community Health	For the effect characteristic reversibility, the definition of reversible reads that "[t]he effect is likely to be reversed after activity completion and reclamation" (Table 6.6-5, p6.6-12 (s.6.6.2.6)). The proponent concluded that effects of the Project on harvested foods would be reversible upon Project decommissioning (p6.6-102 (s.6.6.5.4)). The same conclusion of reversibility is repeated in the CEA section of the application (p6.6-110 (s.6.6.6.4)). While the proponent's use of the term reversible in the assessment is consistent with their definition, the question begs of whether the proponent's conceptualization of reversibility is appropriate in the context of traditional harvesting. As noted on p10 of the CEA Agency's most recent guidance on characterization of residual adverse effects, reversibility is about recovery of effects "within a reasonable timescale" (CEA Agency, 2015.*Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012*. 11pp.). While best left to traditional harvesters and their communities to decide, it would seem that several decades of loss of harvesting space (given the Project's proposed duration, and potential lag effects due to possible perceptions of environmental degradation following decommissioning) might be a very damaging loss, especially considering some people's lifespans. Please justify your conception of 'reversibility' in the traditional harvesting context, and whether it is meaningful and respectful to qualify the loss of harvesting opportunities for several decades as 'reversible'.	Project residual effects as well as the Project's contribution to cumulative adverse effects and cumulative effects with the Project are characterized in error. Effects should be characterized as irreversible as Section 6.6 draws on conclusions from Section 4 and 6.4 and 6.5 and conservatively applies a worse-case characterization of all effects (in this case some effects from Section 4 are identified as irreversible). For all other measures, this conservative approach was observed. This change in characterization does not change the other conclusions related to change in harvested foods. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2759.1	round 1	Gitga'at First Nation	6.6.2.7	Community Health	On p6.6-13 (s.6.6.2.7) the proponent provides definitions of low, medium, and high likelihood. Each definition relies on the terms 'unlikely', 'likely', and 'highly likely' in the likelihood definitions, but what do these terms mean to the proponent? It is good practice to define expressions of probability in quantitative terms, such as the IPCC does in its climate change science communications (see Intergovernmental Panel on Climate Change (2010). Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change. 4pp + Annexes. http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf), so that it is clear to all how the terms are being used and to ensure consistency among users of the terms. Please define what is meant by the terms unlikely, likely, and highly likely.	A qualitative approach is used to describe the likelihood of residual Project effects on community health based on professional judgement and experience of the assessor. A definitive or quantitative approach to defining these terms (i.e., 0-15% chance of occurrence) is not practical. In general, the term 'unlikely' in this instance means that adverse effects between the Project and community health are not predicted to occur. The term 'likely' in this instance means adverse effects between the Project and community health are probable as it may be difficult to avoid or mitigate residual effects. The term 'highly likely' in this instance means adverse effects will occur as residual effects cannot be practically avoided or mitigated.
2760.1	round 1	Gitga'at First Nation	6.6.2.8	Community Health	The significance threshold for the community health and wellness VsC is defined as "highly distinguishable from current conditions and trends and cannot be managed or mitigated through adjustments to programs, policies, plans, or other mitigation (p6.6-13 (s.6.6.2.8))." There are several problems with this threshold. First, what is meant by highly distinguishable? This term should be defined as different people may interpret these words differently. Second, this threshold presumes that all that matters is a quantity of change in the condition of the VsC, yet significance is not simply about change but about change in reference to stakeholders' views of what conditions are and are not acceptable. For example, substantial change doesn't matter if conditions are still acceptable to stakeholders. This threshold embodies a presumption that current conditions are acceptable to stakeholders, when they may not be. Significance is fundamentally about acceptability of impacts to stakeholders, and thus significance must be tied to stakeholder values. Third, the threshold's reference to mitigation is redundant, as significance is judged only on residual effects. Please clarify usage of the term 'distinguishable', please revise the threshold to incorporate stakeholder perspective on what constitutes acceptable conditions, and please revise your effects assessment accordingly.	In the absence of any well-established quantitative thresholds for determining a significant effect, the threshold presented in Section 6.6.2.8 is an "expression of condition" approach. "Distinguishable" in the context of the community health significance threshold definition, means distinct from current conditions or trends. In other words, the condition can be reasonably attributed to the Aurora LNG project rather than due to other socio-economic factors, such as variations or structural changes affecting the economy (including such factors as general in-migration, out-migration, closure and opening of other businesses and projects). It is difficult to apply a numerical threshold, that would be reasonably accepted. For some, no amount of adverse change is acceptable, regardless of whether the community health as a whole may benefit. Therefore, we are using a definition that allows us to first characterize effects post mitigation, and based on this characterization determine if the significance threshold has been passed. If it is evident that there will be material un-mitigated residual adverse Project effects on community health, then it may be considered significant. However, this conclusion will need to be made with appropriate consideration of the local context. For example, residents may be both positively affected (through changes in employment and income) and adversely affected (through population change or adverse changes in personal health practices and coping skills) by the Project.
2761.1	round 1	Gitga'at First Nation	6.6.2.8	Community Health	The significance threshold for the harvested foods VsC is defined as "a persistent and substantial decline in availability and/or perceived quality of harvested foods (p6.6-13 (s.6.6.2.8))." This threshold has the same problems mentioned in the previous comment, namely clarity of key terms in the definition, and the lack of reference to what conditions are and are not acceptable to stakeholders. Please clarify usage of the terms 'distinguishable', 'persistent', and 'substantial', please revise the threshold to incorporate stakeholder perspective on what constitutes acceptable conditions, and please revise your effects assessment accordingly.	"Distinguishable" means that the adverse effect is measurable, predictable, and attributable to one or more project or cumulative interactions (i.e., it is not within the boundaries of normal variation of the measurable parameter under baseline conditions). "Persistent" refers to effects that exist for a long period of time; in this instance, beyond Project activities. "SubstantialTefers to a high magnitude measurable change from baseline conditions.
2762.1	round 1	Gitga'at First Nation	6.6.2.8, 6.6.5.3, 6.6.5.5, and 6.6.7.1	Community Health	The significance threshold for the community health and wellness VsC is defined as "highly distinguishable from current conditions and trends and cannot be managed or mitigated through adjustments to programs, policies, plans, or other mitigation (p6.6-13 (s.6.6.2.8))." As such, by the proponent's definition, effects on this VC are significant if they vary substantially from current conditions and are not addressed through mitigation, i.e., are residual. This is a strange definition for significance since significance is typically assessed on residual effects, i.e., it's a given that the effects cannot be managed through mitigation because mitigation has already been accounted for. Regardless, on p6.6-73 (s.6.6.5.3) the proponent concluded that there was a high likelihood that the Project would cause residual effects (and again indicated in Table 6.6-22 "Summary of Project Residual Effects on Community Health" on p6.6-103 (s.6.6.5.5)), yet then on p6.6-113 (s.6.6.7.1) with respect to significance the proponent concluded that "[w]while changes in community health and wellness are anticipated to be distinguishable from current conditions and trends, adverse effects are expected to be managed through the application of mitigation measures (p6.6-113)." So the proponent not just establishes a definition of significance that is non-sensical by way of retaining reference to mitigation when significance is to be determined on residual effects but then goes back and forth in the course of effects assessment and significance determination saying that there will be residual effects but then there won't be residual effects. The proponent seems to be saying that planned mitigation will reduce residual effects to acceptable levels, but this remains problematic given how they characterized residual effects: in Table 6.6-22 (p6.6-103 (s.6.6.5.5)) the worst Project direct effects are characterized as high magnitude, continuous frequency, long-term duration, irreversible, a context that is low to moderate resiliency, and high likelihood. Therefore the conclusion that these effects aren't significant doesn't fit the antecedents. Please revise the significance threshold, effects assessment, and significance determination to ensure that significance is assessed on residual effects only and to provide consistency and clarity through the application. Please clarify if there are residual effects of the Project or not, and if the residual effects are significant or not. Please justify the conclusion of non-significant impacts given how residual effects were characterized.	In the absence of any well established quantitative thresholds for determining a significant Project effect on community health and wellness (or most other socio-economic effects) Aurora LNG is using an "expression of condition" approach to define the threshold. "Distinguishable" in the context of the community health significance threshold definition, means distinct from current conditions or trends. In other words, the condition can be reasonably attributed to the Aurora LNG project rather than due to other socio-economic factors, such as seasonal variations or structural changes affecting the LAA or RAA (including such factors as general in-migration, out-migration, closure and opening of other businesses and projects). It is difficult to apply a numerical threshold, that would be reasonably accepted. For some, no amount of adverse change is acceptable, regardless of whether the LAA or RAA as a whole may benefit. Therefore, Aurora LNG is using a definition that first allows for the characterization of Project effects post mitigation, and based on this characterization determine if the significance threshold has been passed. If it is evident that there will be material un-mitigated residual adverse effects attributable to the Project then it may be considered significant. In the case of change in community health and wellness and change in harvested foods this was not determined to be the case.

2763.1	round 1	Gitga'at First Nation	6.6.3.2, 6.6.5.4, and 6.6.6.4	Community Health	Baselines are the 'no-project' scenario from which project direct, as well as cumulative effects of other projects and activities, get measured. As such, it's very important to have a good sense of VC conditions. However, the baselines developed in the Project's EA application frequently provide insufficient context from which to characterize effects and determine their significance. In the Community Health chapter, the baseline on harvested foods – which is mostly focused on Aboriginal traditional harvesting – provides little sense of the actual context for further impacts of major project development. The baseline outlines what foods are gathered but doesn't explore the history of colonization and industrialization on Aboriginal harvesting and most importantly the acceptability of current conditions of harvesting to Aboriginal groups in the area. This is not simply an academic issue but is critical for interpreting Project effects. In the effects assessment, the proponent concluded that Project effects on harvesting would occur within a "resilient socio-economic context because alternative areas of hunting, trapping, fishing and gathering exist within the LAA and RAA where the harvesting of country foods can occur and therefore localized changes in use can be accommodated (p6.6-102 (s.6.6.5.4))." This then led the proponent to conclude in s.6.6.7.1 (p6.6-114) that the Project would not cause significant adverse effects on harvesting. A parallel conclusion is made in the CEA section of the application (p6.6-110 in s.6.6.6.4, and p6.6-115 in s.6.6.7.2). The proponent defines a resilient socio-economic context as one that has "[h]igh capacity for the VC to recover from a perturbation, with consideration of the existing level of disturbance" (Table 6.6-5 on p6.6-12 (s.6.6.2.6)). While the baseline hints at the issue of existing conditions that are unsatisfactory to First Nations in the area (e.g., impacts on Kitselas traditional harvests due to "degradation of access, abundance and quality of resources" are noted on p6.6-40 (s.6.6.3.2), and harvesting challenges for Gitga'at are noted on p6.6-41 (s.6.6.3.2)), First Nations for the most part do not view current harvesting conditions as acceptable but instead as already heavily compromised. From this perspective, any further impacts on traditional harvesting are significant. Further, the notion that harvesters can simply shift their activities to other harvesting grounds ignores the fact of unequal distribution of resources across the region and the limitations imposed by traditional governance boundaries, and also assumes that alternative sites are felt to be of adequate environmental quality. The proponent seems to recognize the possibility that shifting to other locations may carry problems, but this notion isn't noted until the CEA portion of the application (p6.6-109 in s.6.6.6.4). Even then, in the CEA where major Projects affecting a larger portion of the study area are examined, the proponent still concludes that harvesters can just shift harvesting locations. The proponent seems to conclude that the larger RAA means that harvesters have an even larger space from which to shift their activities, thus repeating the issues of unequal distribution of resources, political boundaries, and available of suitable alternative sites raised above further. Please revise the baseline for the harvested foods VsC to reflect a deeper understanding of context and please revise the effects assessment and cumulative effects assessment accordingly.	Additional details regarding harvesting, including past, present and future use, is provided in Part C of the Application, and particularly Section 12.2.9 for Gitga'at First Nation. This includes a discussion on changes to harvested species, changes to harvesting location and access routes, and changes in the harvesting experience. A conservative approach was used in the assessment of harvested foods and therefore, reasonable worst case assumptions (i.e., potential to harvest throughout the PDA at any time) have been made upon which to base a prediction of the significance of environmental effects. Additional baseline detail is therefore not predicted to change the effects assessment and cumulative effects assessment.
2764.1	round 1	Gitga'at First Nation	6.6.5.2	Community Health	On p6.6-47 (s.6.6.5.2) the proponent indicates that 27% of the site preparation workforce will be hired from within the LAA. How did the proponent estimate this? Please explain how this parameter, as well as other estimates of where proportions of the workforce come from, were estimated.	Aurora LNG's predicted break-down of labour by LAA residents, RAA residents, BC residents, other Canadian residents, and imported labour, is based on consideration of the skills needed during site preparation, overall understanding of the labour market, and anticipated potential to "train-up" workers for related positions. Aurora LNG anticipates that a substantial proportion of its workforce will consists of BC residents, whose skills will be already developed through technical training programs and hands-on experience at other construction sites. Nevertheless, because of the limited available labour force within the LAA, Aurora LNG anticipates that a proportion of its workforce will be hired from outside the LAA. This proportion should decline over time, as more LAA residents seek to increase skills relevant to site preparation.
2765.1	round 1	Gitga'at First Nation	6.6.5.3 and 6.6.5.4	Community Health	In s.6.6.8 (p6.6-115) the proponent notes that its prediction confidence is predicated on several things including expected effectiveness of proposed mitigation measures, and professional judgment from prior experience and understanding of proven mitigation measures. Yet little empirical evidence is provided in the mitigation section (s.6.6.5.4) about the effectiveness of proposed mitigation measures. For example, the proponent indicates that it will develop a Health and Medical Services Plan and provides some information on what will be in the plan (e.g., p6.6-65 (s6.6.5.3)). However, insufficient evidence is provided to understand how effective the measures will be once implemented. What evidence is there that such plans have been effective for other proponents who have developed similar plans? Please provide empirical data or other evidence to support the effectiveness of management plans.	The Health and Medical Services Plan will be based on Northern Health's Health and Medical Services Best Management Plan Guide. The Health and Medical Services Plan has not yet been developed. Aurora LNG will consult with regulators and Aboriginal Groups on the development of the Plan.
2766.1	round 1	Gitga'at First Nation	6.6.5.4	Community Health	The proponent provides a number of ideas on how it will mitigate Project effects on community health, including traditional harvesting, but there may yet be more that could be done and that would be effective and appreciated by stakeholders. Aurora LNG must commit to working with Gitga'at in developing and implementing mitigation measures.	Aurora LNG requested and received specific feedback on proposed mitigation measures from Aboriginal Groups during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the BC EAO on Day 90.
2767.1	round 1	Gitga'at First Nation	6.6.6.3	Community Health	The proponent notes on p6.6-108 (s.6.6.6.3) that Aurora LNG will implement the same mitigation measures as proposed by two other major projects in the region (Pacific Northwest LNG and LNG Canada) and that because all three projects will use the same mitigation measures the CEs of development "are therefore expected to [be managed] to an acceptable level". The proponent seems to assume that if other major projects planned to mitigate adverse effects in certain ways and the Aurora LNG project implements the same mitigation measures that mitigation will be effective. Similar statements are made in the mitigation sections of other VCs, yet neither of the two other LNG projects mentioned have yet to be implemented, and thus there presumably is no data from these other projects' mitigation programs to support the notion that the planned mitigation measures will be effective. Please provide further evidence to indicate why Gitga'at, decision-makers and other stakeholders should have confidence that mitigation measures used by other projects and planned for Aurora LNG will be effective.	Mitigation described in Tables 6.6-18 and 6.6-21 of the Application are predicted to reduce the Project's contribution to cumulative effects on change in community health. Other proposed projects will likely be subject to similar mitigation expectations through the environmental assessment and permitting process which would be expected to reduce each project's potential contribution to cumulative effects. Aurora LNG has committed to participating in provincial and/or regional led initiatives to further reduce cumulative adverse effects on community health.
2768.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Workplace incidents may affect the health and well-being of affected workers and their families. Community-wide effects may occur because of demand on local treatment centres (local health care providers and ambulatory care facilities), which are not listed. Assessment on these is required.	Section 6.3.5.5 of the Application assesses change in health care infrastructure and services related to population change (direct, indirect and induced workers and their families) as well as demand from the Project (e.g., from workplace incidents).
2769.1	round 1	Gitga'at First Nation	6.6.5.3	Community Health	Both beneficial and adverse impacts on health and wellbeing can arise from Project activities, depending on employment status and level of involvement in personal/family and local community activities. Mitigation includes an employee assistance program but it is not clear how this would enhance/reduce effects. The Application simply states that it will "promote holistic worker health from a physical, mental, cultural and social perspective". Please provide more information on the employee assistance program, including evidence of effectiveness.	Aurora LNG employees will be provided with access to an employee assistance program (mitigation 6.6.1) that will promote holistic worker health from a physical, mental, cultural and social perspective. Aurora LNG will encourage its subcontractors to make available similar programs. This mitigation measure was selected as it aligns with industry best practice regarding health and safety programs and is currently offered by Nexen (a Joint Venture Partner of Aurora LNG). There is predicted to be a moderate likelihood of success as this mitigation measure depends on the Aurora LNG employees taking advantage of the program and the subcontractors making available similar programs (as well as the extent to which subcontracted workers take advantage of applicable plans, where available). Since there is uncertainty as to the extent by which the workforce that will take advantage of the program and the degree to which subcontractors make available similar plans, there is a moderate degree of uncertainty associated with this mitigation measure. To reduce this risk, awareness materials and messaging will be provided to the workforce as part of communications and worker engagement processes built into the HMSP.
2770.1	round 1	Gitga'at First Nation	6.6	Community Health	Details on how mitigation measures collectively changed the effect characterization and how that in turn resulted in a determination of not significant remains unclear for all parameters assessed. Please provide more information. A decision matrix or narrative around how the decisions were made with respect to characterizing effects post-mitigation and how the overall conclusions were made should be developed. For example, what combination of characteristics (magnitude, geographic extent, frequency, duration, reversibility and resiliency) results in a significant outcome versus a not significant outcome?	The assessment of Project residual effects completed in Section 6.6 of the Application align with methods described in Section 3.5 (which align with methods established in the AIR [see AIR section 3.6]). In accordance with these methods, the assessment characterizes Project residual effects following the implementation of mitigation measures; a characterization of potential Project effects without the application of mitigation measures is not completed. Effects characterized in Sections 6.6.5.3 and 6.6.5.4 are predicted effects post-mitigation. Effect characterizations take into consideration effect mechanisms (identified in Table 6.6-2 and expanded upon in Sections 6.6.5.3 and 6.6.5.4) and interactions between potential effects (i.e., change in community health and wellness and change in harvested foods) and Project components and physical activities (see table 6.6-17). Project residual effects are characterized using criteria identified in Table 6.6-5 with significance measured against thresholds presented in Section 6.6.2.8. A specific combination of these characterizations does not necessarily result in a significant effect as additional criteria are described in the significance thresholds. For example, despite characterization (e.g., magnitude, duration, extent...), effects on community health and wellness may "be managed or mitigated through adjustments to programs, policies, plans or other mitigation" and therefore may not be considered significant.
2771.1	round 1	Gitga'at First Nation	6.6	Community Health	Mitigation measures make seek to improve potential impacts; however, impacts specifically to vulnerable populations is missing. Please conduct assessments on all parameters evaluated on vulnerable populations.	The assessment of change in community health and wellness considers measurable parameters and effect mechanisms identified in Table 6.6-2 with the assessment completed at the LAA level (i.e., for the total population). However, as noted in Section 6.6.5.2, the assessment of change in community health and wellness recognizes that Project-related adverse effects could disproportionally affect vulnerable populations. As such, residual effect characterizations provided for the LAA level are further qualified, where appropriate, for vulnerable populations. These qualified characterizations are provided in the following subsections of 6.6.5.3 (Characterization of Residual Effects for Change in Community Health and Wellness): 'Communicable Diseases and STIs', 'Income and Social Status', 'Personal Health Practices and Coping Skills'. Characterizations are summarized in Table 6.6-22. As a result of this approach, all measurable parameters identified in Table 6.6-2 are considered in the assessment of change in community health and wellness for vulnerable populations.
2772.1	round 1	Gitga'at First Nation	6.6	Community Health	Communicable diseases and STIs - mitigation includes encouraging workers to remain on-site; how will Nexen do this? And please provide evidence of effectiveness.	As stated in Section 6.6.5.3 subsection (Mitigation for Change in Community Health and Wellness), the construction camp will be a closed-access camp, meaning that Project employees will be expected to remain onsite for the duration of their work shifts (see Section 1.2 Proposed Project Description). Failure to adhere to the camp policies will result in employee disciplinary actions potentially including termination. Consequently, it is anticipated that this camp policy will be effective at reducing or eliminating adverse Project effects, such as communicable diseases and STIs, on community health and wellness associated with FIFO workers interacting and being present in LAA and RAA communities. In addition, Aurora LNG will implement an infection control policy (Mitigation 6.6.2) that will outline infectious disease control procedures not limited to prevention measures and outbreak response. This is in addition to WorkSafeBC encouraged hygiene policies and mandatory reporting of the outbreak or occurrence of illness (above the incident level that is normally expected) at the camp per the Industrial Camps Regulation under the Public Health Act. The infection control plan will be developed in accordance with Northern Health's best management guide on this topic and included in the Health and Medical Services Plan (also developed in accordance with Northern Health best management guidance). Stated in Table 6.6-18 under the column 'Expected Success/ Risk and Uncertainty', there is a moderate to high likelihood of success. Success of the mitigation depends on the extent to which the workforce adheres to hygiene policies. There is uncertainty as to the percentage of the workforce that will strictly adhere to workplace hygiene policies outlined in the plan. To reduce risk, awareness materials and messaging will be provided to the workforce as part of communication and worker engagement processes built into the HMSP.
2773.1	round 1	Gitga'at First Nation	6.6	Community Health	Higher income for workers may improve healthy behaviors and overall health status. However, income can also increase the accessibility of drugs and alcohol, and higher rates of stress and anxiety may be experienced by workers due to employment demands. An alcohol and drug policy and employee assistance program is proposed as mitigation. Please provide evidence of effectiveness.	Table 6.6-18 of the Application provides both 'rationale for selection' and 'expected success/risk and uncertainty' regarding the proposed mitigation measures. Alcohol and Drug Policy The alcohol and drug policy (mitigation 6.3.2), was selected as it is a best management practice within the oil and gas sector to address issues relate to the abuse of alcohol and drugs and other impacts posed to communities located withing proximity of construction camps. Given the high occurrence of corporate drug and alcohol policies in the oil and gas sector, and focus of communicating pre-placement testing and awareness, the mitigation has a high likelihood in successfully mitigating effects posed to the health and safety of the construction workforce. However, the success of mitigating potential drug and alcohol-related effects on local residents will depend on the level of engagement and standards communicated to the workforce when they are not working. Employee Assistance Program Aurora LNG employees will be provided with access to an employee assistance program (mitigation 6.6.1) that will promote holistic worker health from a physical, mental, cultural and social perspective. Aurora LNG will encourage its subcontractors to make available similar programs. This mitigation measure was selected as it aligns with industry best practice regarding health and safety programs and is currently offered by Nexen (a Joint Venture Partner of Aurora LNG). There is a moderate likelihood of success as this mitigation measure depends on the Aurora LNG employees taking advantage of the program and the extent to which subcontractors make available similar programs (as well as the extent to which subcontracted workers take advantage of applicable plans, where available). Since there is uncertainty as to the extent the workforce will take advantage of the program and the degree to which subcontractors make available similar plans, there is a moderate degree of uncertainty associated with this mitigation measure. To reduce this risk, awareness materials and messaging will be provided to the workforce as part of communications and worker engagement processes built into the HMSP.
2774.1	round 1	Gitga'at First Nation	6.6	Community Health	For perceived decrease in the quality of harvested foods, the proponent proposes mitigation via communication and reporting of grievances. It is unclear the effectiveness of this mitigation so please provide further evidence.	Table 6.6-21 provides both 'rationale for selection' and 'expected success/risk and uncertainty' regarding the proposed mitigation measures. With respect to the referenced mitigation measures, Aurora LNG proposes to continue to engage with local communities and Aboriginal Groups to address community concerns associated with the Project (mitigation 6.3.11) and to develop and implement a community grievance process for addressing issues related to the Project (mitigation 6.4.8). These mitigation measures were selected as they are considered industry best practice. Regarding mitigation 6.3.11, this is a standard mitigation used in the oil and gas sector and as such has a moderate to high likelihood of success. Communication and engagement is known to be valuable in managing the relationships between Aurora LNG, Aboriginal Groups, communities, and stakeholders. With respect to perceived decreases in the quality of harvested foods, communication of Project activities and monitoring results are expected to help inform concerned stakeholders of Project activities and physical works that could have interactions with harvested foods and measures taken by Aurora LNG to manage the potential adverse effects. This mitigation measure has a moderate degree of risk and uncertainty which relates to the willingness of residents and stakeholders to participate in the engagement activities. Regarding mitigation 6.4.8, this is a standard mitigation used in the oil and gas sector and is considered to have a moderate likelihood of success. While some issues brought forward to Aurora LNG will be easily resolvable, others may not be resolvable. In the case of perceived decreases in the quality of harvested foods, grievances brought forward by concerned stakeholders will be reviewed by Aurora LNG with appropriate responses provided. As with mitigation 6.3.11, risk and uncertainty are moderate as the effectiveness of the mitigation measure is in part dependent on the degree to which residents and stakeholders are willing to participate and the degree to which issues are able to be resolved.

2775.1	round 1	Gitga'at First Nation	6.6	Community Health	Harvested Foods - for the cumulative effects assessment, it is acknowledged that construction and operation of future projects could further impact access to, and availability of harvested foods; however, the effect of changes to harvested foods was considered not significant. To assess this conclusion, more information is needed, specifically on vulnerable populations and the actual level of resiliency to the loss of harvest areas.	The assessment of cumulative residual effects on harvested foods provided in Section 6.6.6.4 of the Application is completed at the RAA level (i.e., the total population). Additional qualification of cumulative residual effect characterizations for vulnerable groups was not completed. As stated in Section 6.6.5.2, differing characterizations are provided for the assessment of change in community health and wellness for vulnerable groups; this does not extend to the assessment of change in harvested foods. Information provided in Section 6.6.3.2 subsection 'Harvested Foods', as supported through referenced baseline information and effect characterizations provided in valued components included in Section 4 (Environmental Effects) and Section 6 (Social Effects) of the Application, is sufficient to support the assessment of the Project's contribution to cumulative effects and cumulative residual effects with the Project. Concluded in Section 6.6.6.4, as informed through the above mentioned assessments of valued components, because of the large size of the RAA, and the availability and abundance of terrestrial and marine country food species available for harvesting, cumulative effects occur within a socio-economic context that is resilient to change; however, as noted in Section 6.6, regardless of the potential availability of alternative harvesting locations it is recognized that alternative locations may not be favorable and that harvesters could experience additional adverse effects related to the relocation of harvesting activities (e.g., increased costs, increased time spent travelling to harvesting locations, poorer quality yields).
2776.1	round 1	Gitga'at First Nation	6.6	Community Health	Harvested Foods, states ""while harvested food gathering in the PDA will no longer be possible this represents only a small fraction of areas available for Local Assessment Area (LAA) community members to sustainably harvest terrestrial country foods", without elaboration on important factors such as: • What is the 'small fraction' affected? • Are there disproportionate impacts on certain groups? For example, does that area account for 100% of the harvest foods collected for a specific group or community? • What assistance is available for those who are unable to make use of alternate harvest areas?	The assessment of change in harvested foods relies, in part, on effect assessment completed in Section 6.4 (Land and Resource Use) and 6.5 (Marine Use and Harvested Areas). Section 6.4 and 6.5 provide quantitative and qualitative descriptions of areas removed for potential harvest within associated LAAs and RAAs. These sections also provide a summary of harvested foods taken from the LAA and RAA. Information on the intensity of harvesting locations within the LAA and RAA in comparison to other locations within traditional territories on a Nation-by-Nation basis is not provided in Section 6.4 or 6.5 of the Application. Mitigation measures proposed in Section 6.4 are predicted to reduce Project residual effects on consumptive non-tenured land use (e.g., hunting, fresh-water fishing, vegetation gathering and marine plant harvesting) while mitigation measures proposed in Section 6.5 reduce Project residual effects, among others, on marine fisheries. See section 6.4 and 6.5 of the Application for additional information on the proposed mitigation measures.
2777.1	round 1	Gitga'at First Nation	6.6	Community Health	A total of 105 mitigation measures are listed to reduce or eliminate the effects of the Project on harvested foods. It appears that these measures were not developed directly to address harvested foods, but were taken from other sections of the Application and evaluated for their applicability and relevance to impacts on harvested foods. Aurora LNG must commit to working with Gitga'at in developing and implementing mitigation measures.	The comment correctly identifies that mitigation measures presented in Table 6.6-21 were applied from other sections of the Application and evaluated for their applicability and relevance to effects on harvested foods. This approach is valid as it recognizes that the combination of mitigation measures proposed in Sections 4.2 (Air Quality), 4.3 (Greenhouse Gases), 4.4 (Acoustic Environment), 4.5 (Water Quality), 4.6 (Vegetation and Wetland Resources), 4.7 (Wildlife Resources), 4.8 (Freshwater Fish and Fish Habitat) and 4.11 (Marine Birds) are predicted to manage adverse Project effects related to changes in the abundance of harvested foods within the LAA which could affect harvesting. Mitigation measures from Section 6.2 (Visual Quality), 6.3 (Infrastructure and Services), 6.4 (Land and Resource Use) and 6.5 (Marine Use and Navigable Waters) are predicted to manage adverse Project effects related to social-based effects (e..g, changes in the visual landscape, access and use of lands and waters) on harvesting within the LAA. Aurora LNG will continue to engage with Aboriginal Groups on development of the mitigation measures which will form part of the proposed environmental management plans.
2778.1	round 1	Gitga'at First Nation	6.6	Community Health	Harvested Foods, there is a lack of differentiation between the study population at large and vulnerable groups. Although such groups have been identified (e.g., "Dodge Cove and Crippen Cove residents and vulnerable populations"), additional detail around how they may be differentially impacted, and how mitigation measures affect them differently (positively or negatively) should be added to verify that the determination of significance is valid.	The assessment of change in harvested foods is completed at the LAA level (i.e., the total population). Additional qualification of adverse Project effect characterizations for vulnerable groups was not completed. As stated in Section 6.6.5.2, differing characterizations are provided for the assessment of change in community health and wellness for vulnerable groups; this does not extend to the assessment of change in harvested foods.
2779.1	round 1	Gitga'at First Nation	7.2.2.4	Heritage	Increased human presence should be considered during construction, operations and closure as a potential adverse effect on archaeological sites. Sites such as coastal shell middens are particularly sensitive to increase human presence and it is known that there currently are and will likely to continue to be exposed archaeological materials in the LSA.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
2780.1	round 1	Gitga'at First Nation	7.2.2.5	Heritage	The RAA should be larger than the LAA. As there is no regional setting provided it is not possible to assess the significance of the sites that will be impacted (How rare are the site types that are being impacted? Is the density of sites in the project area normal for this region?).	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5.
2781.1	round 1	Gitga'at First Nation	7.2.2.5	Heritage	The RAA should be larger than the LAA.The LAA and RAA are limited to ground disturbance from construction but do not consider disturbance to archaeological sites as a result of increased human presence on the island. Both the LAA and RAA should be increased in size to take this into consideration.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. For these reasons, no change to the Application is considered warranted.
2782.1	round 1	Gitga'at First Nation	7.2.2.6	Heritage	The assessment assumes that archaeological sites will only be impacted during the construction phase. This needs to be revised to account for increased human presence that will also occur during operations and closure that may result in impacts to sites. Additionally, buried deposits such as shell midden sites may be disturbed during closure and reclamation.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
2783.1	round 1	Gitga'at First Nation	7.2.3.2	Heritage	Gitga'at is concerned with the lack of testing on Spire Island where two rock overhangs were identified and visually examined but not tested. High potential areas like these must be tested or more information provided on the rationale for not testing.	Two rock overhangs were identified on Spire Island during the AIA. Visual examination of the areas did not identify any archaeological materials or remains. However, given the potentially sensitive nature of these features as potential burial places, intrusive subsurface inspection was not conducted. As per the AIA report (Appendix W), avoidance is recommended. If avoidance is not feasible, additional archaeological study would be undertaken prior to construction.
2784.1	round 1	Gitga'at First Nation	7.2.9	Heritage	With the large number of sites in very close proximity to the Project, on going monitoring to ensure the sites are not impacted is required. We would like to see monitoring during construction and yearly monitoring of the sites during operations, and monitoring during closure and reclamation activity.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, monitoring of the sites after initial construction (tree removal and ground disturbance) may not be required however Aurora LNG will review the requirement for monitoring on a site by site basis in discussion with the appropriate regulatory authorities. Aurora LNG welcomes further discussions with Gitga'at First Nation regarding heritage and archaeological resources.
2785.1	round 1	Gitga'at First Nation	7.2.3.2	Heritage	Fossil sites have been attributed to Digby Island, however the report states that there is no potential for fossil finds. It is not clear from the Paleontology report if a qualified professional paleontologist conducted this assessment. Please state the qualifications of the person who did the study.	Edits were made to Sections 7.2.1, 7.2.2.1, 7.2.2.8, 7.2.3.1, 7.2.3.2, 7.2.3.3, 7.2.8, and 7.2.9 in response to comments from the Heritage Branch during the screening of theapplication in December 2016 which address this comment. To clarify, a high-level review of paleontology has been conducted for the Project. The review was conducted by a professional Palaeontologist with a PhD who is a member of the British Columbia Paleontological Alliance. A paleontological assessment will be conducted prior to construction and will include review of relevant information and databases. The assessment and reporting will be conducted under a permit issued by the province. If any fossils are identified, they will be managed in consultation with the Heritage Branch. The Archaeological and Heritage Resources Management Plan will include measures to manage any unexpected fossil finds during project activities. The plan will meet Heritage Branch standards regarding management of fossil sites. The management plan will be prepared prior to construction. An edit was made to Table 7-7 during screening to reflect that the Heritage Branch will be consulted during its preparation.
2786.1	round 1	Gitga'at First Nation	7.2.4	Heritage	Gitga'at disagrees with the assessment of potential project interactions with archaeological sites. This section needs to include potential impacts from increased human presence throughout the project lifecycle, and impacts to buried deposits during construction, decommissioning and closure.	Potential Project interactions with archaeological and heritage resources are only anticipated to occur during activities that result in tree removal or ground disturbance (including dredging) during the construction phase. The operation and decommissioning phases are not anticipated to result in additional tree removal or ground disturbance (including dredging) outside of the area affected during the construction phase, and therefore do not have potential to cause a measurable interaction with archaeological and heritage resources. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources.
2787.1	round 1	Gitga'at First Nation	7.2.5.1	Heritage	Gitga'at disagrees with the assumption that the effects of the Project on Heritage resources are well understood based on the work done in the LAA and RAA. The LAA and RAA are too small to understand the affects of the Project and Heritage resources and need to be expanded.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA.Within the Application process, the AIR describes the LAA and RAA as being the Project Development Area and this is consistent with what is included in the Application, Section 7.2.2.5. The LAA and RAA are used to assess effects during all project phases; however, only construction activities are predicted to have an effect on this VC because vegetation clearing and ground disturbance with the potential to impact archaeological and heritage resources will be completed during the construction phase. Access to archaeological sites within the LAA/RAA by members of the public is not anticipated to increase during the construction and operation phases, as there will be on-site security services and restricted access to the PDA. Access to archaeological sites by project personnel is not anticipated (see mitigation 6.4.4). Therefore, tree removal or ground disturbance related to increased human presence are not anticipated and human presence is unlikely to cause a measurable interaction with archaeological and heritage resources. For these reasons, no change to the Application is considered warranted.
2788.1	round 1	Gitga'at First Nation	7.2.5.2	Heritage	Gitga'at disagrees with the assessment of residual effects. The assessment has not considered the significance of the sites regionally. The project area has a very high density of archaeological and historic sites and is evidence of the high use and significance of the area over a long period of time. There a few places on the coast that have such a high density of sites in such a small area and location. It is also an excellent area for public interpretation to occur. The loss of these sites would have a significant residual impact on the population of archaeological and heritage sites in the larger region.	The regional setting for archaeology and heritage is addressed in the permitted AIA report (Appendix W). The AIA was completed in accordance with regulatory guidelines and considers appropriate regional data to assess the significance of, and potential effects to, sites situated in the LAA/RAA. Aurora LNG acknowledges the concern of Gitga'at First Nation regarding the archaeological and heritage sites in the PDA. Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.
2789.1	round 1	Gitga'at First Nation	7.2.5.3	Heritage	The assessment of residual effects needs to be revised to reflect the significance of the very high density of archaeological and heritage sites in this location and how the loss of this resource will carry forward in to the future and result in the loss a significant resource. Mitigation through data recovery and monitoring of the sites will not be enough to offset losing an area like this that has this time depth of occupation, density and diversity of sites.	Aurora LNG acknowledges the concern of Gitga'at First Nation. Avoidance of archaeological and heritage sites is the preferred method of mitigation. If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued by the Archaeology Branch for HCA protected sites. For non-protected heritage resources, mitigation is determined in consultation with the Heritage Branch and potentially affected Aboriginal Groups, as applicable, and typically follows established best practices. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant.Aurora LNG will engage the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan.
2790.1	round 1	Gitga'at First Nation	7.2.6	Heritage	A cumulative effects assessment is necessary for this project as the logic that the mitigation will offset the residual effects is flawed. The current mitigation plan does not offset the significant loss the collective archaeological and heritage resources in this area.	Aurora LNG is confident that the correct approach to mitigating the loss of information about or alteration to site contents or contexts resulting from construction of the Project has been employed. Avoidance is recognized as being the preferred option, and the majority of the archaeological sites with high significance within the PDA are situated within the proposed buffer (Figure 7-1 and Figure 7-2). If avoidance is not feasible, a program of systematic data recovery and/or archaeological monitoring will take place under a Section 12 alteration permit issued for HCA protected sites. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Archaeological and Heritage Resources Management Plan. The success of the measures that are ultimately determined through this engagement is predicted to be high. Therefore, with the implementation of mitigation measures 7.1.1 to 7.1.3, residual effects are assessed to be not significant. In accordance with the AIR, an assessment of cumulative effects on archaeological and heritage resources was not undertaken as the following two conditions were not met: 1) proposed Project is assessed as having residual effects on the VC and 2) residual effects could act cumulatively with residual effects of other past, present, or reasonably foreseeable future physical activities. Further assessment of cumulative effects on archaeological and heritage resources is not warranted because the Project effects on archaeological and heritage resources will be mitigated prior to alteration. As a result, there are no predicted residual effects to archaeological and heritage resources. Consequently, the Project is not expected to interact cumulatively with potential residual effects from other projects or activities.
2791.1	round 1	Gitga'at First Nation	7.2	Heritage	Gitga'at recommends to protect old growth areas in the PDA and access to them.	Access will not be permitted in the PDA during the construction and operation phases of the project. Aurora LNG welcomes further discussion with Gitga'at First Nation regarding the management of any old growth areas in the buffered portion of PDA that will not be felled during construction.
2792.1	round 1	Gitga'at First Nation	7.2	Heritage	Nexen must commit that all workers must be educated on chance finds.	The Archaeological and Heritage Resources Management Plan will include a chance finds procedure which would include training for relevant project staff and/or contractors. All personnel working on the Project will receive an orientation and be required to receive all applicable training as per the environmental management plans.

2793.1	round 1	Gitga'at First Nation	8	Human Health	According to the human health assessment, emissions during the operations phase will exceed those associated with construction of the Project. For that reason, the construction phase of the Project was not assessed in the human health assessment. However, the air quality assessment indicates that construction emissions will exceed operations emissions for certain air contaminants (e.g., PM2.5 and PM10 emissions; see Table 4.2-11 and Table 4.2-12). Therefore, the health risks associated with construction of the Project should be quantitatively assessed.	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and Project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and Project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project PDA (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case which means that levels of PM increases about 0% to 4% of the applicable air quality objective. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase. For other types of potential construction emissions such as volatile organic compounds, refer to the "Volatile Organic Compound and Human Health Assessment" technical memo which will be filed with the BC EAO. The "Volatile Organic Compounds and Human Health Assessment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2794.1	round 1	Gitga'at First Nation	8.3.1	Human Health	Other applications in BC that included a marine traffic component were required to assess the health effects of diesel particulates. Rationale should be provided why diesel emissions were excluded from the Application. If such rationale cannot be provided, diesel emissions should be included in both the air quality and human health assessment.	The potential health risk associated with the construction phase was not assessed in the Application because the amount of PM10 and PM2.5 produced was similar between the construction and project-alone phase. For example, the Air Quality TDR (Appendix A of the Application), Table 13 (page 21) provides the average annual emissions of PM10 and PM2.5 during the construction phase and project-alone phase. - Construction PM10 emissions = 21.5 tonnes/year. - Construction PM2.5 emissions = 20.9 tonnes/year. - Project operations PM10 emissions = 19.2 tonnes/year. - Project operations PM2.5 emissions = 18.4 tonnes/year. Based on the results of the Human Health assessment (Chapter 8 of the Application), Table 8.2-9 (page 8-34), the potential change in health risk from particulate matter in the operations phase is negligible. In locations such as Dodge Cove (i.e., Receptor ID: D-337D, D-372F and D-385) and the worker camp within the Project PDA (i.e., Receptor ID: IF-1764, IF-1825, and IF-385), the concentration ratio increases marginally from 0.00 to 0.04 above the Base Case which means that levels of PM increases about 0% to 4% of the applicable air quality objective. There are negligible changes in the health risk to people from particulate matter in the communities that are closest to the proposed Project. People in communities more distal from the proposed Project (e.g., Prince Rupert, Port Edward, Metlakatla Village) would experience even lower exposures. Given this information, it is logical to conclude that the assessment of particulate matter in the operations phase (i.e. Application Case) would provide sufficient information to conclude a similar degree of health risk in the construction phase.
2795.1	round 1	Gitga'at First Nation	8.2.2.8	Human Health	The relevance of the significance threshold should be further described. For example, according to Table 8.2-5, *"if the baseline HQ for food or water ingestion is greater than 0.2, the significance threshold is reached when the Project or cumulative case HQ is greater than baseline HQ + 0.2 "*. No information is provided for why the "HQ + 0.2" benchmark constitutes a significance threshold (i.e., the metric seems somewhat arbitrary). Additional information should be provided as to why this benchmark is considered significant.	The application of adding 0.2 to the baseline CR/HQ was made following comments from the Ministry of Health. The Ministry of Health has commented in working group meetings that the project's contribution to health risk should not exceed 20% (i.e., a CR or HQ of 0.2) of the applicable regulatory guideline.
2796.1	round 1	Gitga'at First Nation	8.2.2	Human Health	The Application only focused on a select number of COPC (e.g., CACs like CO, PM, SO2 and NO2). No rationale is provided for excluding trace air contaminants like PAHs, VOCs or metals. Other (similar) applications in BC have included a detailed characterization of health risks associated with TACs. Information should be provided why only CACs were considered.	The Application focused on criteria air contaminants that could be produced in sufficient amounts so as to reasonably pose a risk to human health. The scope of the assessment was determined in collaboration with federal and provincial regulators and other stakeholders. Polycyclic aromatic hydrocarbons, volatile organic compounds and metals were not included in the Application Information Requirements under Section 8 for the assessment of human health. Volatile organic compounds in LNG are predominantly methane, ethane, propane and other short chained hydrocarbons which are not toxic when inhaled. There is no pathway for the project to contribute metals in the air. The assessment of metals in air are typical of mine projects, which produce mineralized dust. A rationale for excluding a chemical substance is only provided for substances that were identified in the Application Information Requirements, which defines the scope of the Application.
2797.1	round 1	Gitga'at First Nation	8.2.4	Human Health	Boiling water will neither change the pH nor metal concentrations of water. There is an assumption that the residents use a point of source filtration device rather than boiling the water.	The Application does not state that boiling water will change the pH or metal concentrations in the water, noting that the predicted change in water pH (less than 0.3 pH units in the Dodge Cove water reservoir) does not result in a health concern as described in Section 8.2.4 of the Application (Human Health VC - 8.2.4 Project Interactions with Human Health). The boil water advisory is intended to protect residents from water-borne diseases caused by Escherichia coli (E.coli) and fecal coliforms that could be present in untreated or unboiled water. The Project does not affect fecal coliform levels in the Dodge Cove drinking water reservoir. The Application also states that "some Dodge Cove residents apply a point-of-use personal water filtration system for surface waters collected from Digby Island". This statement only indicates that some residents choose to apply a water filtration device as a personal preference.
2798.1	round 1	Gitga'at First Nation	8.2.5.3	Human Health	COPC were selected by comparing measured sediment concentrations against sediment quality guidelines that are intended for the protection of aquatic life. This pathway is not immediately relevant to human health. As a result, it is unclear if the human health includes all COPCs relevant or applicable to the Project. Other screening criteria should be considered for the identification of COPC and the subsequent characterization of multiple exposure pathways.	Aurora LNG stands by the methods used to screen chemicals of potential concern to apply to marine traditional foods. As noted in Section 8.2.2.5.4 of the Application, there are no sediment quality guidelines for the protection of human health from any provincial, federal or international regulatory agency. Other screening criteria (e.g., screening against soil quality guidelines for the protection of human health) would encounter similar issues where guidelines are not entirely applicable. The screening was conducted in a manner that consistent with the assessments of other projects that involved dredging (e.g., Pacific Northwest LNG, Prince Rupert Gas Transmission Pipeline, LNG Canada (in Kitimat)). Aurora LNG acknowledges that during the AIR development in 2014, the Ministry of Health (MOH) indicated that the use of CCME sediment quality guidelines as a screening tool for food pathways is not appropriate. A request was made at that time for MOH to suggest alternative screening methods because the proponent recognized that no environmental guidelines would be entirely applicable. Ministry of Health declined to provide alternative screening methods that would be acceptable. Aurora LNG had considered applying the following methods as screening tools: - Canadian Food Inspection Agency tissue residue limits for dioxins and furans. - BC Contaminated Sites Regulations Soil Quality Guidelines for the Protection of Human Health (residential land). However, if these screening methods were applied, copper, dioxins and furans would be screened out of the assessment because the concentration of dioxins and furans were below the CFIA tissue residue limit, and the concentrations of copper, dioxins and furans in the sediment are below the BC CSR soil quality guidelines defining them as contaminants. Therefore, in order to be consistent with the methods used in other LNG projects that propose dredging, the CCME sediment quality guidelines were applied.
2799.1	round 1	Gitga'at First Nation	8.2.5.3	Human Health	Consumption rates used for the exposure assessment are lower than those estimated by the Gitga'at. Gitga'at must be consulted on this.	Refer to the document "Supplemental Information for Traditional Marine Foods", which will be submitted to the EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2800.1	round 1	Gitga'at First Nation	8.2.5.3	Human Health	PAH that were below the detection limits were not included in the assessment. Please update the Application by including these.	Polycyclic aromatic hydrocarbons (PAH) are a broad class of chemicals. Among these, nine individual PAH compounds are considered carcinogenic. When any one of these PAHs were above the applicable screening guideline, all nine PAHs were included in the assessment of human health. This is the standard protocol when addressing the health risk associated with chemicals that have a similar mode of action with respect to human health. For carcinogenic PAHs that were below the detection limit, the assessment assumed that the concentration of PAHs in the food was equal to the detection limit, which is the most conservative approach.
2801.1	round 1	Gitga'at First Nation	8.2.5.3	Human Health	Arsenic concentrations were not speciated and were not considered in the assessment although exposure pathways for arsenic are identical to those presented for copper, which was assessed. The rationale for excluding arsenic from further analysis is inconsistent with retaining copper as a COPC (i.e., COPC selection criteria should be consistent). Please assess arsenic risk.	Arsenic in seafood such as fish, crustaceans and molluscs is predominantly in the form of arsenobetaine, an organometallic which is largely considered non-toxic and harmless to humans when consumed. This rationale was provided in the Human Health Technical Data Report (Appendix R, Section 4.1.2.1 - Rationale for Excluding Arsenic from Marine Harvested Foods). In contrast, there is no supporting body of research that indicates different levels of toxicity associated with inorganic and organic forms of copper. Therefore, all forms of copper were assumed to have the equivalent level of toxic potential. Please refer to the following literature sources regarding the relative toxicity of arsenobetaine in seafood and marine life in general: https://www.iupac.org/publications/pac/pdf/2010/pdf/8202x0373.pdf http://ceqg-rcqe.ccme.ca/download/en/230
2802.1	round 1	Gitga'at First Nation	8.2.5.3	Human Health	No analytical results for the crab tissue or the crab hepatopancreas are provided. No details regarding the crab tissues are provided. Analysis should conducted on crab muscle, total crab (including hepatopancreas) and hepatopancreas in order to adequately assess exposure. Please provide these results and assess impacts.	Please see the "Supplemental Information for Traditional Marine Foods" technical memo which includes responses to this comment. This technical will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2803.1	round 1	Gitga'at First Nation	8.2.5.3	Human Health	The results of the analysis of 5 clam samples are provided and the mean concentrations of copper from the 5 samples are used in the assessment. Given the small sample size risk for the maximum concentrations should also be calculated.	Health Canada's "Supplemental Guidance on Human Health Risk Assessment for Country Foods" recommends that for simple risk assessments, a minimum of 5 to 10 tissue samples be taken for each species and tissue of interest. Clam samples were composite samples (i.e., multiple individual clams were used to generate a single tissue sample) Each composite sample was composed of 8-10 clams, totaling a range of 40-50 clams. The maximum concentrations are provided in the laboratory results.
2804.1	round 1	Gitga'at First Nation	8.2	Human Health	Rather than calculating health risk through a multi-pathway assessment, individual pathways were assessed. Please reassess using multi-pathways. Worked examples of specific calculations of exposure in the HHRA are needed.	The guidance framework provided by Health Canada for risk assessments only considers multi-pathway assessments if people are exposed to the same chemical from different exposure pathways (e.g., inhalation, ingestion, dermal pathway). The assessment of human health for the Project does not apply the same chemicals. The inhalation pathway considers sulphur dioxide, nitrogen dioxide and particulate matter. The ingestion pathway for marine food considers dioxins, furans, polycyclic aromatic hydrocarbons and copper.
2805.1	round 1	Gitga'at First Nation	8.2	Human Health	Dermal exposure to sediments during clamming was not assessed. Please update the Application with this assessment	The concentrations of chemicals in the sediment do not constitute levels that could pose a significant risk to people from dermal exposure. The maximum concentration of dioxins measured in surface sediments in the area was 2.86 picograms per gram (i.e., 2.86 trillionths of a gram). Concentrations of dioxin in sediment may be compared to soil quality guidelines because sediment is essentially soil material in water. The BC Contaminated Sites Regulations guideline for dioxins in soils for the protection of human health is 350 pg/g (for residential soil). http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/375_96_07 This means that if the equivalent amount of dioxins were found in the soil of a residential area, there would be no significant risk since the levels would be 100-times below what is considered contaminated. Dermal exposure to sediment while clamming is intermittent and short-term. In comparison, dermal exposure to residential soil is considered a potential long-term exposure. If the exposure to dioxin in soils (at a concentration of 2.86 pg/g) does not constitute a significant risk, intermittent exposure to sediments at this concentration would also not be a significant risk. Sediment core samples have demonstrated that the highest levels of dioxins are in the surface layers. Therefore, any dredging to a depth of 15 meters would only serve to further reduce dioxin concentrations in the localized sediment.
2806.1	round 1	Gitga'at First Nation	8.2	Human Health	Were health impacts assessed for crew and terminal operators if a "rapid transition phase" (or "cold explosion") event were to occur (cryogenic and asphyxiation could occur)?	The accidents and malfunctions section of the Application (Section 9) describes the scenarios that could result in a release of LNG into the marine environment resulting in rapid phase transition, and the overall implications to each VC including health.
2807.1	round 1	Gitga'at First Nation	8.2	Human Health	How can the impacts to human health be 'reversible'?	The characterization of "reversible" and "irreversible" health effects refers to the nature of the effect. For example, if exposure to a substance (e.g., sulphur dioxide or nitrogen dioxide) results in a respiratory response, that effect is reversible because after the exposure has stopped, a person is expected to recover from the effects. An irreversible effect would be permanent, and the effect would not recover after the exposure has stopped. This refers to cancerous effects where genetic damage resulting from an exposure has occurred. An example would be cigarette smoking where the cancer risk is cumulative over an individual's lifetime.
2808.1	round 1	Gitga'at First Nation	8.2	Human Health	Why wasn't change to human health from changes in marine food quality assessed cumulatively with other Projects?	A cumulative effects assessment considers other future projects that have the potential to overlap temporally and spatially with the effects of the Aurora LNG Project. In this case, a cumulative effects assessment would be conducted if there were activities from other projects that would occur at the same time as dredging, and/or in the same location. No other future projects were identified which would result in overlapping marine activities in the Aurora LNG dredge footprint that could affect marine foods.

2809.1	round 1	Gitga'at First Nation	8.2	Human Health	What during and post-dredging monitoring will take place?	Aurora LNG will consider the need for post-dredge monitoring related to human health prior to the start of construction. Given that chemicals of potential concern (e.g., dioxins) will not increase in the sediment during or after Project dredging, monitoring is not currently proposed.
2810.1	round 1	Gitga'at First Nation	8.2	Human Health	Who will be track health effects (e.g., changes in asthma, diabetes, cancer)?	Aurora LNG proposes to monitor Project-related effects on health care infrastructure and Services through the Social Management Plan (see mitigation 6.3.1 and Section 14.12). Monitoring and reporting of Project-related changes in health status beyond that required by WorkSafeBC is not proposed. On-going monitoring of changes in health status is completed at the federal and provincial level. Federally, Health Canada, Statistics Canada and the Canadian Institute for Health Information monitor and report on various measures of health status. Provincially, BC Stats, the Provincial Health Services Authority, Local Health Authorities (e.g., Northern Health) and the Aboriginal Health Authority monitor and report on various measures of health status.
2811.1	round 1	Gitga'at First Nation	8.2	Human Health	Why wasn't health impacts from Project related noise, vibration and light not assessed in this section?	The effects of noise and vibration was assessed in the Acoustic Environment valued component Application (Section 4.4 of the Application), which applies the same metrics for noise applicable to human health (i.e., percent highly annoyed; or %HA. The assessment concluded that there would be no significant changes in the %HA. The conclusion would be the same when applied to human health, because such an assessment would apply the %HA metric in the same manner. Potential effects from light are described in the Visual Quality assessment (Section 6.2 of the Application). This section already describes the potential lighting effects to nearby receptors/residences.
2812.1	round 1	Gitga'at First Nation	9	Accidents or Malfunctions	According to the Society of International Gas Tanker and Terminal Operators Ltd. (SIGTTO) "Site Selection and Design for LNG Ports and Jetties" (SIGTTO, 1997), LNG safety is reliant (among others) on the siting of LNG terminals away from civilians and that berths must be far from transit routes to prevent collision (and ignition); the Aurora LNG Project is not compliant with either of these standards. This is concerning to Gitga'at, especially considering the climatic and oceanographic conditions of the north coast. [SIGTTO, 1997: available at http://reallnghearings.org/wp-content/uploads/2015/05/sigtto-standards.pdf]	As stated in Section 9.8.2. of the Application, 'the Project will comply with Canadian Standards Association Z276-15 code, as per the LNG Facility Regulation' which includes 'prescribed setbacks from occupied areas to protect the public based on modelled heat transfer from a Project-induced fire and dispersion of an unignited vapor cloud.' Control zones, described in Section 6.5.2.5 of the Application, on p. 6.5-7, and shown in Figure 6.5-2, are 500 m diameter zones surrounding the berths of the marine terminal that other marine traffic will be required to avoid as a precaution for safety and security. Section 9.9 of the Application considers a credible worst case scenario involving a vessel-to-vessel collision.
2813.1	round 1	Gitga'at First Nation	9	Accidents or Malfunctions	Given the worst-case scenario of an LNG release, and subsequent LNG drift, the impacts can be devastating. Please assess this scenario, including health and socio-economic impacts - consider who, what and where evacuations would result. Also consider worst-case weather and navigation conditions, e.g., high winds.	The release of LNG is already considered in three scenarios within the Application: Section 9.6 On-shore Fires or Explosions; Section 9.8 On-shore Hazardous Spills; and Section 9.9 Vessel Grounding or Collision. Within each of these sections, the relevant VCs which may experience an adverse effect have been assessed.
2814.1	round 1	Gitga'at First Nation	9	Accidents or Malfunctions	The Application states that the LNG industry has an exceptional safety record - please provide evidence to support this statement, including the metrics used to evaluate and conclude such statement. It is known that the LNG carrier shipping industry often uses a total loss of a vessel as their metric which can provide skewed inferences.	Comment noted. Natural gas is a clean burning fuel when compared to other fossil fuels. Reference to the exceptional LNG industry safety record is reflected by the GIIGNL 2012 report on the safety of commercial LNG shipping. Stringent safety and environmental regulations in Canada will only serve to improve this record further.
2815.1	round 1	Gitga'at First Nation	9.1	Accidents or Malfunctions	The response plans must address First Nations capacity to respond to emergencies. Communication plans need to involve First Nations communities and be agreed on between the company and First Nations (also local small communities such as dodge cove). These should include evacuation plans, who to notify, and how.	As stated in Section 12.6 of the Application, 'Aurora LNG looks forward to continuing to consult with Aboriginal Groups about safety and emergency response strategies'. Such discussions will help Aurora LNG to identify meaningful ways in which Aboriginal Groups such as the Gitga'at First Nation may be integrated into Project-related response planning and preparedness.
2816.1	round 1	Gitga'at First Nation	9.1	Accidents or Malfunctions	The HSE plan does not address cumulative environmental impact but does it address cumulative health and safety concerns? Impact to human health and such?	The Nexen Corporate HSE Management System referred to in the comment is designed to assess the safety risk to people and the effects to the environment of a single scenario occurring. The probability of any particular accident and malfunction scenario occurring is extremely low (e.g., aircraft impacting the facility) to low e.g., vehicle accidents), while the types of safety risks are different for each scenario (e.g., fire, exposure to LNG, explosions, vehicle collision) and they are not cumulative with each subsequent accident and malfunction event. The project specific Emergency Response Plan described in section 14.16 will describe the procedures to be implemented to response to all incidents and emergencies associated with the Project. The plan will identify protection of emergency response staff, workers, the public, property and the environment as priorities in an emergency.
2817.1	round 1	Gitga'at First Nation	table 9.3-1	Accidents or Malfunctions	Facility impacts from air craft - what are the impacts of the facility to aircraft? Such as changing micro-climate, potential re-routing of air craft etc.	Section 9.7 of the Application discusses the potential effects of a facility malfunction including potential effects on infrastructure and services such as civil aviation. Also see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo to address the issues raised by this comment. This technical memo will be filed with the BC EAO.
2818.1	round 1	Gitga'at First Nation	table 9.3-1	Accidents or Malfunctions	Vessels grounding or collision would certainly affect vegetation and wetland resources. Salt marshes, seaweed and kelp beds and harvest, intertidal vegetation, and wildlife would be impacted. The socio-economic impacts have been proven to be enormous to local economies when disasters like a collision and spill occur, not to mention impacts to visual quality from spills, wreckage and damage. Table 9.3.1 does not appear well thought out, justified or inclusive of all the potential impacts.	Potential effects of vessel grounding or collision on salt marshes, seaweed and kelp beds, intertidal vegetation are included within the assessment of Marine Fish and Fish Habitat (p. 9-38). The interactions in 9.3-1 are considered based on the measurable parameters, potential effects and characterization of residual effects as described for each VC in their respective sections in Part B. There are other interactions that may occur as a result of these accident or malfunction scenarios however based on the characterization of residual effects criteria, they are not expected to be of concern. Section 9.3 on page 9-5 describes how these determinations where made.
2819.1	round 1	Gitga'at First Nation	9.4.1 conclusion	Accidents or Malfunctions	" there are no interactions between motor vehicle collisions within the PDA with any VC's" what about fuel delivery? Service trucks? Crew busses? Heavy equipment?	The potential interactions between a motor vehicle collision involving a fuel delivery truck or other large vehicle and VCs could arise if the collision resulted in an on-shore spill. Potential interactions between an on-shore spill and VCs are described in the Application, Section 9.6.
2820.1	round 1	Gitga'at First Nation	9.6.2	Accidents or Malfunctions	Aurora will perform fire and explosion analysis as per company requirements - What does this look like in comparison to provincial and or federal guidelines (if any)? how will this be monitored and recorded? Please provide more information.	The LNG Plant will be designed and built according to the CSA standard for LNG facilities (including completion of a Quantitative Risk Assessment) as well as the fire code standards.
2821.1	round 1	Gitga'at First Nation	9.7.1	Accidents or Malfunctions	"….Full emergency shutdown of a maximum of one production train with associated flaring." What does this mean? Is this worst-case? For example, why only one train?	The probability of an emergency shutdown of one train is low but more likely than an emergency shutdown of all four trains. Potential effects of an emergency shutdown of one train are therefore assessed for Wildlife Resources (Terrestrial), Marine Birds, Infrastructure and Services (see Table 9.3 1). Potential effects of a four train shutdown are assessed for Air Quality, GHGs , and Human Health VCs, as a result of "worst case" air emission and dispersion modelling assumptions.
2822.1	round 1	Gitga'at First Nation	9	Accidents or Malfunctions	What exclusions or shutdowns to vessels or vehicle traffic will occur? Either by order of Nexen, the Port Authority or transport Canada.	As noted in Section 6.5.2.5 of the Application, Aurora LNG has proposed a control zone of 500 m radius surrounding each marine terminal berth which is expected to define the ignition-free areas and areas that will be used to dock the LNG vessels. Other marine traffic will be required to avoid these zones as a matter of safety and security while the LNG carrier is loading. The final size of the control zones is subject to change based on the results of a detailed risk assessment to be undertaken as part of facility design (see Figure 6.5-2). Aurora LNG will be participating in a TERMPOL process and will abide by the recommendations resulting from this process related to safe shipping practices. The recommendations will serve as the basis for additional mitigation measures and may lead to the refinement of the proposed control zone.
2823.1	round 1	Gitga'at First Nation	9.7.3	Accidents or Malfunctions	"Flaring activities could temporarily interfere with civil aviation." As the project is in close proximity to the airport, this seems risky. Please provide more information on how Nexen plans on managing this risk.	Please see the "Potential Effects on Aviation as a result of Accidents or Malfunctions" technical memo which will be filed with the BC EAO.
2824.1	round 1	Gitga'at First Nation	9.7.3	Accidents or Malfunctions	"concentrations of sulphur dioxide, nitrogen dioxide and particulate matter would be less than applicable health based ambient air quality objectives" - does this consider if a second LNG facility such as PNW is operating? What will Nexen do in the event of an exceedance? does this result in an immediate shut down?	Dispersion modelling was used to predict air quality concentrations relative to a four-train shutdown. resulting in flaring of the full LNG plant inventory (see Section 7.2.2 of Appendix A of the Application). Model predictions were found to be below applicable ambient air quality objectives. If emergency flaring is required as a result of a full scale shutdown, Aurora LNG will activate the EMP and inform applicable jurisdictions. Air quality will be monitored relative to applicable thresholds established during permitting. If ambient air quality concentrations exceed applicable objectives as a result of a four-train shutdown, Aurora LNG will use the ERP to inform the public. The assessment of multiple LNG facility malfunctions is not within the scope of the AIR and is therefore not included in the assessment.
2825.1	round 1	Gitga'at First Nation	9.7.4	Accidents or Malfunctions	"…and accidents and malfunctions scenario involving an LNG plant malfunction, will result in no significant effect to the VC's (i.e. air quality, GHG's, wildlife resources (terrestrial), Marine birds, infrastructure and services, and human health)" - what about a major flaring event, large leak or catastrophic failure? Although the table is listed for residual effects, there would be significant acute effects.	Flaring as a result of an all train shutdown is assessed in Section 9.7. Onshore hazardous spills are assessed in Section 9.8. Potential effects of ignited leaks (i.e., natural gas, flammable liquids and vapours) are assessed in Section 9.6.
2826.1	round 1	Gitga'at First Nation	9.8.2	Accidents or Malfunctions	"Drainage systems will be in place to collect contaminated water and process effluents" - this material must be avoided in the first place but if it occurs it must be treated and mitigated.	Aurora LNG acknowledges and agrees with the comment; this is why spills are considered to be accidents or malfunctions, as opposed to part of normal operations. Contaminated water will be handled as hazardous material and be treated as disposed of in accordance with legislation.
2827.1	round 1	Gitga'at First Nation	9.9.1	Accidents or Malfunctions	"Released marine fuel is expected to spread quickly …..Diesel quickly degrades within one to two months through naturally occurring processes." IN the event of a grounding and spill of bunker and/or diesel, large impacts to local economies, health and ways of life may be felt. The local communities rely on the ocean for sustenance, for employment and health. In the event of a grounding event, the implications could be severe to many in the local communities. This is particularly true for Bunker oil as you mention on page 9-38 "bunker oil is persistent in the environment". Please provide more information on how Nexen will manage these risks.	Section 9.9.3 recognizes the potential effects of spills resulting in localized closure to marine harvesting of country foods as well as commercial fishing (Community Health). Aurora LNG acknowledges a closure to marine harvesting may affect local communities. The predicted effects are expected to be limited in geographic extent to the LAA and short-term in duration (as defined in the characterization of residual effects tables for these VCs). Aurora LNG notes that the severity of potential effects, on marine fish and fish habitat, from a spill in the marine environment, will vary depending on various factors including the type and volume of material spilled, the location, weather (during and following the spill) and season, marine fish (and life stages) and habitat present; tidal influences, response time and response measures.
2828.1	round 1	Gitga'at First Nation	page 9-41 section 9.9.1	Accidents or Malfunctions	Community health: and in Human health: In the event of a spill of diesel or bunker oil you mention that a localized fishing ban will be implemented. There are people and groups who do not have choice on where to fish through house territories, size of boat or issues as simple as no mode of transportation or money and must harvest food close to where they live. A large spill would be catastrophic.	As described in Section 11.6 of the Application, Aurora LNG acknowledges that the potential cumulative effects of a vessel-to-vessel collision causing a release of diesel and/or bunker oil could be significant to Aboriginal Current Use and Aboriginal Physical and Cultural Heritage through the potential loss or change in quality of harvested resources, or culturally or spiritually important species.
2829.1	round 1	Gitga'at First Nation	9	Accidents or Malfunctions	It is not clear if future conditions due to climate change (e.g., sea level rise) were considered in the assessment?	The potential effects of climate change on the Project are assessed in Section 10 of the Application (Effects of the Environment on the Project).
2830.1	round 1	Gitga'at First Nation	Table 11.3-2	CEAA 2012	For "effects of changes to the environment on Aboriginal health", why wasn't change in Project-related vibrations assessed? And why wasn't change in light?	The residual effects to the environment on Aboriginal Health were assessed according to the methods outlined in Section 11.3.5.1 and in Figure 11.3-5 of the Application. These methods were based on guidance provided by the CEAA, and are consistent with those described in Figure 11-1 of the AIR. Aurora LNG determined that a change in light levels, which are considered in the Visual Quality VC, did not have potential to interact with Aboriginal Health; therefore, these effects were not carried forward in the assessment. The potential effects from a change in vibration levels are captured through the assessment and conclusions of theAcoustic Environment and related VC's, and was not included in the discussion on Aboriginal Health because conclusions in the Acoustic Environment VC apply equally to any person, Aboriginal or non-Aboriginal.
2831.1	round 1	Gitga'at First Nation	Table 11.3-2	CEAA 2012	Again, disagree with the limited scope of the assessment on "effects of changes to the environment on Aboriginal socio-economics".	As per CEAA 2012 5(1)(c), the focus of the assessment is on effects to the environment on the various CEAA 5(1)(c) factors. The residual effects to the environment on Aboriginal socio-economics were based on guidance provided by the CEAA, and are consistent with those described in Figure 11-1 of the AIR.
2832.1	round 1	Gitga'at First Nation	11.3.2.4	CEAA 2012	The boundaries of the combined VCs LAAs and RAAs were modified to reflect information on harvesting practices along the coastlines of Melville Island and Stephens Island, and to capture all of Lucy Islands. The map on page 11-31 (Figure 11.3-1), depicts a much larger area for the LAA boundary for Current Use, going all the way up to Lax Kw'alaams and down to Kitkatla. Why does it cut off the southern end of Stephens Island? This area is much closer to the proposed shipping route than a good portion of the LAA, and Gitga'at's Traditional Use and Occupancy Study identified extensive Gitga'at use of that area, including anchorages, clam harvesting, and fishing throughout.	The LAA boundaries established for all of the Section 5(1)(c) Effects include areas from Lax Kw'alaams south to Kitkatla. The LAA boundary for Current Use is larger, extending further west, as it also incorporates the LAA's established for; Marine Mammals and Marine Use and Navigable Waters (see figures 4.10-1 and 6.5-1 respectively). The LAA's established for the Marine Mammals and Marine Use and Navigable Waters include buffers around the shipping route of 6km and 5km buffers, respectively, and encompass the area where potential effects from the Project could occur. The southern end of Stephens Island was not included in the Current Use LAA as it is outside of the 6km buffer established around the shipping route.
2833.1	round 1	Gitga'at First Nation	Table 11.3-6, Table 11.3-34	CEAA 2012	For the characterization of residual effects of 'reversibility', the definition of reversible reads "residual effect is likely be reserved after activity completion and reclamation". The proponent concluded that effects of the Project on current use would be reversible (Table 11.3-34). While the proponent's use of the term reversible in the assessment is consistent with their definition, the question begs of whether the proponent's conceptualization of reversibility is appropriate in the context of Gitga'at's harvesting. As noted on p10 of the CEA Agency's most recent guidance on characterization of residual adverse effects, reversibility is about recovery of effects "within a reasonable timescale" (CEA Agency, 2015.*Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012.* 11pp.). While best left to harvesters and Gitga'at as a community to decide, it would seem that several decades of loss of harvesting space (given the Project's proposed duration of "medium term" [see comment above], and potential lag effects due to possible perceptions of environmental degradation following decommissioning) might be a very damaging loss, especially considering some people's lifespans. Please justify your conception of 'reversibility' in the current use harvesting context, and whether it is meaningful and respectful to qualify the loss of harvesting opportunities for several decades as 'reversible'.	Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). In accordance with the AIR, the definitions of reversibility relate to "whether or not the residual effect can be reversed once the physical work or activity causing the disturbance ceases." As described in Table 11.3-6, the definition of reversibility in the context of the assessment of CEAA 5(1)(c) effects considers whether the residual effect is likely to be reversed after "activity completion and reclamation", which includes decommissioning activities. Applying the characterization of reversibility is linked to the characterization of duration. The definition of "Medium-term" in Table 11.3-6 includes consideration of whether or not a residual effect restricts traditional use, such that the effects extend beyond a single generation (~ 25 years) and effectively remove the knowledge related to a practice at a particular site from the community's Traditional Knowledge. Determining whether or not the potential effect restricts (i.e. effectively prevents) the transfer of knowledge related to a practice at a particular site is the primary consideration in determining whether a potential effect (that is predicted to last beyond the construction phase) should be characterized as "medium-term" or "permanent". If the presence of the Project would prevent Gitga'at First Nation use of particular known sites, then traditional users' ability to share traditional knowledge about those sites would be deprived for the duration of the Project activity. In this case, for the purposes of this assessment, residual effects on land and resources relied on for such a traditional use, which would otherwise be considered "medium –term", are instead characterized as "permanent" and "irreversible" on the basis that the resulting restrictions on the site will prevent the ability to transfer traditional knowledge related to the site where the site is removed from usefor a generation (~ 25 years). However, if Project activities have the potential to affect (but don't prevent) use of the sites where the current use activities occur, then traditional knowledge transfer about the sites and resources harvested or used would not be considered restricted. In this case, the duration of effects is characterized as "medium-term" and "reversible".
2834.1	round 1	Gitga'at First Nation	Table 11.3-7, Table 11.3-34, Table 11.3-36, Table 11.3-37	CEAA 2012	For the characterization of residual effects of 'duration', the definition of 'medium-term' reads "residual effect extends through the duration of construction, operations and decommissioning", and goes on to read "Aurora LNG understands that residual effects that restrict TU and extend beyond a single generation (~25 years) can effectively remove a practice from the community's TK. Therefore, for the purposes of this assessment, residual effects on land and resources relied on for TU that last longer than a single generation (~25 years) will be considered permanent." - so considering that the operation phase is expected to be 25 years, i.e., "a single generation" and due to the permanence acknowledgement of Nexen with impacts lasting one generation, why is there a medium or long-term duration category? It is Gitga'at's view that any effect that exists in construction and continues into operation and decommissioning is permanent; the duration characterization of current use (Table 11.3-34), socio-economic conditions (Table 11.3-36), and physical and cultural heritage (Table 11.3-37) must be changed from "MT [medium-term]" to "P [permanent]", and the significance determination must be re-evaluated.	Aurora LNG acknowledges, as per the definition of "Medium-term" in Table 11.3-6, that residual effects that restrict traditional use and extend beyond a single generation (~ 25 years) can effectively remove a practice from the community's Traditional Knowledge. Therefore, for the purposes of this assessment, residual effects on land and resources relied on for traditional use that last longer than a single generation (~ 25 years) are considered permanent. Determining whether or not the potential effect "restricts" (i.e. effectively prevents) the transfer of knowledge related to a practice at a particular site is the primary consideration in determining whether a potential effect (that is predicted to last beyond the construction phase) should be characterized as "medium-term" or "permanent". If the presence of the Project would prevent Gitga'at First Nation use of particular known sites, then traditional users' ability to share traditional knowledge about those sites would be deprived for the duration of the Project activity. In this case, for the purposes of this assessment, residual effects on land and resources relied on for such a traditional use, which would otherwise be considered "medium –term", are instead characterized as "permanent" on the basis that removing the ability to transfer traditional knowledge related to the site would no longer be possible if the site is removed for a generation (~ 25 years). However, if Project activities have the potential to affect (but don't prevent) use of the sites where the current use activities occur, then traditional knowledge transfer about the sites and resources harvested or used would not be considered restricted. In this case, the duration of effects is characterized as "medium-term".

2835.1	round 1	Gitga'at First Nation	11.3.2.7	CEAA 2012	For Significance Threshold for Current Use, a residual effect exists if the current use activity is "no longer considered viable" - please define "viable". Further information is needed besides "the determination of viability is guided by information provided by Aboriginal Groups and applying professional judgment". Also, similar to comments in the socio-economic Part B VC's, this significance threshold lacks reference to what conditions are and are not acceptable to Gitga'at (and other Aboriginal groups) - please also incorporate stakeholder perspective on what constitutes viable/acceptable conditions, and please revise your effects assessment accordingly.	The Application, including Section 11.3, was developed in accordance with the Application Information Requirements (AIR) and informed by pre-application consultation with Aboriginal Groups (see the Aboriginal Consultation Reports). Aurora LNG acknowledges that Gitga'at First Nation may have differing views regarding significance and the associated threshold as it relates to predicted residual effects on Current Use. In the context of the significance threshold for Current Use, "viability" is the consideration of whether it remains realistically possible and/or feasible to continue to participate in a specific traditional use activity at, or near, current levels (potentially with some level of modification). In accordance with the AIR and the Canadian Environmental Assessment Agency (CEA Agency) document entitled "Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects: A Framework" this evaluation considers the assessments of magnitude, geographic extent, duration, reversibility and context (i.e., resilience) for each of the measurable parameters identified for current use. In accordance with the AIR, professional judgement is applied as part of this evaluation in a manner that is consistent with the guidance provided in CEA Agency's document entitled "Technical Guidance for assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012" (December 2015) (see pg. 11). Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, the re-assessment, as suggested, is neither warranted nor required.
2836.1	round 1	Gitga'at First Nation	11.3.2.7	CEAA 2012	For Significance Threshold for Aboriginal Health, Socio-Economic Conditions and Cultural and Physical Heritage a residual effect exists if "if a key component (Table 11.3-2) that is relevant... would have a substantial effect ... beyond that considered in the VC analysis in Part B of the Application, it would be considered significant" - this ambiguous, and further information is needed: a) who determines if a component is "key", and "relevant"? b) what constitutes "substantial effect"? measured by who?, and c) what "VC analysis in Part B". Also see comments on Table 11.3-2.	The significance thresholds for Aboriginal Health, Aboriginal Socio-Economic Conditions and Aboriginal Cultural and Physical Heritage were established in accordance with the Application Information Requirements (AIR) and informed by pre-Application consultation completed by Aurora LNG. Aurora LNG acknowledges that Gitga'at First Nation may have differing views regarding significance and the associated threshold as it relates to predicted residual effects on Aboriginal Health, Aboriginal Socio-Economic Conditions and Aboriginal Cultural and Physical Heritage. As indicated in the significance threshold for Aboriginal Health, Aboriginal Socio-Economic Conditions and Aboriginal Cultural and Physical Heritage (pg. 11-47), the key components identified as relevant for each of the three potential effects are identified in Table 11.3.2 (in the "Components included in Assessment" column), which also identifies the Part B VCs that each of the potential effects referenced (pg. 11, 25-26) As provided in Section 11.3.2.7, significance thresholds for Section 5(1)(c) effects were developed by considering feedback received from Aboriginal Groups, taking into account guidance provided by the Canadian Environmental Assessment Agency and the BC EAO, examining similar environmental assessments, and applying professional judgement (pg. 11-47). The consideration, as part of the significance determination, of whether a key component that is relevant to Aboriginal Health, Aboriginal Socio-Economic Conditions, and Aboriginal Cultural and Physical Heritage would have a substantial effect beyond that considered in the VC analysis in Part B of the Application was guided by information provided by Aboriginal Groups and applying professional judgment. In this context, professional judgement was applied in a manner that is consistent with the guidance provided in CEA Agency's document entitled "Technical Guidance for assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012" (December 2015) (see pg. 11).
2837.1	round 1	Gitga'at First Nation	11.3.2.7	CEAA 2012	Significance Thresholds for Residual Effects. Simply because an area is physically available for use does not mean that harvesters would be willing or comfortable using that area. This determination, made by outsiders, does not consider other reasons that are not included in these guidelines.	Please see the memo titled "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application.
2838.1	round 1	Gitga'at First Nation	11.3.3, Appendix S.2, 11.3.12, 11.4	CEAA 2012	As with some of the Part B VCs (e.g., Community Health, harvested foods), the baseline provides little sense of the actual context for further impacts of major project development. The baseline outlines what species are used but doesn't explore the history of colonization and industrialization on Aboriginal use and most importantly the acceptability of current conditions of use to Aboriginal groups in the area. This is not simply an academic issue but is critical for interpreting Project effects (i.e., further impacts on current use may be significant to Gitga'at but are not concluded as such in effects assessments). Further, the notion that harvesters can simply shift their activities to other harvesting grounds ignores the fact of unequal distribution of resources across the region and the limitations imposed by traditional governance boundaries, and also assumes that alternative sites are felt to be of adequate environmental quality. Also in the CEA where major Projects affecting a larger portion of the study area are examined, the proponent still describes that harvesters can just shift harvesting locations. The proponent seems to conclude that the larger RAA means that harvesters have an even larger space from which to shift their activities, thus repeating the issues of unequal distribution of resources, political boundaries, and available of suitable alternative sites raised above further. Please revise the baseline to reflect a deeper understanding of context and please revise the effects assessment and cumulative effects assessment accordingly.	The methods utilized to compile the Existing Condition section and to characterize residual effects were established in accordance with the Application Information Requirements (AIR) and informed by pre-Application consultation completed by Aurora LNG. Regarding the Existing Conditions section (Section 11.3.12.2), the AIR indicates that the Application will summarize relevant baseline conditions for each Aboriginal Group on Aboriginal traditional practices and the current use of lands and resources for traditional purposes that may interact with the proposed Project (pg. 11-9). The information presented in Section 11.3.12.2 (Existing Conditions for Gitga'at First Nation) is in alignment with the requirements of the AIR. Regarding characterizations for Current Use, the specific characterizations for Current Use presented in Section 11.3.12.3 (Assessment of CEAA 2012 5(1)(c) iii—Current Use of Lands and Resources for Traditional Purposes) were assessed based on the information contained in Section 11.3.12.2 and Section 9 (Gitga'at First Nation) of Appendix S.2 (Aboriginal Consultation) and the definitions identified in Section 11.3.2.5 (Residual Effects Description Criteria). Please also see the memo titled "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12.5 of the Application. Aurora LNG is confident that the environmental assessment presented in the Application is fully compliant with all provincial and federal regulatory requirements. As a result, the re-assessment, as suggested, is neither warranted nor required.
2839.1	round 1	Gitga'at First Nation	11.3.4	CEAA 2012	Please provide more information for why "employment and expenditures" is not considered to impact Aboriginal Socio-Economics?	Section 11 of the Application addresses the assessment requirements of the CEAA 2012 (CEAA 2012) Section 5(1)(c). This section requires an assessment of residual effects on Aboriginal people that result from Project-generated changes to the environment. As such, the effects considered in the assessment of Section 5(1)(c) Effects are those that qualify as "effects to the environment" as defined by CEAA 2012. Effects that may affect Aboriginal people that are not "effects to the environment," such as employment and expenditures, are outside the scope of Section 11, and are considered in Part B of the Application.
2840.1	round 1	Gitga'at First Nation	11.3.5.1	CEAA 2012	It is stated "when interactions are found, identify if the predicted interactions would be different in an Aboriginal context when compared to those interactions described in the original VC section" - what is meant by "Aboriginal context"?	The assessment of CEAA 5(1)(c) effects considered whether the residual environmental effects identified in Part B VC assessments would be experienced differently by Aboriginal people than non-Aboriginal people by taking into account existing data from Aboriginal Groups on Current Use, Aboriginal Health, Aboriginal Socio-Economic Conditions, and Aboriginal Cultural and Physical Heritage. Existing conditions information for Gitga'at First Nation is presented in Section 11.3.12.2. These methods are outlined in Figure 11.3-5 and are consistent with those presented in Figure 11-1 of the AIR.
2841.1	round 1	Gitga'at First Nation	11.3.5.2	CEAA 2012	The assumption that resources harvested on or around Digby Island and in surrounding waters are not unique and can be harvested elsewhere within the LAA depending on protocols and availability is incorrect (and is not "conservative" as the text suggests). A particular species is not equivalent in all locations where it is harvested. Harvesting depends on a myriad of factors including weather, tides, seasonal abundance, quality and quantity at a specific location, proximity and ease of harvest, traditional conservation practices to prevent over harvesting and to allow re-growth, cultural teachings and variations in taste. One can't simply move to another area without it having an impact. This also ties to the last assumption that "all species identified through either Project specific TK and TU studies, or publicly available sources, are hunted, trapped, fished for, or gathered throughout the Current Use RAA." These further heighten Gitga'at's concerns regarding this section. No assumptions such as these should be made and Section 11.3 should be revised.	Information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" which will be filed with the BC EAO.
2842.1	round 1	Gitga'at First Nation	11.3.6.1	CEAA 2012	Due to linkages in Table 11.3-9 and Table 11.3-10, comments above in specific Part B VC apply. For example, we disagree with the methodology of only evaluating LNG carriers docked at the facility, as the shipping lane should be assessed.	The effects of LNG shipping, including LNG carriers and other supporting marine traffic such as tugs, were assessed in the following VC sections: Air Quality (section 4.2), Greenhouse Gases (Section 4.3); Water Quality (Section 4.5); Marine Fish and Fish Habitat (Section 4.9); Marine Mammals (Section 4.10); Marine Birds (Section 4.11); Community Health (Section 6.6); Marine Use and Navigable Waters (Section 6.5); and Human Health (Section 8). LNG carriers docked at the facility represent the most substantial potential effects. The effects of LNG shipping were not carried through certain VC assessments because LNG shipping are not predicted to have measurable effects based on the assessment findings of similar LNG projects (i.e., Pacific NorthWest LNG; LNG Canada). For VC assessments that did not consider effects from LNG shipping traffic, a description of why these effects were not brought forward in the assessment is provided in each of the relevant VC assessments. Aurora LNG believes that the assessment methods, analysis, and conclusions set out in the Application are fair and reasonable, and in compliance with the requirements of the AIR.
2843.1	round 1	Gitga'at First Nation	11.3.6.1	CEAA 2012	Table 11.3-9, Marine Use and Navigable Water, change in marine fisheries and other uses - please justify why "vegetation gathering" (e.g., seaweed) is not relevant?	As outlined in the AIR, Part B, Section 4.9 Marine Fish and Fish Habitat; Potential Project effects on Marine Fish and Fish Habitat, marine plants (e.g. eelgrass, seaweed, and kelps, SARA – listed species) are considered part of marine fish habitat. In regard to measurable parameters for the potential effect change in marine navigation, Section 6.5: Marine Use and Navigable Waters, Table 6.5-3: Potential Effects and Measurable Parameters for Marine Use and Navigable Waters, changes in Marine Fisheries and Other Uses does not address vegetation gathering, and is not applicable to seaweed gathering.
2844.1	round 1	Gitga'at First Nation	11.3.6.1	CEAA 2012	Table 11.3-10, Air Quality, change in ambient CAC concentrations - please justify why this is not relevant to important species that can be impacted by air quality impacts.	Project-related effects to species as a result of changes in air quality, where potential effects may exist, have been considered in relevant VC assessments and reiterated in the Section 11, as appropriate. While potential air quality effects were deemed relevant to the assessment of effects on use of spiritually or culturally important sites (in terms of a human's experience using those sites), air quality effects on spiritually or culturally important species are inferred through the results of relevant VC assessments. Additional Project specific information related to the species of spiritual or cultural importance can be found in the following VC assessments and TDRs: Wildlife Resources (Terrestrial) (Section 4.7 and Appendix J); Freshwater Fish and Fish Habitat (Section 4.8 and Appendix K); Marine Fish and Fish Habitat (Section 4.9 and Appendix L); Marine Mammals (Section 4.10 and Appendix N); Marine Birds (Section 4.11 and Appendix Q); and Vegetation and Wetland Resources (Section 4.6 and Appendix I).
2845.1	round 1	Gitga'at First Nation	11.3.6.1	CEAA 2012	Table 11.3-10, Acoustic Environment - please justify why this is not relevant to important species that can be impacted acoustics (e.g., killer whales).	The predicted Project-related effects to species as a result of potential changes in acoustics, where potential effects may exist, have been considered in the relevant VC assessments (for example, Wildlife Resources in Section 4.7 or Marine Mammals in Section 4.10) and reiterated in Section 11, as appropriate. The Acoustic Environment VC assessment (Section 4.4 of the Application) relates to potential changes to in-air sound levels only, and effects are considered from a human perspective. While potential acoustic-related effects were deemed relevant to the assessment of effects on use of spiritually or culturally important sites (in terms of a human's experience using those sites), acoustic-related effects on spiritually or culturally important species are inferred through the results of other relevant VC assessments. For example, potential changes to underwater sound levels are addressed in the Marine Mammals (Section 4.10) and Marine Fish and Fish Habitat (Section 4.9) assessments, and are reiterated in Section 11.3.12.3. Additional Project specific information related to the species of spiritual or cultural importance can be found in the following VC specific assessments and TDRs: Wildlife Resources (Terrestrial) (Section 4.7 and Appendix J); Freshwater Fish and Fish Habitat (Section 4.8 and Appendix K); Marine Fish and Fish Habitat (Section 4.9 and Appendix L); Marine Mammals (Section 4.10 and Appendix N); Marine Birds (Section 4.11 and Appendix Q); and Vegetation and Wetland Resources (Section 4.6 an Appendix I). The Prince Rupert – Aurora LNG Acoustic Monitoring Study (Appendix O), and the Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting (Appendix P) also provide further information related to potential acoustic effects on species.
2846.1	round 1	Gitga'at First Nation	11.3.6.1	CEAA 2012	Table 11.3-11 - see comments in each of the Part B VCs comments above, including one of Gitga'at's overlying major concern with the Application in that evidence of effectiveness for many of the mitigation measures presented throughout the Application is missing. Also, there are not any Aboriginal-specific (including Gitga'at-specific) mitigation measures presented.	Aurora LNG is confident in the effectiveness of mitigation measures proposed in the Application to reduce adverse effects of the Project. Aurora LNG requested specific feedback on proposed mitigation measures from Gitga'at First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
2847.1	round 1	Gitga'at First Nation	11.3.6.1	CEAA 2012	Will Nexen commit to follow-up monitoring programs to verify the accuracy of this assessment, and to determine if the mitigation measures presented in Part B (and referenced again in this section) are indeed effective? Gitga'at would like to be engaged in the development and implementation of follow-up monitoring programs.	Follow-up programs will be designed and implemented to assess the accuracy of the assessment predictions, and the effectiveness of mitigation measures. Section 15 of the Application outlines the proposed follow-up programs for the Project. Aurora LNG will engage with the appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of follow-up programs.
2848.1	round 1	Gitga'at First Nation	11.3.6.2	CEAA 2012	Again, shipping noise should be assessed.	The Aurora LNG Project shipping route distance to the nearest sensitive receptor (i.e., receptor ID R06, Barrett Rock) is 670 m. Based on the shipping noise effect from a similar application (PNW LNG), the predicted nighttime shipping sound level at receptor R06 would be less than 28.5 dBA. The nighttime sound level of 28.5 dBA is well below the nighttime existing sound level of 40 dBA at Barrett Rock presented in Table 4.4-7 of the Application. Further assessment of noise effects along the shipping route is therefore not required. Please see the "Sleep Disturbance and Speech Interference" technical memo for a discussion of the maximum noise level from sounding the marine horn on the LNG vessel during shipping activities. The technical memo will be filed with the BC EAO. The "Sleep Disturbance and Speech Interference" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2849.1	round 1	Gitga'at First Nation	11.3.6.2	CEAA 2012	Table 11.3-12 - see comments in each of the Part B VCs comments above, including one of Gitga'at's overlying major concern with the Application in that evidence of effectiveness for many of the mitigation measures presented throughout the Application is missing. Also, there are not any Aboriginal-specific (including Gitga'at-specific) mitigation measures presented.	Aurora LNG is confident in the effectiveness of mitigation measures proposed in the Application to reduce adverse effects of the Project. Aurora LNG requested specific feedback on proposed mitigation measures from Gitga'at First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
2850.1	round 1	Gitga'at First Nation	11.3.6.3	CEAA 2012	Table 11.3-13 - see comments in each of the Part B VCs comments above, including one of Gitga'at's overlying major concern with the Application in that evidence of effectiveness for many of the mitigation measures presented throughout the Application is missing. Also, there are not any Aboriginal-specific (including Gitga'at-specific) mitigation measures presented.	Aurora LNG is confident in the effectiveness of mitigation measures proposed in the Application to reduce adverse effects of the Project. Aurora LNG requested specific feedback on proposed mitigation measures from Gitga'at First Nation during Technical Workshops #4 and #5. Aurora LNG is currently reviewing feedback received to date on mitigation measures and any revised or new mitigation measures proposed will be included as part of an updated Table 16-1 and 16-2 to be submitted to the EAO on Day 90.
2851.1	round 1	Gitga'at First Nation	11.3.12.2	CEAA 2012	p. 11-307 what consumption rates were used for Gitga'at?	In the Project specific study provided by Gitga'at First Nation to Aurora LNG, no details on the average consumption rate of traditional foods by community members were included. Please see the technical memo, "Supplemental Information for Traditional Marine Foods" for additional discussionon consumption rates for marine foods. This document will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2852.1	round 1	Gitga'at First Nation	11.3.12.2	CEAA 2012	Existing Conditions - Socio-Economic Conditions (p. 11-308): this section has very minimal information. Please provide all of the information that was used to assess socio-economic impacts as they relate to CEAA 2012.	Information used to inform the assessment of Section 5(1)(c) effects for Gitga'at First Nation, including Socio-Economic Conditions, is presented in Section 5.2.3 of Economic Conditions and in Section 9 of the Aboriginal Consultation TDR (Appendix S2).
2853.1	round 1	Gitga'at First Nation	11.3.12.2	CEAA 2012	Due to linkages to Part B VCs, comments above apply - for Marine Birds, Marine Mammals, Wildlife (Terrestrial), Marine Fish and Fish Habitat, and Freshwater Fish and Fish Habitat.	Aurora LNG has assumed that the "comments above" is referring to the question put forth in the preceding comment. Information used to inform the assessment of Section 5(1)(c) effects for Gitga'at First Nation, including Wildlife (Terrestrial), Marine Mammals, Marine Birds, Marine Fish and Fish Habitat, and Freshwater Fish and Fish Habitat, is presented in Sections 4.7.3, 4.8.3, 4.9.3, 4.10.3, 4.11.3 and in Section 9 of the Aboriginal Consultation TDR (Appendix S2).
2854.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	The "summary of effects (terrestrial and marine)" on p. 11-313 it is stated that "it is anticipated that any specific marine hunting practices would be able to continue, albeit at potentially reduced levels, and it is not anticipated that there will be a measurable change in current use of marine mammals, such that current use cannot continue". This seems to contradict p. 11-312 where noticeable change in current use of marine mammals is predicted. The conclusion for current use on p. 11-333 does not seem to align either. Please clarify.	The quoted text from page 11-313 will be updated to, "it is anticipated that marine hunting practices would be able to continue, albeit at potentially reduced levels. Although as described above, Gitga'at First Nation members may notice a change in marine mammals, it is not anticipated that there will be a measurable change in marine hunting practices such that current use cannot continue". An errata document is being created that will capture these corrections and it will be filed with the BC EAO.

2855.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-314 - what is meant by "0 m depth contours"?	Measuring the total channel width from 0 m depth contours means that the width of the channel was measured from the lowest astronomical tidal height, displayed on the area's nautical chart.
2856.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-315 - states "…safety and access to shoreline sites will be maintained with the implementation of the proposed mitigations": what mitigations exactly?	Safety and access to shoreline sites will be maintained through the implementation of proposed mitigation measures summarized in the Marine Use and Navigable Waters assessment (Section 6.5). Examples of proposed mitigation measures include:A Marine Activities Plan will be developed and implemented to communicate Project construction activities with marine users.Project-related marine traffic, including LNG carriers, will use the Coast Guard Marine Communication and Traffic System (MCTS) to provide notice of planned arrival time at Triple Island. Aurora LNG will encourage Aboriginal Groups to use the system to plan their routing and scheduling.LNG carriers will maintain safe operating distances from other marine craft.LNG carriers will strictly adhere to the prescribed route and passing restrictions.LNG carriers, tugs, and barges will not exceed a speed of 16 knots within the LAA.
2857.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-315 states "… because shipping has occurred along the shipping route for decades, it is expected that mariners will be accustomed to navigating around large vessel traffic" - as stated in other comments, Gitga'at disagrees with the use of this statement in the EA (also, consider the LNG carrier is a new vessel to the region). Therefore, the conclusion that "Gitga'at First Nation members are expected to experience little to no change from existing conditions" is not supported.	The Project will result in the addition of LNG carriers to marine shipping traffic; however LNG carrier vessels are similar with respect to their size, speed, and maneuverability to other large marine vessels currently traveling in the RAA, such as cruise ships and container vessels traveling to the Port of Prince Rupert. LNG carriers will also travel along the existing shipping route. Given proposed mitigations, it is unlikely that two LNG carriers transits per day (at full build out) associated with the Project would reduce access to sites located along the shipping route, as marine users will still be able to travel through the existing shipping lanes. For these reasons the assessment concludes that little to no change from existing conditions or alteration of behaviour to access marine or terrestrial hunting locations is anticipated .
2858.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-318 states "These effects are anticipated to be reversible following the removal of underwater sound sources and lighting, localized, and are expected to not jeopardize the ability of a fish to complete one or more of their life processes" - what is meant by this statement? What processes?	This terminology is drawn from the wording provided by DFO in their definition of serious harm to fish (DFO 2013). The intention of using this wording is to explicitly align Aurora LNG's assessment with regulatory guidance. Although DFO do not provide a strict definition of "life processes", Aurora LNG interprets this term to mean any aspect of a species' biology or life history that must be completed in order to successfully perpetuate the species. These processes are typically considered to include feeding and growth, reproduction, predator avoidance, and adjusting to environmental changes. Examples of life-history traits that would also fall within the scope of "life processes" include migration and any species-specific behaviours necessary to spawn or reproduce (e.g. courtship rituals or vocalizations). Reference: Fisheries and Oceans Canada (DFO). 2013. Fisheries Protection Policy Statement. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/pol/PolicyStatement-EnoncePolitique-eng.pdf. Accessed: July, 2016.
2859.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-318 states "Residual effects on fish behaviour are not anticipated to threaten the long-term persistence of a marine fish population" - was fish individuals or populations assessed? What evidence does Nexen have to justify this statement?	Please see Section 4.9 of the Application for a full assessment of effects on Marine Fish and Fish Habitat. Specifically, effects on fish were assessed by considering potential interactions between Project activities and fish or their habitats. Although interactions are mediated via interactions at an individual level, the importance of these effects lies in the extent to which they could result in adverse effects at the population level. Consequently, population effects are integral to the marine fish and fish habitats assessment. Specifically, fish populations are considered as part of the magnitude characterization of residual effects (Table 4.9-5) and the definition of significance for effects on marine fish and fish habitat (Page 4.9-17).
2860.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-318 - what about disposal at sea impacts at Brown Passage?	The discussion of potential effects on marine fish and fish habitat associated with 'disposal at sea' activities refers to potential effects at the proposed Brown Passage site. Potential effects associated with disposal of dredged materials at sea (at Brown Passage) are characterized under the 'change in habitat' effect, the 'change in mortality risk' effect, and the 'change in health' effect (Section 4.9 of the Application).
2861.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-319 states "… the loss of a limited number of individuals is not expected to threaten the long term persistence of a marine fish population…" - what evidence does Nexen have to justify this statement?	The concept that some individuals in a population can be lost without threatening the long-term persistence of that population is a fundamental principle in ecology, the basis of all food webs, and a foundational component in the management of wildlife hunts and fisheries. That is, if some individuals in a population die, the population itself does not necessarily suffer calamitous consequences. The productivity of the population is such that the loss of those individuals does not necessarily result in a long-term and precipitous decline in population levels. As mortality levels increase, the potential for population-level ramifications to occur also increases. Aurora LNG's assertion that Project effects will not threaten the long-term persistence of a marine fish population is based on the assessment, characterization (which considers the magnitude, geographic extent, frequency, duration, reversibility, and context of extent; Table 4.9-5), and likelihood of residual effects (please see Sections 4.9.5, pages 4.9-41 to 4.9-63, 4.9-69 to 4.9-78, 4.9-87 to 4.9-95, and 4.9-101 to 4.9-106).
2862.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-319 states "With offsetting, it is anticipated that current use can continue, and it is not anticipated that there will be a measurable change in current use of fish species"; more information is required on fish offsetting before statements/conclusions such as these can be made.	A Conceptual Fish Habitat Offsetting Plan was included as part of the Application. Please refer to Appendix V for details regarding the conceptual plan.
2863.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-319 in a few instances, Nexen describes that Gitga'at does not harvest freshwater fish in any streams within the PDA; these statements must be made with caution because it is does not mean that Gitga'at does not harvest anadromous species that use freshwater ecosystems within the PDA.	The referenced statements are included within the measurable parameter of quantity and quality of current traditional use locations where use will be affected. This measurable parameter is assessed based on traditional use locations identified by Gitga'at First Nation in Project specific or publicly available studieswhere use may be affected. As indicated in the Application, project specific information reports that Gitga'at First Nation members currently harvest both marine fish and intertidal species near the PDA and marine infrastructure exclusion zone, however information was not provided to indicate that freshwater streams within the PDA are used by members for fishing. Potential effects to anadromous species utilizing freshwater streams within the PDA was assessed in the Freshwater Fish and Fish Habitat VC and considered in the Current Use assessment through the measurable parameter of quantitative and qualitative changes in currently harvested species.
2864.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-321 "use of radar or other software that can broadcast real-time Automatic Identification Systems information will help fishers anticipate the movements of LNG carrier traffic and plan their responses accordingly" - does Nexen have data on how many Aboriginal boats (including personal, not just commercial) have said technology? How will conflicts between LNG vessels and tugs be resolved? Who will get out of the way for who?	Information regarding recreational and commercial boats, including boats operated by Aboriginal community members, can be acquired through the Department of Oceans. Commercial and Marine fisheries are managed by DFO using spatially-defined management areas, and recreational fishing is an activity enjoyed by local residents including Aboriginal community members. These activities are regulated by DFO under the BC Sport Fishing Regulations of the Fisheries Act. As described in Section 6.5: Marine Use and Navigable Waters, Traffic management procedures and protocols, pursuant to Section 56 of the Canada Marine Act are outlined in detail in the Prince Rupert Port Information Guide (PRPA 2015). Notable marine safety and security measures include the use of automated electronic harbour scheduling software, and the requirement to file detailed ship and cargo information prior to entering the port. Information is submitted electronically and simultaneously to the PRPA, TC and RCMP.
2865.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-326 the vagueness on the amount of "rocky substrate" (for kelp) that will be altered or lost due to dredging and marine construction is concerning. Due to the amount of dredging required, it is assumed that Nexen would know how much of that area is rocky or not? Please provide a refined estimate on the amount of kelp predicted to be alternated/lost from the Project.	Aurora LNG is of the opinion that the approach and level of detail provided in Section 4.9.5.2 ('change in habitat' effect, Marine Fish and Fish Habitat VC) is sufficient to support the assessment and characterization of anticipated kelp loss due to Project construction activities. The approach included applying the following conservative assumptions: i) that marine algae of cultural importance (such as kelp) existed in areas where physical conditions are appropriate for its growth (i.e., on rocky substrate), but for which data was not available (i.e., the absence of kelp observations from an area was not used to infer the absence of kelp), and ii) the upper limit of hard substrate was anticipated to be the amount of rocky habitat altered or lost (i.e., 35% for South Digby Island and 20% for Casey Cove). Aurora LNG acknowledges that the amount of rocky substrate and kelp anticipated to be altered or lost as a result of Project activities may be further refined during final engineering and design (e.g., from refining information around dredging activities), and if so, this information will be applied to further refine estimates of habitat alteration and losses during preparation of an application for a Fisheries Act authorization.
2866.1	round 1	Gitga'at First Nation	11.3.12.3	CEAA 2012	p. 11-330 states "However, the PDA will include a vegetated riparian buffer that avoids must of the identified archeological and heritage resources with highest significance located in the PDA" - "highest significance" for who?	As discussed in Section 7: Assessment of Potential Heritage Effects, 7.2.7.1 Significance of Project of Residual Effects, "While there are archaeological and heritage resources within the LAA/RAA, the Project activities that could affect them will be limited to the area outside the proposed buffer zone, thereby wholly or partially avoiding most of the archaeological or heritage resources in the PDA with the highest significance." Heritage resources, archaeological sites, and historic places are defined in accordance with applicable federal and provincial legislation. The provincial HCA automatically protects archaeological and heritage resources that pre‑date AD 1846 as well as Aboriginal rock art and human remains, regardless of their age. Section 5(1)(c) of the Canadian Environmental Assessment Act, 2012 (CEAA 2012) requires consideration of Aboriginal physical and cultural heritage and of any structure, site or thing that is of historical, archaeological, palaeontological or architectural significance and potential archaeological, cultural, and heritage resources have been identified as being of concern to regulators, Aboriginal Groups, stakeholders, and the public. Significance in this context is defined as per the BC Archaeological Impact Assessment Guidelines (Archaeology Branch 1998).
2867.1	round 1	Gitga'at First Nation	11.3.12.3, Table 11.3-34	CEAA 2012	Please justify why for 'current use (consumptive), Fishing' context has a moderate to high resilience?	An error was made in the characterization of residual effects on Gitga'at First Nation's Current Use fishing practices. The effects should have been characterized as having a low level of resilience. This change will be incorporated as an errata. An errata document is being created that will capture these corrections and it will be filed with the BC EAO.
2868.1	round 1	Gitga'at First Nation	11.3.12.4, Table 11.3-35	CEAA 2012	For both 'changes in human health from changes in marine harvested food quality' and 'changes to Aboriginal health from change in noise levels' duration is denoted as "ST[short-term] - LT[long-term]" - this large range seems inappropriate, please justify.	An error was made in the characterization of duration for "changes in human health from changes in marine harvested food quality" and "changes to Aboriginal health from change in noise levels". The duration of residual effects should have been characterized as medium-term in accordance with the definitions in Tables 11.3-6. An errata document will be prepared that will captures these corrections and it will be filed with the BC EAO.
2869.1	round 1	Gitga'at First Nation	11.3.12.5, Table 11.3-36	CEAA 2012	Please justify why 'changes as a result of changes to harvested foods' has moderate to high resilience? Especially considering that the current baseline conditions are already at a compromised state for some species.	An error was made in the characterization of residual effects on Gitga'at First Nation's Aboriginal Socio-Economic Conditions as a result of changes to harvested foods. The effects should have been characterized as having a low level of resilience. This change will be included in an errata document that is being prepared to capture these corrections and it will be filed with the BC EAO.
2870.1	round 1	Gitga'at First Nation	11.3.12.6, Table 11.3-37	CEAA 2012	For 'changes in consumptive land and resource use' context is denoted as "L [low resilience] - H [high resilience]" - this large range seems inappropriate, please justify.	The assessment of Aboriginal Physical and Cultural Heritage took into account the conclusions from the assessment of Current Use, including consumptive land and resource use. The characterization of residual effects on consumptive land and resource use was divided into separate hunting, fishing, trapping, and vegetation gathering subsections; each of these effects were characterized separately. As outlined in Table 11.3-34, residual effects for hunting were characterized as having a moderate resilience for the terrestrial environment and a low resilience for the marine environment; residual effects for fishing, trapping and vegetation gathering were characterized as having a medium to high resilience. Table 11.3-37 presents the characterization of residual effects on consumptive land and resource use as low to high to reflect these distinct characterizations.
2871.1	round 1	Gitga'at First Nation	11.4	CEAA 2012	What significance thresholds for this section were used? This information is required to review this section further.	As outlined in Section 11.3.2.7 of the Application, a cumulative residual effect on Current Use would be considered significant if the predicted effect results in a condition where participation by Aboriginal people in a current use activity is no longer viable within existing conditions. A cumulative residual effect on Aboriginal Health, Aboriginal Socio-Economic Conditions, and Aboriginal Cultural and Physical Heritage would be significant if a key component would have a substantial effect on Aboriginal people's health, socio-economics or cultural and physical heritage beyond that considered in the VC assessment in Part B of the Application. The significance determinations considered the magnitude, geographic extent, and duration of key components that could interact with CEAA 2012 5(1)(c) effects , as well as whether the residual effect on Current Use, Aboriginal Health, Aboriginal Socio-Economic Conditions, or Aboriginal Cultural and Physical Heritage takes place in a context that has low resilience as defined in Table 11.3‑6.
2872.1	round 1	Gitga'at First Nation	12	Aboriginal Consultation	The GFN traditional use study is illustrative of Gitga'at occupation and use of a defined study area. As noted in the past, the occupation and use information is not exhaustive as time and budget did not allow for interview of all community members.	While the information contained in the study helped Aurora LNG more fully understand Gitga'at First Nation's traditional use in the Project-area, Aurora LNG acknowledges the limitations of the study.
2873.1	round 1	Gitga'at First Nation	12	Aboriginal Consultation	Within Gitga'at's traditional use study, a listing of species is not necessarily exhaustive, hence each listing begins with "including." In the EA application "including" should always be used in listings as well.	Aurora LNG acknowledges this comment, and has included this change in the errata document that is being compiled and will be filed with the BC EAO.
2874.1	round 1	Gitga'at First Nation	12	Aboriginal Consultation	There are several statements that Gitga'at's use of the Study Area is by members who live in Prince Rupert. Nowhere is this statement made in the Gitga'at's traditional use report. Gitga'at's use of the Study Area is by members who live in a number of communities including Hartley Bay, Vancouver and Prince Rupert.	Aurora LNG acknowledges this comment, and has tried to reflect this understanding by using the broad term "Gitga'at First Nation members" throughout the assessment, which includes anyone who is part of Gitga'at First Nation, regardless of where they reside. Aurora LNG also considered potential effects on Gitga'at First Nation members travelling to or from Prince Rupert (see for example Section 12.5.9.8 starting on page 12-303).
2875.1	round 1	Gitga'at First Nation	12	Aboriginal Consultation	As stated in Gitga'at's traditional use study report, Gitga'at's use of the Study Area has been impacted over the years by external factors including land alienation, industrialization, pollution, government legislation and regulations, and commercial over-harvesting. It is incorrect to imply that Gitga'at members not using an area or a particular resource was a decision made outside of the above context. It is also incorrect for Nexen to assume that if an area is not currently being used, it will not be used in the future.	Aurora LNG appreciates that Gitga'at First Nation included information in its Project-specific study regarding the influence of external factors on Gitga'at First Nation use of the Project vicinity. Aurora LNG was able to incorporate this information into the assessment in several locations: see Section 12.5.9.5 (Changes in Harvested Species, page 12-277 and again on page 12-291), and Section 12.5.9.6 (page 12-300). As described in Section 12.5.9.5 (page 12-276), Aurora LNG assumes that Gitga'at First Nation would like to continue to use the Project vicinity for the same purposes, and in the same ways, as it currently uses the area. Aurora LNG also notes that some important marine resources are not currently available for harvesting and that Gitga'at First Nation would like to resume harvests in the future, even if these resources are not currently harvested.
2876.1	round 1	Gitga'at First Nation	12.1.1	Aboriginal Consultation	Principle 1 states that information received from Aboriginal Groups will be meaningfully considered - can you please describe Nexen's view of meaningful.	Aurora LNG amalgamated, in the Technical Data Report (see Appendix S2), all known Gitga'at First Nation culturally important sites, marine use information, species and locations used for hunting, trapping, fishing, and vegetation gathering, as well as information regarding Gitga'at First Nation infrastructure, businesses and services. From this dataset, Aurora LNG then incorporated this information about Gitga'at First Nation's use of the Project vicinity into the assessment in Part C. In acknowledgement of the nuanced and important context to Gitga'at First Nation's use of the area, Aurora LNG endeavored to incorporate direct quotes from Gitga'at First Nation into the assessment in Part C wherever possible. Gitga'at First Nation had the opportunity to review the draft Part C (and Section 11.3) prior to submission of the Application for screening review and to discuss any views or feedback at Technical Workshop #3, which was held on October 13-14, 2016. The views provided by Gitga'at First Nation as part of that workshop were incorporated into Sections 11.3 and 12.3 of the Application, in accordance with the AIR (see Tables 11.3-6 and 12.9-1). As noted in Table 12.9-1, in many cases feedback received from Gitga'at First Nation resulted in revisions to the final version of Part C submitted to the BC EAO. Aurora LNG believes the depth and scope of incorporation of Gitga'at First Nation information in Part C as described above is meaningful.
2877.1	round 1	Gitga'at First Nation	12.2.2	Aboriginal Consultation	Tsimshian Cultural Groups. This section has ignored the Gitga'at summary in the Gitga'at traditional use study. Southern Tsimshian is a recent construct of anthropologists and does not reflect Gitga'at's views. Gitga'at has a long history that is not only tied to the Douglas Channel region. Historically Gitga'at occupied villages on the Skeena River and in the Prince Rupert Harbour as set out in the traditional use study.	Aurora LNG acknowledged this concern in the preamble to the presentation of material in Section 12.2.2, and referenced Gitga'at First Nation's Project-specific use study: "However, divisions between Tsimshian groups are not recognized universally, and are not reflected in all ethnographic and historic records (Inglis 2016). These divisions are presented here to provide context." The assessment of effects on Gitga'at First Nation's Aboriginal Interests incorporates the information presented in Gitga'at First Nation's Project-specific study. Please see Section 12.5.9.3 for a direct quote from the study (on page 12-275) regarding past use and occupation of the Prince Rupert harbour region.

2878.1	round 1	Gitga'at First Nation	12.2.2.2-4	Aboriginal Consultation	This is a limited and simplistic discussion of Tsimshian social and political organization. Please provide more information.	In accordance with Section 12.2 of the AIR, Aurora LNG presented a "brief summary of publicly available and relevant information on ethnography, language, land use setting and planning, governance, economy, and Indian Reserves for Schedule B Aboriginal Groups" in Section 12.2 of the Application. Based on Project-specific studies provided by Aboriginal Groups, feedback received from Aboriginal Groups during consultation activities, and on information in the public domain, Aurora LNG understands that the Aboriginal Groups discussed in Section 12.2 share similarities in language, traditional harvesting practices, and over-arching social organization. As a result, Aurora LNG also provided a background section including, in brief, a discussion regarding the general cultural similarities among the Aboriginal Groups. Aurora LNG has also included a list of publicly available documents that provide detailed background information on the subjects summarized in Section 12.2 (see Seguin Anderson 2006; Halpin and Seguin 1990; Menzies 2011 for examples).
2879.1	round 1	Gitga'at First Nation	12.2.2.5	Aboriginal Consultation	This is too simplistic. Many resources harvested by Gitga'at members in the past and today are not mentioned including many varieties of fish (black cod, snapper, etc), sea mammals (seals and sea lions), and terrestrial animals (deer, bear, porcupines, etc.). There is no mention of trapping. Seasons of harvesting are much broader and more complicated than presented. For example clams and cockles are harvested primarily over the winter months (November through February). Others are harvested year round. Seagull eggs and abalone are not collected from beaches. Please provide more information.	The overview provided in Section 12.2.2.5 of the Application is meant to be a brief summary as required by the AIR (Section 12.2). A full description of Gitga'at First Nation use of the Project vicinity is included in Section 12.5.9.3. In addition, Aurora LNG amalgamated a dataset of known Gitga'at First Nation use (including, among other things, seasonal information and areas outside the Project Vicinity) in the Aboriginal Consultation Technical Data Report (See appendix S2, Section 9.5).
2880.1	round 1	Gitga'at First Nation	12.2.8.2	Aboriginal Consultation	The term Southern Tsimshian is a term recently developed by anthropologists. It is not recognized by Gitga'at as discussed in the Gitga'at's traditional use study.	Aurora LNG acknowledged this concern in the preamble to the presentation of material in Section 12.2.2, and referenced Gitga'at First Nation's Project-specific use study: "However, divisions between Tsimshian groups are not recognized universally, and are not reflected in all ethnographic and historic records (Inglis 2016). These divisions are presented here to provide context." The assessment of effects on Gitga'at First Nation's Aboriginal Interests incorporates the information presented in Gitga'at First Nation's Project-specific study. Please see Section 12.5.9.3 for a direct quote from the study (on page 12-275) regarding past use and occupation of the Prince Rupert harbour region.
2881.1	round 1	Gitga'at First Nation	12.2.8.6	Aboriginal Consultation	This section is very limited, e.g., where is fishing?	The importance of the commercial fishery to Gitga'at First Nation is described in Section 12.5.9.9 (Assessment of Effects on Gitga'at First Nation Economic Opportunities). Potential Project effects on Gitga'at First Nation commercial fishing are also described in that section.
2882.1	round 1	Gitga'at First Nation	12.3	Aboriginal Consultation	For clarity, this section should be revised to clearly describe what "Schedule B Aboriginal Groups" were involved in each of the activities and plans/reports (due to the Section 13 Orders).	The level of detail in Section 12.3 is in accordance with the AIR (Section 12.3) to provide a brief summary of: the Second Aboriginal Consultation Report (ACR#2) changes to the Aboriginal Consultation Plan as a result of feedback from Aboriginal Groups key issues raised by Schedule B Aboriginal Groups regarding the environmental assessment. For an in-depth description of the different consultation activities undertaken by Aurora LNG in the pre-Application phase, please see the ACR#2 in Appendix S1 of the Application. Consultation activities are described for each Aboriginal Group in that document. Aurora LNG will be providing a draft of Aboriginal Consultation Report #3 (i.e. the interim consultation report) at day 90 of the 180 day Application-review period (as per the EAO's letter of December 14, 2016). As part of the draft Aboriginal Consultation Report #3, Aurora LNG will report on its understanding of the status of issues/concerns resolution with Gitga'at First Nation for the issues/concerns recorded during all phases of the EA (in table format), including those identified in Aboriginal Consultation Report #2 and recorded as part of Technical Workshops #4 and #5. The final version of Aboriginal Consultation Report #3 will be submitted at day 120 of the 180 day Application-review period (as per the section 11 Order [as amended]).
2883.1	round 1	Gitga'at First Nation	12.3.6	Aboriginal Consultation	It is unclear to Gitga'at why two versions of Gitga'at's pre-application concerns exist in the Application, i.e., Appendix S.1, Table 10-1 and Table 12.3-6?	The various records of Gitga'at First Nation's pre-application concerns align with requirements for different documents. Table 10-1 in Appendix S1 represents a full list of Gitga'at First Nation concerns raised during pre-Application, including concerns not directly related to the Application. Table 12.3-6, as required by the AIR, summarizes key issues raised by Gitga'at First Nation regarding the environmental assessment (all sections). Another table (Table 12.9-1) presents Gitga'at First Nation's pre-Application views on Part C specifically.
2884.1	round 1	Gitga'at First Nation	12.4, 12.5.2.4	Aboriginal Consultation	Water quality is missing from Table 12.4-1 and Section 12.5.2.4 (and subsequently in Part C assessments). Please justify why.	Potential changes to water quality could affect the exercise of Gitga'at First Nation Aboriginal Interests through effects on species or habitats used for harvesting-related activities and cultural wellbeing. These effects have been considered in the relevant Part B VCs, which are listed in Table 12.4-1 and described in the assessments in Section 12.5.9.5 and 12.5.9.6.
2885.1	round 1	Gitga'at First Nation	12.5.1, 12.5.2	Aboriginal Consultation	The assessment of potential impacts on the exercise of Aboriginal title relies in part upon the availability of other areas within an Aboriginal group's traditional territory that activities can be shifted. Given a context of colonization, industrialization, continued degradation of natural resources and access, this assessment criterion seems inappropriate. Notwithstanding the previous issues, there are also other problems with shifting activity, namely traditional governance regimes that dictate who can harvest where, the dynamic nature of ecosystems, and the importance of most if not all marine space for harvesting. Please justify the assumption that Aboriginal people can simply shift harvesting or other traditional activities. This assumption was also made in Section 12.5.2.3 where the Project's "interference with the exercise of an Aboriginal Interest" by taking into account "the relative importance of the Project vicinity as well as the availability of other areas within the traditional territory of an Aboriginal Group where the meaningful exercise of Aboriginal Interests could reasonably occur". Please define "meaningful exercise" and "reasonably".	Please see the memo titled "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" for further information and context related to the treatment of information provided by Aboriginal Groups, including information related to the reported use of the Project Development Area and the adjacent marine area, in Sections 11.3 and 12 of the Application. As indicated in Section 12.5.1, the AIR requires that Aurora LNG provide information regarding the following two factors when determining the degree to which the Project may result in residual effects on the exercise of Aboriginal Interests:the relative importance of the Project vicinity and its surroundings to the exercise of an Aboriginal Group's Aboriginal Interests, including any special characteristics or unique features of that area the relative availability of other areas in reasonable proximity, within the traditional territory of each Aboriginal Group, where the meaningful exercise of Aboriginal Interests could reasonably occur In Section 12.5.9.5 (harvesting-related Aboriginal Interests), Aurora LNG included the following text to highlight uncertainty around the availability of other areas: "The Gitga'at First Nation Report focused on Gitga'at First Nation use within the Project vicinity. As a result, Aurora LNG does not know if Gitga'at First Nation members harvest the same resources elsewhere in the traditional territory, nor how much the Project vicinity is preferred for the harvest of these marine species (relative to other available areas available to Gitga'at First Nation members)." (page 12-291) In Section 12.5.9.6 (cultural wellbeing), Aurora LNG included the following statement addressing the concerns raised by Gitga'at First Nation in this comment: "Aurora LNG understands that the Project vicinity may have unique importance and features not found elsewhere in Gitga'at First Nation traditional territory. Aurora LNG understands that the locations that are available to Gitga'at First Nation community members for cultural activities may be restricted by various factors including traditional governance, harvesting protocols, commercial or residential development (including private or restricted lands), and access." (page 12-300).
2886.1	round 1	Gitga'at First Nation	12.5.9.3	Aboriginal Consultation	This section is incomplete. Past use would have been more extensive than present as there was limited outside interference by settlers, industry and government. Present use has been impacted by land alienation, urban development, industrial activities, pollution, commercial activities, and federal and/or provincial land and resource legislation and regulations. Also, at times, the examples are not complete and do not set out the full range of species or locations used by Gitga'at. Future use will likely expand with increase in population and will continue to be impacted as noted above. Already Gitga'at members relate that they are not able to harvest enough for individual, community and other purposes. Also, (and again) harvesting in the Prince Rupert region is not limited to Gitga'at members who live there - Gitga'at members who live in Hartley Bay and other places also harvest in the Prince Rupert region. Please revise this section.	Description of Past Use: Based on the information available to Aurora LNG at the time of writing the Application, a description of Gitga'at First Nation past, present, and future use of the Project vicinity is included in Section 12.5.9.3. In addition, Aurora LNG amalgamated a dataset of known Gitga'at First Nation use (including, among other things, seasonal information and areas outside the Project Vicinity) in the Aboriginal Consultation Technical Data Report (See appendix S2, Section 9.5). Impact of External Factors on Present Use: Aurora LNG appreciated that Gitga'at First Nation included information in its Project-specific study regarding the influence of external factors on Gitga'at First Nation present use of the Project vicinity. Aurora LNG was able to incorporate this information into the assessment in several locations: Section 12.5.9.5 (Changes in Harvested Species, page 12-277 and again on page 12-291), and Section 12.5.9.6 (page 12-300). As described in Section 12.5.9.5 (page 12-276), Aurora LNG assumes that Gitga'at First Nation would like to continue to use the Project vicinity for the same purposes, and in the same ways, as it currently uses the area. Aurora LNG also notes that some important marine resources are not currently available for harvesting and that Gitga'at First Nation would like to resume harvests in the future, even if these resources are not currently harvested. Gitga'at First Nation Members Who Do Not Live in Prince Rupert: Aurora LNG acknowledges this comment and has tried to reflect this understanding by using the broad term "Gitga'at First Nation members" throughout the assessment, which includes anyone who is part of Gitga'at First Nation, regardless of where they reside. Aurora LNG also considered potential effects on Gitga'at First Nation members travelling to or from Prince Rupert (see for example Section 12.5.9.8 starting on page 12-303).
2887.1	round 1	Gitga'at First Nation	12.5.9.5	Aboriginal Consultation	Importance of Project Vicinity. Add seals to the list of species harvested in the vicinity of the PDA.	Aurora LNG has added seals to the list of species harvested in the vicinity of the PDA. This will be included in an errata document being compiled that will capture corrections and it will be filed with the BC EAO.
2888.1	round 1	Gitga'at First Nation	12.5.9.5	Aboriginal Consultation	On p12-278 (s.12.5.9.5) the proponent notes that the Gitga'at First Nation is concerned that resource users would shift their activity south into Gitga'at core territory. In response, the proponent noted that it "does not anticipate the presence of the Project will result in increased use of Gitga'at First Nation territory by other resource users." No rationale for this conclusion was provided, yet the proponent's methodology for this part of the application presumes that shifting of activities away from the Project site will occur and be a way that Aboriginal groups adapt to the Project. Please explain why resource users won't shift their activity southward into Gitga'at core territory.	Aurora LNG understands that the Project vicinity is valued by resource users for its close proximity to Prince Rupert, and because the area was historically a shared resource area among several house groups. As a result, Aurora LNG anticipates that resource users will continue to harvest in other areas close to Prince Rupert, in accordance with traditional governance protocols.
2889.1	round 1	Gitga'at First Nation	12.5.9.5 and 12.5.9.8	Aboriginal Consultation	On p12-286 (s.12.5.9.5) and again on p12-304 (s.12.5.9.8) the proponent takes the position that the Project's two vessel transits per day will not reduce access to harvesting sites along the shipping route or affect marine navigation because marine users will be able to avoid temporary Project marine traffic and continue with their activities. This argument is flawed because it ignores how there is already large vessel traffic in the area, and the Project will add to this traffic, never mind possible other future additions to this traffic. In other words, the Project will not operate in a void but will inevitably contribute to the CEs of other current and future shipping. Please revise the analysis to reflect the reality that the Project's shipping traffic will not occur in a void but will add to the CEs of existing and future large vessel traffic.	Aurora LNG has incorporated the Project's contributions to cumulative effects from shipping in the Changes in Harvesting Locations and Access Routes assessment in Section 12.5.9.5 (see page 12-286). The pre-existing shipping conditions in the region are considered in Section 12.5.9.8 on page 12-304.
2890.1	round 1	Gitga'at First Nation	12.5.9.5	Aboriginal Consultation	The proponent argues that the aesthetic effects of the Project will 'not considerably alter' existing conditions given that the Prince Rupert harbour area is already industrialized and already used for shipping (p12-291 (s.12.5.9.5). The proponent does not seem to be thinking about CEs and limits of acceptability, or more colloquially, what amount of straw will break the camel's back. Please revise the baseline and assessment to reflect an understanding of the level of acceptability of current conditions in the Prince Rupert harbour and how additional changes relate to this significance threshold.	Aurora LNG has incorporated the Project's contributions to cumulative effects from shipping in the Changes in Harvesting Locations and Access Routes assessment in Section 12.5.9.5 of the Application (see page 12-286). The pre-existing shipping conditions in the region are considered in Section 12.5.9.8 on page 12-304. Aurora LNG is unable to apply a defensible threshold in Part C to determine when an aesthetic effect could significantly alter the exercise of an Aboriginal Interest. This is because Aurora LNG cannot meaningfully measure or predict an individuals potential response to differing potential residual effects from the Project.
2891.1	round 1	Gitga'at First Nation	12.5.9.5	Aboriginal Consultation	The proponent expects that trollers and other types of fishers should be able to adapt to LNG carriers by temporarily moving out of the way (e.g., p12-286 (s.12.5.9.5)), yet no evidence was provided to support this assertion. Given that large vessel traffic has been active in the area for many years alongside commercial and traditional fishing, there should be evidence of how well the two marine uses co-exist. Please provide evidence supporting the assertion that large vessel traffic is not a problem for commercial and traditional fishers.	Aurora LNG did not conclude that large shipping traffic is "not a problem for commercial and traditional fishers." Rather, Aurora LNG has provided reasonable evidence to suggest that commercial and traditional fishing activities within the shipping lane could be interrupted by passing vessels, for up to a maximum of one hour per day. Furthermore, Aurora LNG incorporated additional input from Gitga'at First Nation (received during consultation), that "the potential effects on commercial fishing may be exacerbated because of the duration of commercial fishery openings. According to Gitga'at First Nation, the commercial openings for some salmon species are particularly short. Therefore, should a Project-related vessel require a salmon fisher to move gear during an already brief commercial opening, this could cause increased interference and have economic consequences." (Section 12.5.9.5, page 12-286).
2892.1	round 1	Gitga'at First Nation	12.5.9.5	Aboriginal Consultation	The proponent regularly seems to assume that all marine space is uniform in terms of harvesting opportunities. For example, on p12-286 (s.12.5.9.5) the proponent writes "[a] worst-case, unmitigated, and unlikely scenario is that a fisher might lose a total of one hour of fishing time per day because of interacting with both LNG carrier transits (daily incoming and outgoing). While unlikely, this scenario could have a low to medium magnitude effect on a fisher's one-day catch, and is not be anticipated to occur on a regular basis when all the mitigations are implemented (and considering the total area within the traditional territory available for fishing)." Yet marine space differs in numerous ways; while in general the entire region is important for harvesting, particular harvesting locations differ in terms of aesthetics, exposure to bad weather, marine habitat quality, and availability of target species (which can also vary year-to-year). Please revise baseline and effects assessment to incorporate an understanding of the non-uniform nature of harvesting grounds. In revising, please ensure adequate information is included for all mitigations presented. The assessment failed to acknowledge that specific fisheries (i.e., salmon) are only open during limited periods of time, measured in hours. Therefore, the loss of one hour of fishing effort can have a significant effect on harvest, sustenance, and economic gain. Mitigation measures should include scheduled vessel sailings outside of these time-sensitive fishery periods to not impact Aboriginal or commercial fisheries. This mitigation measure has been applied in other ports.	Incorporation of Preferred Harvesting Practices and Species: Aurora LNG has made substantial effort in Part C to identify and highlight preferred species and harvesting grounds and potential effects to those species and locations. Aurora LNG also presented additional information in the Aboriginal Consultation Technical Data Report (Appendix S2) about known Gitga'at First Nation harvesting practices. Additional Information for Mitigations: To reduce redundancy, only conclusions from Part B residual effects and cumulative effects are discussed in Part C. As such, the assessment of Aboriginal Interests does not include a reiteration of the existing conditions of relevant VCs, nor the mitigation measures, unless those mitigation measures are relevant in a way not already considered in the Part B VC assessment. For a full list of proposed mitigation measures, please see Part F of the Application. Acknowledgement of Limited-Duration Commercial Openings: Aurora LNG incorporated additional input from Gitga'at First Nation (received during consultation), that "the potential effects on commercial fishing may be exacerbated because of the duration of commercial fishery openings. According to Gitga'at First Nation, the commercial openings for some salmon species are particularly short. Therefore, should a Project-related vessel require a salmon fisher to move gear during an already brief commercial opening, this could cause increased interference and have economic consequences." (Section 12.5.9.5, page 12-286). Further information that provides context related to the assessment of the identified potential effects in the Application, including clarification regarding the assumptions utilized in the assessment, is provided in the technical memo entitled "Additional Information Regarding Methods Used to Consider Traditional Use Information in the Assessment of CEAA 5(1)(c) Factors and Aboriginal Interests" which will be filed with the BC EAO .
2893.1	round 1	Gitga'at First Nation	12.5.9.6	Aboriginal Consultation	See comments on the Community Health VC - more information, clarification and revision comments are provided in Section 6.6 so Gitga'at does not agree with the statement on p. 12-293 that "community wellbeing-related issues raised by Gitga'at First Nation are not discussed further in the assessment of cultural wellbeing".	The statement quoted in the comment is in reference to the following topics raised by Gitga'at First Nation during consultation: community safety, vulnerability, resilience, health, wellness, cohesion, dynamics, and social structure. These community well-being-related topics have been addressed in Section 6.6 of the Application in the following locations: Community Safety: Effects on community health and wellness from various factors related to community safety, including the presence of workers, workplace incidents, motor vehicle incidents, communicable diseases and STIs, and crime, are assessed in Section 6.6.5.3 on pages 6.6-51, 6.6-66 to 6.6-68, 6.6-70, 6.6-71. Vulnerability and Resilience: The effects on "stress and anxiety" and "personal health practices and coping skills" are assessed in Section 6.6.5.3 on pages 6.6-50, 6.6-52, 6.6-71 and 6.6-72. Health: All of Section 6.6, however the effects on "health status" are described specifically in Section 6.6.5.3 on page 6.6-50 and 6.6-65. Wellness: All of Section 6.6.5.3. Cohesion, Dynamics, and Social Structure: The effects on "income and social status", "income inequality", "social support networks", and "social environments" are assessed in Section 6.6.5.3 on pages 6.6-51, 6.6-52, 6.6-68 to 6.6-70. Effects on community health are also considered in the cumulative effects assessment in Section 6.6.6.3.
2894.1	round 1	Gitga'at First Nation	12.5.9.6	Aboriginal Consultation	p. 12-295 mentions the "marine safety and access to shoreline sites will be maintained with the implementation of the mitigations" - what mitigations?	Please see the mitigation measures numbered 6.5.1 to 6.5.9 in Table 16-1 (see Section 16, page 16-11).

2895.1	round 1	Gitga'at First Nation	12.5.9.6	Aboriginal Consultation	p. 12-295 states "because shipping has occurred along the shipping route for decades, Aurora LNG anticipates that mariners will be somewhat accustomed to navigating around large vessel traffic" - as stated in other comments, Gitga'at disagrees with the use of this statement in the EA (also, consider that the LNG carrier is a new vessel to the region). This also ties to the conclusions made for cultural wellbeing.	Aurora LNG agrees that the Project would introduce new vessels to the region, as per the assessment in Section 6.5, Section 12.5.9.5, 12.5.9.6, and 12.5.9.8. Aurora LNG understands that Gitga'at First Nation disagrees with the statement that "mariners will be somewhat accustomed to navigating around large vessel traffic." However, given the present use of the region by large vessels (~548 to 700 large vessel visits per year into the Port of Prince Rupert), Aurora LNG is of the opinion that the statement is accurate. See Section 6.5.3.2 (Table 6.5-6) for more information about the current use of the region by large vessels.
2896.1	round 1	Gitga'at First Nation	12.5.9.6	Aboriginal Consultation	p. 12-299 - what is the "Indigenous Peoples policy"?	Aurora LNG's Indigenous Peoples Policy is described here: http://www.nexencnoocltd.com/en/ResponsibleDevelopment/SocialResponsibility/AboriginalRelations/IndigenousPolicy.aspx
2897.1	round 1	Gitga'at First Nation	12.5.9.7	Aboriginal Consultation	Not all traditional governance structures are house-based although the assessment has limited discussion to this. See discussion in Gitga'at's traditional use study.	Aurora LNG understands that traditional socio-political organization is more complex than just house groups. However, as described in Gitga'at First Nation's Use Study, "the wilp (house) is the fundamental political and land owning unit" and the chief of the house group manages "the use of the house territories and all associated rights" (p. 10), Aurora LNG believes this is an appropriate traditional governance structure to consider in the assessment of potential effects to Gitga'at First Nation traditional governance.
2898.1	round 1	Gitga'at First Nation	12.5.9	Aboriginal Consultation	In assessing potential impacts, this project is looked at in isolation from the history of development that has already negatively affected the ability of GFN members to harvest in preferred places, preferred species and in quantities needed for individual, family and community purposes. Cumulative effects should be considered	Aurora LNG disagrees with the statement that the Application looks at the Project in isolation from the history of development in the area, or that cumulative effects were not considered. Aurora LNG appreciates that Gitga'at First Nation included information in its Project-specific study regarding the influence of external factors on Gitga'at First Nation's present use of the Project vicinity. Aurora LNG was able to incorporate this information into the assessment in several locations: see Section 12.5.9.5 (Changes in Harvested Species, page 12-277 and again on page 12-291), and Section 12.5.9.6 (page 12-300). Cumulative effects were assessed for all VCs and effects on the CEAA 5(1)(c) factors (Section 11.4). Where cumulative effects on a VC have the potential to affect the exercise of Gitga'at First Nation's Aboriginal Interests, the conclusions from that VC have been incorporated into the assessment of effects in Section 12.5.9.
2899.1	round 1	Gitga'at First Nation	12.5.9.8	Aboriginal Consultation	On p12-305 (s.12.5.9.8) the proponent notes that marine berths will reduce channel width used by Gitga'at boaters by up to 35%. This number differs from those provided in the Marine Use and Navigable Waters section of the application (e.g., on p6.5-53 (s.6.5.5.2) the proponent says the southern terminal including control zone will occupy approximately 17% of the small vessel corridor). Please clarify how the number of 35% was calculated.	As described in Section 6.5.5.2 (on page 6.5-53) of the Application, "The northern berth and control zone spans approximately 35% of the width of the entire channel between Kaien and Digby islands (the total channel width, measured from the 0 m depth contours (chart datum), is approximately 1.4 km). The southern berth and control zone spans approximately 20% of the channel (the total width, measured from the 0 m depth contours (chart datum), is approximately 2.5 km)." The assessment in the Marine Use and Navigable Waters VC also calculates the percent of the "small vessel corridor" that will be overlapped by the proposed marine infrastructure: "The potential effect on marine navigation for smaller vessels is low because only 2% of marine terminal infrastructure lies within the small vessel corridor (see Figure 6.5-2). The northern berth is completely outside of this corridor and is therefore not expected to affect small vessel traffic. The southern terminal (including the control zone) will occupy approximately 17% of the small vessel corridor, leaving more than 80% of the available open to navigation." (page 6.5-53). Aurora LNG, in taking a conservative approach in the assessment of potential effects on Gitga'at First Nation use of marine travelways in Section 12.5.9.8, assumed that Gitga'at First Nation mariners may not only be in small boats. Therefore, the maximum potential interference (because of the proposed control zone around the northern berth) to Gitga'at First Nation marine travel could be up to 35% of the channel width.
2900.1	round 1	Gitga'at First Nation	12.5.9.8	Aboriginal Consultation	p. 12-304 states "because shipping has occurred along the shipping route for decades, Aurora LNG anticipates that mariners will be somewhat accustomed to navigating around large vessel traffic" - as stated in other comments, Gitga'at disagrees with the use of this statement in the EA (also, consider that the LNG carrier is a new vessel to the region).	Aurora LNG agrees that the Project would introduce new vessels to the region, as per the assessment in Section 6.5, Section 12.5.9.5, 12.5.9.6, and 12.5.9.8. Aurora LNG understands that Gitga'at First Nation disagrees with the statement that "mariners will be somewhat accustomed to navigating around large vessel traffic." However, given the present use of the region by large vessels (~548 to 700 large vessel visits per year into the Port of Prince Rupert), Aurora LNG is of the opinion that the statement is accurate. See Section 6.5.3.2 (Table 6.5-6) for more information about the current use of the region by large vessels.
2901.1	round 1	Gitga'at First Nation	12.5.9.9	Aboriginal Consultation	See comments on the Economic VC.	Comment noted.
2902.1	round 1	Gitga'at First Nation	15	Follow-up Programs and Compliance Reporting	Based on Nexen's confidence characterizations in the Application, it appears that Nexen does not have high confidence in some of the EA predictions. In these areas, Nexen should develop and implement monitoring programs. Please provide an updated list of follow-up monitoring programs proposed.	Aurora LNG has proposed follow-up programs for those VC assessments where there is predicted low confidence in the conclusion of potential residual adverse effects. The specific reasons for the low confidence would be due to identified uncertainties outlined in each VC assessment. For VC assessments that concluded moderate to high prediction confidence, these will be managed through the development of Environmental and Operational Management Plans (Section 14 of the Application) designed to verify compliance of the Project with commitments in the Application and conditions in an Environmental Assessment Certificate.
2903.1	round 1	ECCC	4.2.2.1	Air Quality	Marine and other emissions related to the project are subject to the Transboundary Notification Agreement between Canada and the US. A prescribed form (accessible at http://www.ec.gc.ca/air/default.asp?lang=En&n=5AE57A08-1) needs to be completed for any new air pollution source located within 100 km of the Canada/U.S. border that is expected to emit greater than 90 tonnes per year of any one of the common air pollutants. These common air pollutants are sulphur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), total suspended particulates (TSP) and volatile organic compounds (VOC), where VOCs are defined as compounds containing at least one carbon atom, excluding carbon monoxide, carbon dioxide, methane and chlorofluorocarbons. Information Request In support of the requirement to assess project effects outside of Canada, ECCC requests that the proponent provide information that would facilitate transboundary notification and the assessment of project effects on US. ECCC also requests the proponent to revise its accounting of the regulatory and policy setting for the project to include reference to theTransboundary Notification Agreement and its relevance to the environmental assessment.	Aurora LNG will comply with requirements related to the Transboundary Notification Agreement between Canada and the US. Aurora LNG will complete and submit the requested form.
2904.1	round 1	ECCC	4.2.2.1	Air Quality	The North American Emission Control Area under the International Convention for the Prevention of Pollution from Ships (MARPOL) imposes certain emission controls for ships trading off the coast of Canda and US. These controls include a low sulphur fuel standard and nitrogen oxide (NOx) standards for marine diesel engines (e.g., a NOx Tier III standard applies to ships constructed since 2016). Recognition of Emission Control Area standards provide important context for the assessment of project effects on air quality. Information Request ECCC requests that the proponent revise its accounting of the regulatory and policy setting for the project to include reference to the Emission Control Area and its relevance to the environmental assessment.	Aurora LNG agrees that the North American Emission Control Area under the International Convention for the Prevention of Pollution from Ships (MARPOL) is an important regulatory consideration and is relevant to the environmental assessment. The emission control area requirements are included in the list of Project mitigation (Table 4.2-10, Air Quality). The NOx and low-sulphur fuel requirements associated with the emission control area regulation are discussed throughout the Air Quality TDR, and emission rates and dispersion modelling associated with marine vessels reflect these emission control area requirements.
2905.1	round 1	ECCC	4.2.2.5	Air Quality	In Section 4.2.2.5, the proponent states that "boundaries are sufficiently large to encompass [the area] influenced by major emission sources in the region" (p. 4.2-7). However, the assessment does not include marine emissons while vessels are underway, which are substantially larger than emissions from vessels maneuvering or at berth. Information Request ECCC requests that the proponent provide a complete accounting of project-related marine emissions to the limits of the territorial sea for inclusion in the effects assesment.	The approved Application Information Requirements (Section 4.2.2) notes that air quality will be assessed through dispersion modeling to determine the effects of the Project marine vessels and Project LNG Facility emissions on air quality for Project activities that occur near the LNG facility. This includes the LNG and support vessels when maneuvering and at berth which occur at the same time and in proximity to the LNG Facility emissions when it is operating at full capacity. Consistent with the AIR and as detailed in the final approved Detailed Model Plan (Appendix 1, Air Quality - TDR) the assessment was intentionally scoped to focus on the combined LNG Facility and marine vessel emissions near the facility to represent maximum potential effects on air quality in closest proximity to nearby communities and other sensitive receptors. The BC MOE approved the final Detailed Model Plan excluding separate modelling of Project LNG vessels when underway (at sea).
2906.1	round 1	ECCC	4.2.4	Air Quality	In Section 4.2.4 the proponent indicates that "transit of LNG carriers along the shipping route will be sporadic and short-term in duration (i.e. about 3 hours each way) and as such effects of emissions from shipping are not carried forward into the assessment." (p. 4.2-19). ECCC disagrees with this conclusion. Coast Guard/AIS data show there are 10-20 transits per day of large commercial vessels plus other vessels across the Regional Assessment Area (RAA) and transit times to the territorial sea limit would be greater than 3 hours. Moreover, in this region the vessels are using their main propulsion engines, which have much higher emissions than auxiliary engines. By excluding this vessel traffic and associated emissions for project and non-project marine vessels, the proponent underestimates marine emissions. In not fully accounting for vessel transit time during which main engines are employed, marine emissions are underestimated by 140-350% (annual basis). Information Request ECCC requests that the proponent include a full accounting of emissions from vessels in transit in the RAA (that is revised to extend to the territorial sea limit) to ensure a complete asessment of project effects on air quality and GHG including cumulative effects.	The approved Application Information Requirements (Section 4.2.2) notes that air quality will be assessed through dispersion modeling to determine the effects of the Project marine vessels and Project LNG Facility emissions on air quality for Project activities that occur near the LNG facility. This includes the LNG and support vessels when maneuvering and at berth which occur at the same time and in proximity to the LNG Facility emissions when it is operating at full capacity. Consistent with the AIR and as detailed in the final approved Detailed Model Plan (Appendix 1, Air Quality - TDR) the assessment was intentionally scoped to focus on the combined LNG Facility and marine vessel emissions near the facility to represent maximum potential effects on air quality in closest proximity to nearby communities and other sensitive receptors. The BC MOE approved the final Detailed Model Plan excluding separate modelling of Project LNG vessels when underway (at sea).
2907.1	round 1	ECCC	4.3.5.2	Greenhouse Gases	The proponent states that during operations "The formation CO2 in the form of acid gas is stripped off and sent to the thermal oxidizers for safety purposes." (p. 4.3-26) Information Request ECCC requests that the proponent explain why a fully oxidized stream would be sent to oxidation and describe the ultimate fate of the stripped formation CO2. If the stripped formation CO2 is vented, it should be confirmed whether it is accounted for in line 3 of Table 4.3-14 (GHG Emissions - Thermal oxidizers).	The acid gas sent to the thermal oxidizer is described in Table 14 of the GHG Technical Data Report (Appendix B of the Application). In Table 14, it demonstrates that the acid gas stream is made up of 0.0004 mol fraction of H2S. For safety purposes, the acid gas stream is sent to the thermal oxidizer to convert the H2S into SO2. CO2 content within the acid gas will be directed to the thermal oxidizer. However, as it is already in the form of CO2 it will not undergo further combustion. For this reason, the CO2 content of the acid gas has been identified to be formation CO2 that is received in the feed gas. Section 5.3 of the GHG Technical Data Report provides a breakdown of the thermal oxidizer calculations. Table 23 of the GHG Technical Data Report identifies that formation gas CO2 (i.e. the CO2 content of the acid gas) is included in line 3 of Table 4.3-14 of the Application.
2908.1	round 1	ECCC	4.3.10	Greenhouse Gases	The project is estimated to have a GHG emissions intensity of 0.28 tonne CO2e/tonne LNG produced. Information Request Given the requirement of another comparable project (Pacific Northwest LNG) to achieve a lower GHG emissions intensity (in the 0.21 to 0.22 range), ECCC requests that the proponent describe and evaluate opportunities to achieve a comparable emissions intensity level. If based on such an analysis, it is concluded by the proponent that such a level cannot be achieved, ECCC requests that the proponent identify what is unique about the Aurora LNG project that accounts for the higher intensity level.	Based on the conservative assumptions for Project design (i.e., simple cycle turbines and all onsite facility power) and feed gas composition (1.82% mol C02), the GHG emission carbon intensity has been estimated to be 0.28 tCO2e/t LNG produced. It has been conservatively assumed that the Project will not consume electricity through BC Hydro. If the Project were to connect to the BC Hydro grid, a reduction in the GHG intensity can be expected. Discussions are continuing with BC Hydro to determine if connection to the grid is a feasible option. Further, the carbon intensity will reduce once actual feed gas data is available. Other LNG projects in the region have presented the formation CO2 concentration in feed gas between 0.6 and 0.8% mol CO2. The current Aurora LNG Project design with a revised feed gas composition of 0.8% mol CO2 would result in a carbon intensity closer to 0.25 tCO2e/t LNG produced. The current Aurora LNG Project design with a revised feed gas composition of 0.6% mol CO2 would result in a carbon intensity closer to 0.24 tCO2e/t LNG produced. As the facility design advances through detailed engineering, efficiencies and optimum equipment selections are expected to result in reduced overall project operation emissions. For further information, regarding how changes of mol CO2 % in the feed gas can affect the GHG emission intensity, please refer to the technical memo "Feed Gas Carbon Dioxide (CO2) Content Impact on GHG Emissions for the Aurora LNG Application for an Environmental Assessment Certificate" which will be filed with the BC EAO.
2909.1	round 1	ECCC	Part E 14.4	Greenhouse Gases	The proponent references a GHG Management Plan and a review of best available technologies. Information Request ECCC requests that the proponent confirm that the proposed review will be ongoing during the life of the project as appropriate.	Section 4.3.5.2 of the Application states "A GHG Management Plan will be prepared to identify the requirements of relevant GHG reporting legislations and will contain continuous assessment of monitoring and management requirements applicable to the mitigations listed in Table 4.3-12 (i.e., requirements of a fugitive emission survey program). The management plan will also contain a Best Achievable Technology analysis." Further to this statement, Mitigation 4.3.6 states, "By continuously monitoring the requirements of GHG mitigations and relevant GHG reporting legislations, the Project will continue to implement best management practices."
2910.1	round 1	ECCC	Section 4.7 Appendix 2 in Appendix A	Air Quality	Marine emissions from vessels at anchor are a major contributor criteria to air contaminants and GHGs over the 24 hour anchorage period. However, the environmental assessment does not include a consideration of these emissions, and as a consequence, project-associated criteria air contaminants and GHG marine emissions are underestimated by about 30%. Information Request ECCC requests that the proponent account for emissions of vessels at anchor in the assessment of impacts on air quality and GHG.	The approved Application Information Requirements (Section 4.2.2) notes that air quality will be assessed through dispersion modeling to determine the effects of the Project marine vessels and Project LNG Facility emissions on air quality for Project activities that occur near the LNG facility. This includes the LNG and support vessels when maneuvering and at berth which occur at the same time and in proximity to the LNG Facility emissions when it is operating at full capacity. Consistent with the AIR and as detailed in the final approved Detailed Model Plan (Appendix 1, Air Quality - TDR) the assessment was intentionally scoped to focus on the combined LNG Facility and marine vessel emissions near the facility to represent maximum potential effects on air quality in closest proximity to nearby communities and other sensitive receptors. The BC MOE approved the final Detailed Model Plan excluding separate modelling of Project LNG vessels when underway (at sea). Section 5.4 of the GHG Technical Data Report (Appendix B of the Application) also discusses marine operations considered in the assessment.
2911.1	round 1	ECCC	Sections 5.3 and 5.5 in Appendix A	Air Quality	The proponent has not used the short-term marine emissions scenario for modelling maximum predicted concencentrations. However, the ambient air quality objective for NO2 is based on the 98th percentile of a 1-hr objective. Information request: ECCC requests that the proponent model the short-term emissions scenario (2 LNG carriers and 4 tugs at berth), including marine emissions from anchorage and underway within the LAA, and the effects be described with reference to the ambient air quality objectives (See Appendix A, Section 5.3, Table 14, and Section 5.5, Table 17)	The statement in the ECCC comment about Aurora LNG not using the short term emission scenario is incorrect. Aurora LNG used the short-term emission scenario (2 LNG carriers and 4 tugs at berth) to calculate the maximum 1-hour (98th percentile daily hourly maximum). As a result, it is not necessary to provide updated model predictions.

2912.1	round 1	ECCC	4.5.13.3	Water Quality	Dredging of marine sediments is proposed by the proponent for several project components. The proponent is planning to dispose of the top 0.5m dredgate in a land based on-site soil disposal facility. After construction is completed the soil storage area will be revegetated. The dredgate exceeds applicable sediment guidelines for arsenic, copper, PAHs and PCDD/Fs (Table 4.5-24). The proponent did not compare chemical concentrations to soil quality guidelines in support of proposed land disposal, but did specify that the concentrations do not exceed the BC Contaminated Sites Soil Relocation Standards (p. 4.5-56). Note that these standards are only applicable until October 31, 2017 (see BC Contaminated Sites Regulation (CSR) Stage 10 Omnibus Update). Information Request ECCC requests that the proponent provide the following information in support of the assessment of impacts to water quality that could result from upland disposal of dredgate, • a comparison of dredgate to applicable soil quality guidelines and - if dredgate exceeds applicable soil quality guidelines- • a prediction of contaminant concentrations in seepage and drainage water along with an assessment of whether the drainage/seepage has the potential to affect freshwater or marine water quality.	Sediment was compared to soil quality guidelines in Section 5.7 of the Marine Sediment and Water Quality Technical Data Report (Appendix F of the Application), with full details of this screening in Table 6-1, Appendix 6 of the Technical Data Report. Section 5.7 of Appendix F stated: "Outside of sodium and chloride, analytes compared to CSR Schedule 7 did not exceed Column II (soil relocation to non-agricultural land) standards. BC MOE Technical Guidance 20 states that if the land disposal site is a near-shore site (as would be expected in sites within the Project Development Area on Digby Island) and the remaining contaminants of concern do not exceed Schedule 7, Column II, no Contaminated Soil Relocation Agreement (CSRA) would be necessary for disposal of dredgeate on land." All applicable CSR Schedule 7 metal analytes were not analyzed in the baseline field program. Supplemental metal analysis will be conducted if required. Additional screening against revised contaminant criteria will also be conducted if necessary.
2913.1	round 1	ECCC	4.5, p. 23, Table 4.5.11	Water Quality	The proposed mitigation measures for reducing acidification/eutrophication effects on water quality are mitigation measures which limit SOx/NOx air emissions (see Table 4.5.11). Some of the proposed mitigation measures include complying with applicable legislation which is a legal requirement. Compliance with applicable legislation should not be considered as a project specific mitigation measure. For example, mitigation measure 4.2.7, refers to the Sulphur in Diesel Fuel Regulations (SOR/2002-254), which set maximum limits for sulphur in diesel fuel for use on-road, off-road, in rail (locomotives), vessels, and stationary engines. It is unlawful to use diesel with higher sulfur content. Hence using the low sulfur diesel should only be considered as project specific mitigation, if sulfur content would be considerablely lower than sulfur content in typically available diesel. Similar concepts apply also to mitigation measures 4.2. - 5,6, 9, 12 and possibly 4.2.10. Information Request ECCC requests that the proponent clarify if there is additional project-specific mitigation to be implemented in addressing predicted effects.	Aurora LNG is committing to numerous mitigation measures to manage potential effects of the Project, as summarized in Table 16-1 of the Application. Please see the "Mitigation Measures Categorization Table" technical memo which further categorizes the proposed mitigation measures to indicate whether a measure is outside of permitting requirements (legal requirement, industry standard/Best management practice and/or Aurora LNG additional mitigation measure). This technical memo will be filed with the BC EAO.
2914.1	round 1	ECCC	4.5.13.3, Table 4.5-24	Water Quality	Sediment arsenic and copper concentrations in the dredge areas exceed sediment quality guidelines. The proponent indicates that the elevated levels reflect naturally high background concentrations and does not assess potential impacts to water quality and fish. Information Request: ECCC requests that the proponent provide a rationale and supporting data demonstrating that arsenic and copper concentrations are naturally elevated.	The assessment of dredge material focused on sediment sampling within the dredge footprint and followed the Disposal and Sea criteria for characterizing sediments. Elevated arsenic and copper levels in soil of Skeena Region are documented in the Ministry of Environment Protocol 4: Determining Background Soil Quality, these levels are similar to those found in sediment from the assessment area. Elevated levels of copper and arsenic were found at all depths sampled, (down to 15 m below seabed), indicating that these metal concentrations predate industrial activity.
2915.1	round 1	ECCC	4.5.13.3, p. 4.5-54 and Appendix F	Water Quality	Sediment and water quality data is summarized in Section 4.5.13.3. Detailed data is referenced to be in Appendix F. Appendix F appears to be draft. Data tables and Figures were not included. Information Request ECCC requests that the proponent provide complete and final versions of the referenced data.	The incorrect version of this appendix was posted on e-PIC at the start of Application Review, and subsequently replaced with the correct, final version of Appendix F on February 3, 2017.
2916.1	round 1	ECCC	4.5.15.3, p. 4.5-62 and Section 1.2.5.3; pp. 1-26\28.	Water Quality	Freshwater for the proposed project will be provided through a desalination system. To meet the expected freshwater need of 9855 m3/day, desalination of 20,000 m3 of seawater per day is required (p. 1-26). At the intake, fish screens will be in place and intake water will be chlorinated. The effluent from the desalination plant will be combined with the power plant cooling water blow down and reject water from the desalination plant. The combined effluent will be discharged through the deep outfall into the marine environment at Charles Point. The proponent states that the temperature of the effluent will meet regulatory guidelines (provincial) outside of a small mixing zone (p. 1-28). Information Request ECCC requests that the proponent provide the following information in order to understand whether the desalination process could have an impact on water quality or fish in the marine environment: • Detailed explanation and drawings of desalination system to demonstrate that the fish screen and intake components of the desalination system have been designed to prevent exposure of fish to the chlorination process. • Detailed information on what the proponent considers a "small" mixing zone.	The desalination intake design is not yet finalized and will be completed during Front End Engineering Design. Under the Fisheries Act, the intake must be designed so that its operation does not result in serious harm to fish. The exact size of the deepwater outfall mixing zone is not yet known, and will be determined through modelling in the permitting phase. However, under the Fisheries Act, waste discharges within and outside the mixing zone cannot be acutely toxic to fish. Discharges from the deepwater outfall will require a permit under the Municipal Waste Regulation, which imposes limits on the extent and location of the mixing zone. For further details on waste discharges see the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2917.1	round 1	ECCC	4.5.15.3, p. 4.5-63, Table 4.5-26	Water Quality	Proposed mitigation measures to avoid/reduce change in physical or chemical composition of marine waters (Table 4.5-26) include complying with applicable legislation (e.g. 4.5.7). Similar to ECCC's comment regarding acidification/eutrophication mitigation measures, compliance with applicable law should not be considered a project-specific mitigation measure. Information Request ECCC requests that the proponent clarify the project-specific mitigation to be implemented in addressing predicted effects.	Details on mitigation measures for waste discharges to the marine environment are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2918.1	round 1	ECCC	4.5.15.3; p. 4.5 - 76	Water Quality	Marine sediment dispersion modelling did indicate temporary Total Suspended Solids (TSS) levels up to 218 mg/L in Casey Cove, and up to 67 and 72 mg/L in Berth 1 and 2 respectively. ECCC understands that TSS levels in Casey Cove near the dredging operations are predicted to exceed the applicable 5mg/L guideline for the duration of dredging activities (48 days). Suspended sediments are expected to contain PCDD/F, copper, arsenic and PAHs (see Table 4.5-24). ECCC understands that TSS modelling indicated that PCDD/F resuspension and re-settling does not lead to a wider distribution. ECCC also agrees that PCDD/F usually partion into the sediment, not into water column. However, if high levels of suspended sediment with PCDD/F are predicted, fish frequenting the area as well as other receptors may be exposed to PCDD/F. Information Request>ECCC requests that the proponent further investigate the potential effects of TSS, and its contaminants, on ecological receptors and report on its assessment findings.	The potential effects associated with exposure of marine fish to elevated TSS levels during dredging and disposal at sea activities are assessed under the 'change in health' effect (Section 4.9.5.5 of the Marine Fish and Fish Habitat assessment). The effects assessment also evaluated exposure of marine fish to potential contaminants of concern, including dioxins and furans (PCDD/Fs) in particular, based on the results of the Marine Water Quality assessment (Section 4.5 of the Application). The assessment concluded that the risk to marine fish from exposure to PCDD/Fs is considered low and similar to baseline conditions (see Appendix F, Marine Sediment and Water Quality TDR for baseline conditions). As stated in Section 4.5.13.3, concentrations of PCDD/Fs were above CCME ISQGs in some sediment samples. However, the distribution of these elevated levels was patchy; occurring in only 17 of the 81 samples. Of these 17 samples, 12 were surface samples, and the remaining five were from the top 0.2 m. These PCDD/F concentrations represent the current baseline conditions. The majority of sediment containing PCDD/Fs will be removed for land disposal (an estimated 3% of this sediment may escape during dredging; USACE 1984). The Project will not contribute PCDD/Fs to the environment. Since the highest PCDD/F concentrations were detected in the 0.5 m surface layer of sediment, benthic marine life such as crabs, clams, prawns and benthic fish are currently interacting (i.e., feeding, foraging and living) with the layer of sediment that would result in the highest possible PCDD/F concentrations in their tissues. There is no pathway for the removal of surface, and underlying sediment to 15 m depth to result in higher PCDD/F concentrations in the environment. As noted in Section 4.5.13.3, "sediment containing PCDD/Fs are predicted to settle in an area of similar concentrations.....much of the PCDD/F deposited in the surrounding area is anticipated to be covered subsequentlywith dispersed sediment of lower PCDD/F concentrations". Owing to the highly hydrophobic nature of PCDD/Fs, uptake by aquatic life from the water column is negligible compared to the uptake from food (which represents approximately 75% of PCDD/F uptake) and sediment (Cook et al. 1991). Further discussion on the risk to aquatic life from exposure to PCDD/Fs is provided in Section 4.5.15.3 of the Application. As noted in several previous studies of sediment in the Prince Rupert area, the presence of copper and arsenic above CCME interim sediment quality guidelines is widespread and related to natural occurrence (elevated concentrations in soils of the Skeena watershed). The metals are in particulate form, and not expected to be available for uptake. Marine organisms are already exposed to these metals, for example in the elevated TSS that occurs during annual freshet and in sediment, and no adverse effects from exposure to metals is anticipated. Table 4.5-24 indicates that total PAH levels are below the disposal at sea screening criterion of 2.5 mg/kg, but that some individual PAHs were higher than the interim sediment quality guidelines in some samples. Concentrations of these PAHs were well below the probable effects levels, at which adverse effects would be expected. Given the sporadic occurrence of samples with some elevated PAHs, and the low amounts of sediment released (3%) during dredging, no adverse effects to marine biota are anticipated. References: Canadian Council of Ministers of the Environment (CCME). 2001. Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans (PCDD/Fs). In: Canadian Environmental Quality Guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg. Available at: http://ceqgrcqe.ccme.ca/download/en/245. Accessed: August 2016. Cook, P.M., D.W. Kuehl, M.K. Walker, and R.E. Peterson. 1991. Bioaccumulation and toxicity of TCDD and related compounds in aquatic ecosystems. Banbury Report 35. Biological Basis for Risk Assessment of Dioxins and Related Compounds. U.S. Army Corps of Engineers (USACE), 1984. Shore Protection Manual, 4th Ed. Report by Dept. of the Army, Waterways Experiment Station, Corps of Engineers, Coastal Engineering Research Center, For sale by the Supt. of Docs., U.S. G.P.O. in Vicksburg, Miss, Washington, DC.
2919.1	round 1	ECCC	4.5.15, p. 4.5-77	Water Quality	The proponent states that "with mitigation [4.5.8] the receiving marine waters will meet Canadian Council of Minsters of the Environment (CCME) and BC water quality guidelines (p. 4.5-77)". Mitigation measure 4.5.8 (see Table 4.5-26) states that waste discharges will comply with Fisheries Act and the CCME water quality guidelines for the protection of aquatic life. ECCC could not locate data for marine water quality predictions that demonstrate how guidelines are being met. Information Request ECCC requests that the proponent provide modelled/predicted data on the characterization of waste discharges at the discharge point and modelled/predicted data on the characterization of the marine receiving environment.	Waste characterization and modelling of waste discharge to the receiving environment will be conducted at the permitting stage. Further details on Project waste discharges, effects assessment, and associated regulations are provided in the "Discharges to the Marine Environment" technical memo which will be filed with the BC EAO. The "Discharges to the Marine Environment" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
2920.1	round 1	ECCC	4.5.15, p. 4.5-78	Water Quality	The proponent summarizes the residual effects on marine water quality in terms of magnitude, geographic extent, frequency, duration, reversibility, context and likelihood (Table 4.5.28). Information Request ECCC requests that the proponent provide a rationale (or cross reference to a rationale) to support the assigned ranking in context of the characterization of residual effects as presented in Table 4.5.-21.>	The magnitude, extent, frequency, duration,reversibility, and likelihood of dredging effects were discussed in detail in Section 4.5.15.3, in the Dredging and Sediment Disposal sections. These sections describe the predicted concentration, and spatial and temporal range of, TSS and associated contaminants, generated during the proposed dredging and disposal at sea activities. Section 4.5.13.3, Waste Management - Construction, Operations, Decommissioning, describes how waste discharges will be subject to permit requirements that limit the magnitude, extent, frequency, and duration of effects. The summary section describes waste discharge effects as reversible because no further effects are expected when discharges end, given that discharges were subject to regulation designed to protect the marine environment. The context of the LAA is described as resilient in the summary, given the history of industrial activity in the area, and baseline water quality reflected in the PRPA monitoring program in Prince Rupert Harbour.
2921.1	round 1	ECCC	Application, 4.6.2.1; Appendix U, 3.4	Vegetation and Wetland Resources	The Application does not contain all the information needed to assess potential impacts to wetlands and functions including those situated within federal lands and waters or within the geographic scope of federal authorizations. The Wetland Compensation Plan provided by the proponent states that other than the 2 ha of red/blue-listed wetlands identified within the project development area (PDA), "the remainder of the wetlands in the project development area (PDA) are not considered to be ecologically important in the context of regional guidance from ECCC, and thus will not require compensation" (Appendix U, 3.4, pdf p. 19). This is an inaccurate interpretation of the regional guidance ECCC has provided. Estuaries (including mudflats), eelgrass beds, and other wetlands that would be directly impacted by the proposed Material Offloading Facility and the Marine Jetty need to be assessed. All wetlands in the intertidal zone of Digby Island are considered as "Continental Significance to Waterfowl" ; further, the presence of estuaries (including mudflats) and eelgrass beds have also been identified in the intertidal areas of Digby Island. These wetlands are designated as "ecologically important for the region", thus analysis of mitigation measures to maintain function is necessary. The Application identifies that construction activities may affect wetlands adjacent to the PDA (Application, 4.6.5.4, pdf p. 47), including estuarine (e.g. mudflats) and eelgrass habitats. Wetland functions in these areas, as a result, may also be adversely impacted. Information Request ECCC requests that the proponent provide the following details important to assessing potential impacts on wetlands and wetland functions: • identify and describe potentially impacted wetlands and their function that are within federal lands and waters or located within the geographic scope of federal authorizations • identify the spatial extent (in ha) of any potentially impacted wetlands (including estuaries, eelgrass beds, and other wetlands found within areas of "Continental Significance to Waterfowl" as identified by the Joint Venture).	Wetlands within Federal Lands and Waters include estuarine wetlands within the management jurisdiction of the Prince Rupert Port Authority, the boundaries of which correspond with the area of Continental Significance to Waterfowl identified by the Joint Ventures where these two management area designations intersect within the spatial boundaries of the Project. Estuarine wetlands have been assessed in the Application as follows: See Table 4.6-4 in section 4.6.2.5, and 4-9 in the AIR for the spatial boundaries of the vegetation and wetlands resources VC, which are distinct from the spatial boundaries of the marine fish and fish habitat VC.See section 4.6.1 of the AIR, which states that "eelgrass will be assessed as part of the 'Change in Habitat' effect under Marine Fish and Fish habitat VC in Section 4.9". Note that some eelgrass habitat presented in Section 4.9 is located well below the lower low water mark, and thus are considered subtidal marine habitat rather than estuarine intertidal wetlands. Estuarine wetlands are assessed in section 4.6.5.4 (and see Table 3 of Appendix I, Vegetation and Wetland Resources TDR). The spatial extent of potentially-affected wetlands and their functions are presented in sections 4.6 (wetlands other than eelgrass beds), and 4.9 (eelgrass beds) of the Application. The spatial extent of estuarine shore water wetlands (i.e., mudflats) that occur within the PDA will be determined when the design options for the materials offloading facility are finalized. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Wetland Compensation Plan. The consultation will include the assessment of which habitat offsetting measures associated with marine fish habitat address the habitat functions of estuarine wetlands such as eelgrass and estuarine shore water (i.e., mudflats) to achieve no net loss of functions for these ecologically important wetlands. See the memo titled "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation " for additional details. This technical memo will be filed with the BC EAO.

2922.1	round 1	ECCC	4.6.2.1 and 4.9.5.2	Vegetation and Wetland Resources	In British Columbia, wetlands designated as ecologically or socio-economically important to a region include marine eelgrass beds of the Zostera species. Eelgrass beds serve as essential foraging habitat for a variety of marine-associated fauna during critical stages in their annual cycle (e.g. breeding, wintering, and migration). The Application lists various species at risk and migratory birds using eelgrass habitats adjacent to the project development area (PDA) (e.g. Casey Cove, eastern Digby Island). Although an assessment on eelgrass beds in relation to project impacts on marine fish and their habitat (Application, 4.9.5.2, pdf p. 30) has been presented, there is a lack of information in relation to species at risk and migratory birds, despite their heavy reliance on eelgrass beds in the project area. Information Request ECCC requests that the proponent provide the following information important to assessing impacts on eelgrass and related functions: • baseline studies involving a detailed eelgrass habitat functions assessment that includes surveys to assess for the relative abundance and distribution of migratory birds and species at risk (SARA-listed and COSEWIC-assessed) in relation to potentially impacted eelgrass beds and their associated riparian areas; • the identification and description of potential direct (e.g., removal of eelgrass beds) or indirect (e.g., permanent or temporary alteration of hydrological processes, smothering from sedimentation) impacts to eelgrass beds arising from project activities. In particular, the effects assessment should describe how the habitat functions identified in the baseline studies would be impacted by the project; • the measures that will be taken to avoid, minimize, or compensate for each identified impact along with a rationale justifing the measure chosen; • a consideration of eelgrass restoration for areas where impacts to eelgrass beds cannot be fully avoided (e.g., measures such as replanting the site with material removed during construction); and • an adaptive monitoring program that assesses the recovery of eelgrass beds and their functions (including migratory birds and species at risk).	Table 4.7-11 in section 4.7.5.2 of the Application presents the loss of estuarine marsh, mudflat, and beach communities, which include areas of intertidal eelgrass. See section 4.11.5.3 for the assessment of change in habitat for marine birds, which includes intertidal habitats within the wildlife LAA for migratory birds and species at risk. The unavoidable effects on eelgrass due to marine construction and dredging are presented in section 4.9.5.2 in accordance with the AIR (see response to comment #2578). See section 10.4.1.2 of Appendix V of the Application, Conceptual Fish Habitat Offsetting Plan for proposed compensation addressing the loss of eelgrass. Aurora LNG will consult with ECCC to confirm that the eelgrass offsetting measures in the Fish Habitat Offsetting Plan willalso offset the wetland habitat functions of intertidal eelgrass to achieve no net loss of functions for this type of ecologically important wetland (intertidal eelgrass beds). See memo titled "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation " for additional details. This technical memo will be filed with the BC EAO.
2923.1	round 1	ECCC	Appendix U, 4.2	Vegetation and Wetland Resources	The proponent has committed to a compensation ratio of 2:1 (Appendix U, 4.2, pdf p. 21). Compensation sites are generally required to be larger than the original wetland area impacted to compensate for the inherent uncertainty of replacing the loss of wetland functions and the lag time between the loss of wetland functions in the impacted wetland and gain in wetland functions in the compensation wetland. Therefore, compensation ratios are based on such factors as the probability of success of replacement of wetland functions, length of time required to bring a compensation site to functioning condition, the expertise of the compensation project proponent, and threats to the site. Information Request ECCC requests that the proponent provide the rationale and analysis used to determine that a compenstation ratio of 2:1 will be appropriate to mitigate effects and that case-specific circumstances were taken into account in the analysis.	The ratio presented in the Conceptual Wetland Compensation Plan (Appendix U of the Application), is based on the general regional guidance issued by Environment Canada (2014), which states that, "At a minimum, a compensation ratio of 2:1 is used; however, this ratio varies on a project-by-project basis. Consultation with the Canadian Wildlife Service is recommended to ensure the appropriate ratio is identified." Aurora LNG will consult with ECCC/CWS about the proposed compensation ratio, as indicated in the regional guidance. Reference: Environment Canada. 2014. Federal Policy on Wetland Conservation – Guidance for Application and Implementation in Environmental Assessment. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p403/d37786/1404937173815_193684738c554031afd3fe7a5b3bf6196c13620cba3241eac8c3f318682e8f7f.pdf. Accessed: June 2016.
2924.1	round 1	ECCC	Appendix U, 4.2	Vegetation and Wetland Resources	The location of the proposed wetland compensation is unclear in the Wetland Compensation Plan (Appendix U, 4.2, pdf p. 21). The proponent has also listed a number of "wetland compensation options" - including wetland creation - in conjunction with an ENGO (Appendix U, 5.1 and 5.2, pdf pp 22-23). The plan also states that "actual details of the monitoring program will be determined in consultation with Aurora LNG, ECCC/CWS, and Aboriginal groups" (Appendix U, 5.3, pdf p. 23), and thus it is currently unclear to what extent the proponent will commit to monitoring as part of its wetland compensation program. Information Request ECCC requests that the proponent: • clarify the location(s) in which the wetland compensation will be implemented, • identify the ENGOs that have potentially committed to collaborate as part of the Wetland Compensation Plan. • demonstrate that a variety of criteria and construction methods have been considered in construction and design planning. (e.g., such as Wetland Restoration and Construction, a Technical Guide, 2nd edition (2011) by Thomas R. Biebighauser) • provide an revised monitoring plan that includes criteria to assess compensation success of wetland function and habitat functions.	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order regarding the development of the Wetland Compensation Plan includingabout the details of wetland compensation such as ecological wetland functions to be compensated, potential locations where it could be implemented, ENGOs that could potentially collaborate, design criteria, and monitoring criteria. See memo titled "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation" for additional details. This technical memo will be filed with the BC EAO.
2925.1	round 1	ECCC	Application, 4.2.2.2 and 4.7.5.4; Appendix J	Wildlife Resources (Terrestrial)	The proponent developed habitat suitability modelling for Marbled Murrelets (MAMU) following a four-class rating scheme in RIC guidelines developed in 1999 (Appendix J, 4.2.2.2, pdf p.30). This modelling method is not consistent with the contemporary finer-scale mapping approaches outlined in the MAMU recovery strategy (section 7.1.1 Geographic Location), such as Air Photo Interpretation (API) and Low-level Aerial Surveys (LLA). The proponent has not characterized the extent and quality of suitable nesting habitat for MAMU in much of the critical habitat polygons within the project area. This poses a challenge in reviewing the analysis and mitigation measures provided since the methods used are not comparable or to modelling used in the MAMU recovery strategy. The proponent has conducted detailed habitat assessments for MAMU in areas adjacent to audiovisual survey stations and to ground-truth the wildlife habitat suitability model developed for MAMU (Appendix J, 5.7.2.2, pdf p. 50). This habitat assessment was compared to key biophysical attributes of MAMU nesting habitat in accordance with the recovery strategy. Analysis of the habitat assessment in a preponderance of MAMU critical habitat polygons found within the LAA and adjacent areas (Appendix J, Figure 9, pdf p. 74) is lacking. Determining the presence of biophysical attributes based solely on the locations of audiovisual surveys and the proponent's wildlife habitat suitability modeling results are not sufficient to accurately characterize the extent and quality of MAMU suitable nesting habitat within and near the project area. The proponent recorded 7 MAMU detections during their audiovisual (AV) survey (Appendix J, Table 14, pdf p. 51). However, this type and effort of survey is not sufficient to accurately detect MAMU abundance and assess movement behaviour, as would, for example radar surveys that can detect silent murrelets in the dark over much larger areas (audiovisual observers tend to only detected 10-23% of all murrelets detected by radar). Further, the Proponent should consider implementing mapping and habitat ranking methodologies to characterize the extent and quality of MAMU SNH within and near the Project area nesting habitat, such as LLA and API, consistent with the MAMU recovery strategy (section 7.1.1 Geographic Location), and following widely accepted protocols (e.g. Burger 2004; Burger et al. 2009; McDonald and Leigh-spencer 2009). **References:** Burger AE (ed.) (2004) Standard methods for identifying and ranking nesting habitat of marbled murrelets (Brachyramphus marmoratus) in British Columbia using air photo interpretation and low-level aerial surveys. Report prepared for BC Ministry of Water, Land and Air Protection, Biodiversity Branch, Victoria, BC and BC Ministry of Forests, Vancouver Forest Region, Nanaimo, BC. 37 pp. URL:http://www.env.gov.bc.ca/wld/documents/fia_docs/mamu_standard.pdf Burger AE, Waterhouse FL, Donaldson A, Whittaker C, and Lank DB (2009) New methods for assessing Marbled Murrelet nesting habitat: air photo interpretation and low-level aerial surveys. BC Journal of Ecosystems and Management 10:4–14. URL: http://forrex.org/sites/default/files/publications/jem_archive/ISS50/vol10_no1_art2.pdf Cooper BA, Blaha RJ (2002) Comparisons of radar and audio-visual counts of Marbled Murrelets during inland forest surveys. Wildlife Society Bulletin 30:1182-1194. McDonald S, Leigh-Spencer S (2009) Summary of Marbled Murrelet habitat low-level aerial survey and mapping techniques. Report prepared for Western Forest Products Ltd., Campbell River, BC. 3 pp. URL: http://marbledmurrelet.forrex.org/sites/marbledmurrelet.forrex.org/files/docs/Summary_of_MAMU_Habitat_Low-level_Aerial_Surveys_Mar2009.pdf RISC (2006) Inventory methods for marbled murrelet radar surveys. Standards for components of British Columbia's biodiversity No. 10a."The proponent indicated that "high-disturbance activities during Project construction and operations (e.g. blasting and drilling, pile driving) are likely to result in a high degree of disturbance to marbled murrelet movement during daily trips between potential nesting sites and marine feeding habitat during the breeding season" (Application, 4.7.5.4, pdf p. 74). Given the residual effects on MAMU identified both with and outside of the PDA, it is crucial that the Proponent conduct a more thorough habitat assessment within the LAA (i.e. determining the presence of suitable nesting habitat), in particular in areas identified as critical habitat polygons, as well as collect additional data on their movement patterns and abundance. **Information Request :** ECCC requests that the proponent revise the habitat assessments using modelling methods (e.g. API and LLA) that are consistent with the MAMU recovery strategy, and employing survey methods, such as the use of radar, to ensure survey results accurately capture abundance and movement. The revised assessment should provide an analysis for the following: • biophysical attributes outlined in the recovery strategy; • where potential nesting platforms occur; • where there is an indication of likely MAMU nesting or the presence of a nest; and • where a nest site is confirmed. ECCC requests that the proponent characterize the extent and quality of MAMU suitable nesting habitat which is important to the evaluation of project-related impacts, development of mitigation measures, and determination of residual effect taking into account available guidance in the attached Memo 01 "Environment and Climate Change Canada Standard Guidance for Environmental Assessments: Marbled Murrelet (Brachyramphus marmoratus)" Please also note that ECCC's document "Checklist for Conducting the Five step Strategy for Identifying and Classifying Potential Marbled Murrelet Suitable Nesting Habitat for an Area of Interest" is currently in draft and can be requested from ECCC.	Aurora LNG has completed a comprehensive suite of studies to assess the suitability and availability of marbled murrelet nesting habitat within the PDA and LAA, and to identify potential nesting sites and birds as part of field studies completed for the Project. Additional information on marbled murrelet assessment approaches presented in the Application in the context of the recommendations put forward by Environment and Climate Change Canada has been prepared as a technical memo, entitled "Marbled Murrelet Suitable Nesting Habitat Assessment" and it will be filed with the BC EAO.
2926.1	round 1	ECCC	4.6.5.2	Vegetation and Wetland Resources	The proponent states that "the red-listed non-vascular plant, Sphagnum majus and the blue-listed non-vascular plant, Sphagnum centrale will be translocated from the known locations within the project development area (PDA)", and that they "are considered resilient because they can recover from translocation and persist in the terrestrial local assessment area (LAA) and regional assessment area (RAA)" (Application, Table 4.6-10, pdf p. 29). However, the proponent has not provided further details regarding a translocation strategy and associated monitoring plans, as well as references to support its analysis that the two listed plant species are expected to "recover from translocation and persist" (Application, 4.6.5.2, pdf p. 31). Information Request ECCC requests that the proponent provide further analysis and rationale used to determine that these two plant species can recover from translocation. If the analysis demonstrates that translocation is an appropriate mitigation measure, a translocation strategy is requested including a follow-up monitoring plan to evaluate the effectiveness of such mitigation measures. The strategy should include identification of specific suitable translocation areas that contain the climatic conditions and biophysical features needed for the plants to survive and persist in the area.	Guidelines for the Translocation of Plant Species at Risk (Maslovat 2009) notes that, "in some cases, translocations may be the only viable option. For example, translocation can be a useful tool to mitigate threats to plants in development areas where no other option is feasible." Avoidance is not feasible for Sphagnum centrale and Sphagnum majus because they are located within the PDA. If the Project proceeds, the risks of attempting translocation are limited because the populations would otherwise be lost as a result of clearing within the PDA. Aurora LNG considers this a potentially-viable mitigation measure considering the successful research trials and methods of peatland restoration and moss propagation that have been developed in conjunction with the horticultural/agricultural sector and oil & gas sectors in North America and Europe. Examples of research institutes with publications that address the restoration of Sphagnum spp. include, but are not limited to the following: Peatland Ecology Research Group at the University of Laval, http://www.gret-perg.ulaval.ca/ See: Quinty, F. and L. Rochefort, 2003. Peatland Restoration Guide, second edition. Canadian Sphagnum Peat Moss Association and New Brunswick Department of Natural Resources and Energy. Québec, Québec. Peatland Restoration program at the Northern Alberta Institute of Technology http://www.nait.ca/70709.htm See: Sobze, J., M. Gauthier and R. Thomas 2012. Peatland Restoration – Harvest and Transfer of Donor Material. Technical Note. Available at: http://www.nait.ca/docs/1_Donor_Site_Harvesting_and_Moss_Transfer.pdf Aurora LNG will prepare a Sphagnum Translocation and Monitoring Plan. This will include identification of suitable translocation sites with the specific climatic conditions and biophysical features needed for each of the two species to survive and persist, as well as a plan for monitoring the performance (survival, establishment, and growth) of the translocated populations during the growing season according to the Guidelines for Translocation of Plant Species at Risk (Maslovat 2009). Translocation results will be made available to the BC Conservation Data Centre in order to increase collective knowledge of the species.
2927.1	round 1	ECCC	4.6.5.3	Vegetation and Wetland Resources	The proponent describes old-growth forests in the project development area (PDA), local assessment area (LAA) and regional assessment area (RAA) as resilient, with the ability to recover from perturbation albeit taking over 200 years to develop, and that effects on old growth forest are considered as reversible (Application, 4.6.5.3, pdf p. 40). It is unclear how this determination was made with respect to project-related impacts, given the lack of supporting references, empirical evidence, or adequate justification. Occurrences of species at risk and migratory birds were detected in these old-growth forests, indicating their reliance on this habitat for nesting, breeding, and foraging. Impacts on species at risk and migratory bird using these old-growth forest as habitat during all stages of the annual cycle (breeding, wintering, and migratory) have not been assessed. Information Request ECCC requests that the proponent clarify and provide rationale on how: • old-growth forests in the project area are considered resilient in the context of project-related effects; • project impacts on old-growth forests are considered as reversible, given the amount of time old growth forests take to develop; and • effects on species at risk and migratory birds were taken into account when developing mitigation measures and determining residual effects for old-growth forests.	The scope of Section 4.6.5.3 of the Application is the assessment of change in abundance or condition of ecological communities of interest (including old forest). This does not include the associated wildlife functions of old forest. The wildlife habitat functions of old forest, including the reliance of species at risk and migratory birds, is assessed explicitly in the wildlife section (Section 4.7 of the Application). Wildlife species which require mature and old forest for parts of their life cycle include little brown myotis, marbled murrelet, and western toad, which are assessed quantitatively under Assessment of Change in Habitat in the Wildlife Section (Section 4.7.5.2 of the Application). The Application defines a valued component as resilient if there is "capacity for resources to recover from a perturbation, and consideration of the existing level of disturbance" (Table 4.6-5 of the Application). Technically, old forest can recover from perturbation and does so during natural disturbance events such as forest fires or windthrow, as well as following anthropogenic disturbance such as commercial timber harvesting activities. Project effects on old forest are considered reversible because forests develop old forest characteristics (including complex structure and regeneration of shade-tolerant species with similar composition to the overstory) after a certain period following a stand replacing disturbance. On the North Coast, this period is typically 250 years (BC MOFR and MOE 2010). Duration is a separate characterization of residual effects and the Application directly acknowledges that Project effects on old forest are only reversible in the long term duration (i.e., extends beyond the life of the Project) (see Table 4.6-5 for definitions of effects characterizations. References British Columbia Ministry of Forests and Range and Ministry of Environment (BC MOFR and MOE). 2010. Field manual for describing terrestrial ecosystems. 2nd ed. Forest Science Program, Victoria, BC Land Management Handbook. No. 25. British Columbia Ministry of Forests and Range and British Columbia Ministry of Environment.

2928.1	round 1	ECCC	4.6.5.4 and 4.6.2.1	Vegetation and Wetland Resources	The proponent has committed to implementing the “Marine and Freshwater Resources Management Plan” to mitigate effects on adjacent wetlands outside of the PDA, and that the Wetland Compensation Plan will ensure that these wetlands “will be periodically monitored to determine effectiveness of mitigation measures” (Application, Table 4.6, pdf p 49). However, it is unclear whether these mitigation measures and monitoring efforts will be planned and implemented in the context of potential impacts on species at risk and migratory birds. For instance, loss of freshwater watercourse within the PDA will likely alter hydrological regimes (e.g. salinity, soil deposit) in areas with estuarine mudflats and eelgrass habitats, such as Delusion Bay and Casey Cove, which are known to support numerous migratory birds and species at risk year-round. It is also important to note that waters (including shorelines) from Delusion Bay to the eastern shorelines and waters of Digby Island are part of an Important Bird Area (http://www.ibacanada.ca/maps/sites/BC124.pdf), which further underscores the significance of such estuarine wetland and eelgrass areas for bird species. Information Request: ECCC requests that the proponent identify mitigation measures for adjacent wetland areas outside of the PDA, taking into consideration how species at risk and migratory birds using such areas may be impacted by Project activities. In addition, the proponent should evaluate effectiveness of such mitigation measures via a follow-up monitoring program that includes a “Before-After-Control-Impact” study design for species at risk, migratory birds, and their habitat. The proponent should describe how long-term monitoring and follow-up will be undertaken at the proper scale, and that subsequent studies will be compatible with the baseline studies.	Mitigation measures for wetlands outside the PDA are presented in Table 4.6-13 'Mitigation Measures Proposed to Avoid or Reduce Change in Wetland Function'. See mitigation number 4.6.14, which states that "Wetlands immediately adjacent to the PDA will be periodically monitored to determine the effectiveness of mitigation measures, specifically in relation to wetland hydrology." The recommendations in this comment from ECCC have been noted. Mitigation measures that address species at risk and migratory birds are provided in Table 4.11-9 related to 'Mitigation Measures Proposed to Avoid or Reduce Change in Habitat for Marine Birds' and Table 4.7-10 related to 'Mitigation Measures Proposed to Avoid or Reduce Change in Habitat for Wildlife Resources (Terrestrial)' and Table 4.7-14 related to 'Mitigation Measures Proposed to Avoid or Reduce Change in Mortality Risk for Wildlife Resources (Terrestrial)' Section 14 summarizes the environmental management plans, including the Wildlife Management Plan, which in-turn includes management plans for identified species at risk such as various bat species and marbled murrelet. Aurora LNG will consult with regulators including ECCC and working group members on the development of the environmental management plans, including monitoring plans and follow-up programs developed as part of the Wetland Compensation Plan.
2929.1	round 1	ECCC	Application, 4.6.6.2; Appendix I; Appendix U	Vegetation and Wetland Resources	Information request: ECCC requests that the Proponent address the following items important to understanding how impacts have been assessed and are to be mitigated: • clarify as part of the Invasive Plants Management Plan how “the introduction or spread of invasive species will be mitigated to acceptable levels” (Application, 4.6.6.2, pdf pg. 60); • provide justification for how wetlands without the presence of lichen are “not considered to be particularly sensitive to higher concentrations of NO2 and SOs” (Appendix I, 3.1.4, pdf pg. 19); • clarify why the 3 “Area[s] with Ecologically Important Wetlands” within the PDA mapped in Figure 1 of Appendix U (i.e. CWHvh2/Em05, CWHvh2/Wf51, and CWHvh2/Ws54) were not shown in Figure 4 of Appendix I (pdf pg. 83); and • clarify whether the 3 identified red/blue-listed wetland communities (i.e. CWHvh2/Em05, CWHvh2/Wf51, and CWHvh2/Ws54) were included as part of the NO2 and soil acidification exceedance determination (Appendix I, Table 7 and Table 8) References: Jones, W, 2005. Peat fires: The dangers from a Fire Manager’s Point of View. Journal of the Royal Society of Western Australia, 88, 139-142.	"The introduction or spread of invasive species will be mitigated to acceptable levels" (Application, Section 4.6.6.2, pdf pg. 60) through the implementation of the Invasive Plants Management Plan. This plan will include best management practices which will meet the legal obligations under the Weed Control Act and Regulations, which prohibit the spread of noxious weeds on highways and prohibits using seeds with noxious weed seeds intermixed, and will meet the BC Oil and Gas Commission (BC OGC) Environmental Protection and Management Guideline (2015) requiring control of invasive species during all phases of a project. Best management practices will be included in the invasive plant management plan and will include those in the following references:Best Practices for Managing Invasive Plants on Roadsides. Published by BC Ministry of Transportation and Infrastructure; available as a pocket guide. Contains best practices for roadside workers that are equally applicable to road contractors in the oil and gas sector. http://www.th.gov.bc.ca/publications/eng_publications/environment/ManagingInvasivePlants.pdfThe Best Practices for Managing Invasive Plants on Oil and Gas Operations. Pocket guide developed for British Columbia's Oil and Gas workers. Contains information on key aquatic invasive species as well. http://prrd.bc.ca/services/environmental/weed_control/documents/PRINT-READY-OG-Guide_2013_FINAL.v2.pdfMinistry of Agriculture, Seven Steps to Managing Your Weeds. A Guide for Integrated Weed Management in British Columbia. http://www.agf.gov.bc.ca/weedsbc/pdf/7StepsToManagingYourWeeds.pdfMinistry of Forests, Lands and Natural Resource Operations, Invasive Alien Plant Program - Reference Guide Part 1 https://www.for.gov.bc.ca/hra/plants/RefGuide.htm Mitigation 4.6.5 will also be included in the Invasive Plant Management Plan. Mitigation: Temporary workspaces, reclaimed land, and other revegetation activities will be vegetated using certified weed-free native plant seed and traditional use species where practicable. Mitigation mechanism: Reclaiming temporary workspaces as soon as practicable reduces the chance that invasive species will grow and will minimize erosion and therefore soil loss. Wetlands without the presence of abundant lichen are "not considered to be particularly sensitive to higher concentrations of NO2 and SOs" (Appendix I, 3.1.4, pdf pg. 19) because, as stated in Section 3.1.4 of Appendix I of the Application, "lichens are particularly sensitive to NO2 and SO2 as they lack the protective cuticle that vascular plants have (WHO 2000; Bobbink and Hettelingh 2011)". Wetlands without lichen were not identified as particularly sensitive in the review of literature sources cited in Section 3.3.1 of Appendix I of the Application. The "Area[s] with Ecologically Important Wetlands" within the PDA mapped in Figure 1 of Appendix U of the Application (CWHvh2/Em05, CWHvh2/Wf51, and CWHvh2/Ws54) were not shown in Figure 4 of Appendix I of the Application (pdf pg. 83). Figure 4 of Appendix I displays the dominant ecosystem map code, which may not include the map codes of ecologically important wetlands when they are not the dominant component of a polygon. For this reason, differently themed figures were used in the application to pull out the relevant details for specific purposes. The red/blue-listed wetland communities CWHvh2/Em05 and CWHvh2/Wf51 are not included among communities sensitive to NO2 and SO2, and therefore were included in the general category Total Wetland. The red/blue-listed wetland communities CWHvh2/Em05 and CWHvh2/Wf51 are not identified as communities sensitive to NO2 or SO2 because they are not apt to support lichens; however, the CWHvh2/Ws54 would be included among ecosystems sensitive to this mechanism since it could support abundant lichen. All ecosystems were deemed sensitive to the mechanisms of acidification and eutrophication (Tables 8 and 9 of Appendix I of the Application), including the provincially red/blue listed communities.
2930.1	round 1	ECCC	4.6.7.1 and 4.6.5.5	Vegetation and Wetland Resources	The proponent determined that residual effects to wetland resources are predicted to be not significant, citing justifications such as “change in wetland function will not involve uncompensated net loss of wetland functions of ecologically important wetlands” (Application, 4.6.7.1, pdf p, 76). The proponent concluded project residual effects on wetland function during the construction phase using the follow criteria (Application, Table 4.6-14, pdf p.56): • Magnitude: medium • Geographic extent: PDA • Frequency: single event • Duration: long-term • Reversibility: reversible • Context: resilient • Likelihood: high However, residual effects on wetland functions may be higher than what the proponent has concluded, based on the following criteria: • Geographic extent: beyond the PDA, as the proponent has not adequately considered the adjacent wetland areas (e.g. intertidal coastal wetlands) • Reversibility: irreversible, as the conceptual Wetland Compensation Plan is ambiguous in its proposed mitigation measures to offset impacts to red and blue-listed wetlands that are likely difficult to compensate (i.e. swamps, fens) • Context: not resilient, as the Proponent has not provided adequate information and empirical evidence to justify the resilience of impacted wetlands Information Request ECCC recommends that the proponent expand the effects assessment on wetlands to include project interactions with the estuaries, eelgrass beds, and intertidal wetlands of “Continental Importance to Waterfowl”,	Wetlands within Federal Lands and Waters include estuarine wetlands within the management jurisdiction of the Prince Rupert Port Authority, the boundaries of which correspond with the area of Continental Significance to Waterfowl identified by the Joint Ventures where these two management area designations intersect within the spatial boundaries of the Project. Estuarine wetlands have been assessed in the Application as follows: See Table 4.6-4 in section 4.6.2.5, and 4-9 in the AIR for the spatial boundaries of the vegetation and wetlands resources VC, which are distinct from the spatial boundaries of the marine fish and fish habitat VC.See section 4.6.1 of the AIR, which states that "eelgrass will be assessed as part of the 'Change in Habitat' effect under Marine Fish and Fish habitat VC in Section 4.9". Note that some eelgrass habitat presented in Section 4.9 is located well below the lower low water mark, and thus are considered subtidal marine habitat rather than estuarine intertidal wetlands. Estuarine wetlands are assessed in section 4.6.5.4 (and see Table 3 of Appendix I, Vegetation and Wetland Resources TDR). The spatial extent of potentially-affected wetlands and their functions are presented in sections 4.6 (wetlands other than eelgrass beds), and 4.9 (eelgrass beds) of the Application. The spatial extent of estuarine shore water wetlands (i.e., mudflats) that occur within the PDA will be determined when the design options for the materials offloading facility are finalized. Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended) regarding the development of the Wetland Compensation Plan. The consultation will include the assessment of which habitat offsetting measures associated with marine fish habitat address the habitat functions of estuarine wetlands such as eelgrass and estuarine shore water (i.e., mudflats) to achieve no net loss of functions for these ecologically important wetlands. See the memo titled "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation " for additional details. This technical memo will be filed with the BC EAO.
2931.1	round 1	ECCC	4.7.5.2 and 4.11.5.3	Wildlife Resources (Terrestrial)	Proposed flaring sites are directly adjacent to Delusion Bay, which consists of estuarine meadow/marsh/mudflat habitat (Application, Figure 4.7-2, pdf p. 26) of high ecological value for Pacific migratory and breeding waterfowl and shorebirds. The proponent recorded 10 species of shorebirds and waterfowl in Delusion Bay (Application, 4.6.5.4, pdf p. 53), as well as thousands of other individual birds in the surrounding areas (Appendix J; Appendix Q). In addition, the flaring sites are adjacent to one of the Proponent’s shorebird count stations that resulted in the second highest count : 120 birds (Appendix Q, Table 2-1, pdf p. 45). Further, the PDA is directly adjacent to the Big Bay South to Delusion Bay Important Bird Area (IBA), and is less than 10km from two others (i.e. the Lucy Islands IBA and the Kitkatla Channel IBA). Coastal estuarine and mudflat wetlands found in IBAs serve as crucial breeding and migratory stopover sites for millions of individual birds and are globally significant for congregatory species and colonial waterbird/seabird and waterfowl concentrations. While the proponent has conducted observer-based baseline surveys to determine local abundance and density of various avian species in the LAA, such information may not adequately characterize flaring and lighting-related impacts on avian species within and near the Project area. Additional data collected using instrument-based and/or remote sensing approaches (e.g. radar surveys) in conjunction with observer-based surveys would provide further species or guild-specific information across their annual cycle (i.e. breeding, wintering, and migration). Acquiring a more comprehensive baseline dataset would allow the proponent to develop mitigation appropriate to advoidance and reduction of bird and bat mortality potentially arising from flaring and lighting and effects. The proponent states in the Application that as part of the Wildlife Management Plan “facility staff will document or report bird injuries or fatalities related to Project activities” in relation to lighting-related impacts (Table 4.7-14, pdf p. 62; Table 4.11-10, pdf p. 31). However, such a monitoring plan is not a methodical procedure and thus may not suffice to accurately evaluate the effectiveness of any implemented mitigation in relation to flaring and lighting-related impacts on avian species. Information Request ECCC requests that the Proponent outline provisions for collecting baseline data (using methods such as instrument-based and/or remote sensing) to assess potential effects, due to flaring and lighting-related impacts on avian species that takes into account the following:: • flight direction, altitude, and behaviour of birds and bats; • time periods with high bird and bat movement rates (e.g. migratory season, breeding season); and • relative abundance.	Shoreline stationary count locations were located to maximize survey coverage across various nearshore environments within the LAA, targeting unique marine features (e.g., Delusion Bay, Casey Cove, surrounding islands and islets). For clarity, Section 4.1.3 of Appendix Q provides a description of the findings, indicating that bird abundance and richness was generally similar across points (with exceptions to stations reporting higher numbers of individuals and species described therein). Table 2-1 of Appendix Q provides a summary of individual species reported at each shoreline stationary count. Compared to other locations, counts completed in Delusion Bay (i.e., i.e., MBDI09 and MBDI10) recorded fewer individual birds and species but nonetheless indicate that habitats at those locations support use by shorebirds, ducks, grebes, loons, gulls, corvids, and eagles (for example). Current Project specific and regional data in combination with information available in scientific literature and professional judgement and experience are considered appropriate for characterizing existing conditions and assessing potential residual effects to marine birds. As per mitigation 4.7.20, Aurora LNG has committed to scheduling maintenance flaring events during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. Additionally, the marine riparian disturbance buffer of 30 m (mitigation 4.5.1) will be applied during all phases of the Project to retain shoreline habitats and limit noise and light dispersal, and is expected to further reduce potential for disturbance to avian species using shoreline and nearshore habitats in Delusion Bay. Aurora LNG has further committed to mortality monitoring and reporting (mitigation 4.7.14). The Wildlife Management Plan will provide details on procedures for identifying, recording, and reporting on injuries or mortalities related to Project activities, As part of the reporting, Project personnel will be required to describe the predicted cause of mortality, if known. Aurora LNG welcomes further discussion with Environment and Climate Change Canada on the development of the Wildlife Management Plan and the subsequent implementation of mitigation 4.7.14. To improve understanding of bat species presence and occurrence, and to support the development of the Bat Management Plan, additional information on seasonal activity patterns for bats has been prepared as a technical memo, entitled "Aurora LNG Project Bat Monitoring Program", which provides further information about activity patterns in Delusion Bay. The technical memo will be filed with the BC EAO.

2932.1	round 1	ECCC	Application, 4.7.5.2 and 4.11.5.3	Wildlife Resources (Terrestrial)	There is a lack of information regarding the development of mitigation measures for avoiding and minimizing flaring and/or lighting-related impacts especially given that 3 Important Bird Areas (IBAs) are in close proximity to the project development area (PDA). There is lack of information to understand how the proponent will avoid flaring and light-related impacts to avian species (especially during high risk periods for birds and bat species) through the use of best available technology and what measure would be implemented if avoidance of effects is not feasible. A post-construction monitoring plan has not been provided which is essential to assessing the effectiveness of mitigations measures. In relation to any navigational lighting requirements, in order to minimize the risk to avian species, the minimum amount of obstruction avoidance lighting should be used on tall structures. The use of only strobe lights at night, at the minimum intensity and minimum number of flashes per minute (longest duration between flashes) allowable by Transport Canada, is recommended. The use of solid-burning or slow pulsing warning lights at night should be avoided." ECCC recommends the Proponent include, as part of their Wildlife Management Plan, a post-construction monitoring strategy to assess the effectiveness of mitigation measures for flaring and lighting-related impacts on avian species. The Proponent should consider such things as the following: a. describe how lighting and flaring would be avoided or minimized to the extent possible when occurring at night (see above); b. identify potential high risk periods (see above), as well as specific structures, activities or locations that have the potential to contribute to avian mortality. This should take into account areas that are not able to be monitored due to substrate, health and safety concerns, etc.; c. monitor the effectiveness of mitigation in a scientifically-sound and methodical procedure (this can include, but not be limited to, monitoring bird movement and behaviour using a marine radar); and d. document monitoring results, including a demonstration of whether the mitigation measures have proven effective and if additional measures were required. The monitoring should identify corrections for searcher efficiency, carcass persistence (i.e. scavenging), and searchable area (i.e. that takes into account areas that are not able to be searched due to substrate, health and safety concerns, etc.), in consideration of the use of marine radar independently or in combination with any carcass searches (see Ronconi et al. 2015 and Day et al. 2015 for monitoring protocols). **Information Request** ECCC requests that the proponent describe how its plans for use of best available technology will avoid flaring and lighting-related impacts to avian species (e.g., use of enclosed flare systems). If avoidance is demonstrated as not feasible, the proponent is requested to identify mitigation measures it will implement (in addition to those outlined in Table 4.7-13 and 4.11-10) and to demonstrate the following items have been considered: • Minimizing the number of light installations; • Avoiding the use of solid burning or slow pulsing warning lights; • Avoiding or restricting the time of operation of decorative lights such as spotlights and floodlights that function to highlight the exterior features of buildings; and • Installing the flaring site such that the height of the gas flare (i.e. flaring boom) is out of the flight altitude range of avian species (Day et al. 2015). ECCC requests that the proponent describe how it plans to avoid high risk periods for bird and bat species during the following conditions: • humid, foggy, or rainy nights (illumination glow can draw birds and bats from distance); • spring and fall migration period with high bird movement; and • breeding season for seabirds, when adult birds disperse between their nesting colony and marine foraging areas from dusk to dawn daily (e.g. Marbled Murrelets). ECCC also requests that the proponent provide a post-construction monitoring plan that would allow the effectiveness of mitigation measures to be determined. **References:** Day RH, Rose JR, Prichard AK, Streever B (2015) Effects of gas flaring on the behavior of night-migrating birds at an artificial oil-production island, arctic Alaska. Arctic 68:367-379 Ronconi RA, Allard KA, Taylor PD (2015) Bird interactions with offshore oil and gas platforms: Review of impacts and monitoring techniques. Journal of Environmental Management 147:34-45.	Sections 4.7.5.3 and 4.11.5.3 of the Application discuss effects of lighting infrastructure, including flaring, on terrestrial and marine birds and bats; noting from literature that effects to passerines, and species within the family Alcidae and the order Procellariiformes are more susceptible to light-induced mortality than other species. Although the LAA is located in proximity to three important bird areas, not all species they support are likely to interact with lit infrastructure from the Project (noting, however, that Lucy Islands is located 13 km from the PDA boundary and supports breeding habitat for alcids as described in Appendix Q). Aurora LNG committed to a suite of mitigation measures to reduce the potential effects of lighting infrastructure on birds and bats during all project phases which were described in Sections 4.7.5 and 4.11.5. Proposed mitigations are consistent with the recommendations presented by Environment and Climate Change Canada, in this comment. As per mitigation 4.7.9, Aurora LNG has committed to limit exterior lighting, and use of directional or shielded lighting to reduce the risk of injury or mortality of marine birds during all Project phases. Aurora LNG considered placement options of the flare system within the PDA to reduce potential interaction with environmental valued components and to limit the amount of light dispersal (Table 1-26) . As per mitigation measure 4.7.20, flaring events associated with maintenance activitieswill be scheduled during daylight hours to the extent practicable to further reduce attraction by birds and bats to flare system infrastructure during nocturnal migration or foraging. To facilitate compliance with Project mitigation measures, educational materials provided to employees and contractors will include information on procedures for documenting bird injury or mortality, and handling and release of stranded birds (mitigations 4.7.13, 4.7.14, and 4.7.15). Educational materials will include information on lighting effects to migratory birds, including seasonal and weather-based sensitivities and best management practices for lighting types. The on-site Environmental Monitor(s) will be responsible for providing access to educational materials, training and advising staff, maintaining an accurate record of injury and mortality events, and communicating this record to applicable regulatory authorities at a prescribed interval. To monitor potential effects of lighting on bird and bat mortality, facility personnel will be required to report injuries or fatalities related to Project activities (mitigation 4.7.14). As per mitigation 4.7.16, light-induced stranding's at the LNG facility, marine terminal, supporting infrastructure and facilities, and on berthed vessels will also be documented and reported. To support mitigation measures 4.7.14 and 4.7.16, the Wildlife Management Plan will provide a description of the procedures for searching, documenting, and reporting bird and injuries and mortalities, as a means to evaluate patterns in use, lighting-based effects, and for monitoring the effectiveness of mitigation measures. Project personnel will be required to describe the cause of mortality, if known. The Wildlife Management Plan will be updated as the Project progresses and monitoring results are analyzed. Annual reviews of the plans will be undertaken, subject to the requirements of the program and the effects being monitored. Should any issues be identified during the scheduled reviews, modification to the management plans will be discussed with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order (as amended).
2933.1	round 1	ECCC	4.7.5.2 and 4.11.5.3	Wildlife Resources (Terrestrial)	The proponent states that "if clearing or disturbance to terrestrial habitats is required during breeding bird periods, bird surveys will be conducted in advance by a qualified biologist to comply with the Migratory Birds Regulations of the Migratory Birds Convention Act and the BC Wildlife Act" (Application, Table 4.7-14, pdf p. 63; Application, Table 4.11-5, pdf p 33). Construction during the breeding and nesting period for migratory birds carries with it high risks of detrimental effects (incidental take) to migratory birds. Many bird nests are difficult to locate, even with highly trained observers. ECCC does not recommend that clearing occur during breeding and nesting bird periods, even with pre-clearing surveys. Nest search techniques are not recommended because, in most habitats, the ability to detect nests remains very low while the risk of disturbing active nests is high. Flushing nesting birds increases the risk of predation of the eggs or young, or may cause the adults to abandon the nest or the eggs. In many circumstances, incidental take is likely to still occur during clearing even when active nest searches are conducted prior to these activities. Information Request ECCC requests that the proponent describe the scientifically sound approach it will implement to determine migratory bird presence before any clearing occurs (regardless of time of year) with attention to the following considerations: • existing standards to be followed, including Resources Information Standards Committee (RISC) standards for inventory and survey methods of Forest and Grassland Birds, as well as other species-specific survey and inventory methods, selected in consultation with ECCC, where applicable for species that are often not detected using RISC guidelines (e.g. Common Nighthawk, Western Screech-Owl, etc.) • descriptions of how surveys will be carried out by an experienced, Qualified Professional in a manner that protects migratory birds and nests and avoids harming, killing or disturbing migratory birds or destroying or taking their nests or eggs.	Environment and Climate Change Canada (ECCC) provides guidance on the Avoidance of Detrimental Effects to Migratory Birds (Incidental Take) to facilitate compliance with the Migratory Birds Convention Act (ECCC 2017a). Aurora LNG has adopted this guidance in the development of Project mitigation measures to prevent the inadvertent harming, killing, disturbance or destruction of migratory birds, nests, and eggs. Consistent with ECCC's guidance on avoiding incidental take, Aurora LNG will avoid pre-construction clearing activities within the primary breeding bird window, using ECCC's General Nesting Periods of Migratory Birds in Canada (ECCC 2017b). As per mitigation 4.7.17, Aurora LNG has also committed to modifying the pre-construction clearing schedule to limit disturbance of other species (e.g., bald eagle from February 5 through August 31) whose nesting period extends beyond the regional primary nesting period. If clearing becomes required within the proposed PDA during the primary nesting period, a pre-clearing survey will be completed to identify breeding activity for migratory birds. For clarity, the nest search survey referred to in mitigation 4.7.18 is intended to apply non-intrusive (e.g., passive) monitoring and search methods to identify breeding activity while limiting disturbance to breeding migratory birds, consistent with recommendations from ECCC (2017a). To the extent feasible, breeding activity will be determined using passive survey methods (e.g., point counts following provincial RIC standards) to support discovery of an actual nest, or behavioural observations that suggest evidence of nesting activity (e.g., territorial behaviour, carrying nesting material). If necessary, these methods will be adapted to confirm presence and nesting of potentially occurring migratory birds that are more appropriately surveyed using other methods. As noted by ECCC (2017a), more systematic nest survey approaches (e.g., transects with passive monitoring along each) are appropriately applied in simple habitats (e.g., open habitats). Appropriate methodology would be applied based on the habitat type and with professional judgement of the qualified professional performing the survey. ECCC recommends that "Any nest found should be protected with a buffer zone determined by a setback distance appropriate to the species, the level of the disturbance and the landscape context, until the young have permanently left the vicinity of the nest" (ECCC 2017a). Consistent with this recommendation, mitigation 4.7.18 indicates that active nests identified prior to clearing and setbacks will be clearly marked to show the extent of allowable clearing until the nest is no longer active. Buffer distances will be based on direction from provincial and federal guidance and species-specific disturbance thresholds, in the context of site conditions (e.g., habitat type; type of construction activity). Evidence of nesting activity and professional judgment are sufficient to recommend mitigation measures (e.g., setbacks), even if a nest is not found. The Wildlife Management Plan will provide a detailed description of the procedures for searching, documenting, and reporting of active nests and will be consistent with applicable Environmental Assessment Certificate conditions. Aurora LNG will engage with ECCC during the development of the Wildlife Management Plan. References Environment and Climate Change Canada (ECCC). 2017a. Avoidance of Detrimental Effects to Migratory Birds (Incidental Take). Available at: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=C51C415F-1. Accessed: March 2017. Environment and Climate Change Canada (ECCC). 2017b. General Nesting Periods of Migratory Birds in Canada. Available at: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1. Accessed: March 2017.
2934.1	round 1	ECCC	Application, 4.7.5.2	Wildlife Resources (Terrestrial)	The proponent has identified 19 ha of Marbled Murrelet (MAMU) critical habitat within the PDA, of which 5 ha will be retained through the Wetland Compensation Plan (Application, 4.7.5.2, pdf p. 49). MAMU critical habitat is the portion (approximately 70%) of 2002 levels of suitable nesting habitat across coastal British Columbia required for the survival and recovery of the species as specified by short and long term population and distribution objectives. According to the MAMU recovery strategy, the minimum nesting habitat retention level for the conservation region within which the project is located (i.e. Northern Mainland Coast) is 68%. However, as indicated in the above IR, it appears that the Proponent did not determine whether SNH for MAMU is present within or near the project area, in consultation with ECCC. Further, the Proponent has not indicated whether they have consulted with the provincial or federal authorities to determine if impacts to SNH would compromise the minimum nesting critical habitat retention level for the Northern Mainland Coast conservation region. If the minimum nesting critical habitat retention level is compromised from Project-related impacts, ECCC would advise that destruction of critical habitat is likely. With respect to this mitigation hierarchy, the environmental assessment should describe how the hierarchy was applied and provide a rationale for moving from avoidance to minimization to offset. Given the long time it takes for forests to develop the biophysical attributes necessary to support nesting, it may not be possible to fully compensate for impacts to the critical habitat of MAMU. This is because of the time lag between when impacts would occur and the time when compensated habitat would become suitable for nesting. Information Request ECCC requests that the proponent determine the presence of suitable nesting habitat within and near the local assessment area (LAA) and consult with provincial or federal authorities in evaluating whether impacts to suitable nesting habitat would compromise the minimum nesting critical habitat retention level for the Northern Mainland Coast conservation region. ECCC also requests that the proponent identify and describe measures to avoid, minimize, or offset for any potential impact identified. With respect to this mitigation hierarchy, the environmental assessment should describe how the hierarchy was applied and provide a rationale for moving from avoidance to minimization to offset. Consistent with ECCC's Operational Framework for Use of Conservation Allowances, considerations should be given to the use of compensation for the loss of MAMU habitat: http://www.ec.gc.ca/Publications/58A4AECD-A096-458C-B457-0E67CADF911D/OperationalFrameworkforUseofConservationAllowances.pdf	To support the assessment and characterization of residual effects to marbled murrelet, wildlife habitat assessments were completed to support the development of a detailed habitat suitability model to quantify and qualify nesting habitat suitability within the LAA. The habitat assessments were supplemented with audio-visual surveys and detailed habitat assessments to refine the prediction of potential effects on marbled murrelet habitat. Survey data was collected to determine evidence of breeding or occupied detections (i.e., marbled murrelets seen or heard landing, perching, or flying through or out of the forest canopy) and to further evaluate habitat attributes within preferred or identified critical habitat polygons (see Section 5.7.2 of Appendix J for details). No marbled murrelets were detected during audio-visual surveys and no 'high-likelihood' nesting habitat was identified during the detailed habitat assessments. Supported by Project field studies, Section 4.7.5.2 of the Application provides an estimate of direct and indirect loss of preferred breeding (i.e., suitable nesting) habitat and identified critical habitat for marbled murrelet within the LAA.The PDA overlaps with 77 ha of preferred nesting habitat and 19 ha of polygons containing marbled murrelet nesting critical habitat. After accounting for portions of the PDA retained by the vegetated riparian buffer, the Project is estimated to result in the direct removal of 61 ha of preferred and 14 ha of identified critical habitat (with overlap in extent between those two classifications; see Figure 9 of Appendix J). The majority of preferred and identified critical habitat is located in stands of old-growth forests located on the perimeter of Digby Island. After accounting for portions of the PDA retained by the vegetated riparian buffer, the net change in identified critical habitat was estimated to be 14 ha as a result of the Project. The Project residual effects in change in breeding habitat is likely to act cumulatively with other past, present, or reasonably foreseeable projects and physical activities. The Application included a quantitative assessment of cumulative effects to marbled murrelet habitat in Section 4.7.5.6. A GIS spatial analysis was used to estimate the residual cumulative effects of past, present, and reasonably foreseeable future projects and physical activities in combination with residual Project effects on murrelet habitat present within the RAA (see Section 4.7.5.6). The ecological modelling conducted for the RAA indicates 923 ha of mature or old coniferous forest will be removed by reasonably foreseeable future developments (Table 4.7-19). The Project's contribution to change in habitat accounts for less than 0.0001% of the habitat supply target for the Northern Mainland Coast population. The Project's contribution to cumulative effects is considered a conservative estimate given that: (a) the full extent of identified critical habitat polygons were used to estimate direct effects (Environment Canada 2014), (b) the majority of habitat is located within 500 m of shoreline and is therefore only 'moderately likely' to support nesting (Environment Canada 2014), (c) recent studies have shown positive trends in radar counts (and associated availability of nesting habitat) for the North Mainland Coast (Bertram et al. 2015), and (d) Aurora LNG is committed to implementing a Marbled Murrelet Management Plan to avoid or reduce potential Project effects to changes in nesting habitat. Results of this assessment suggest that the Project's residual effect and its contribution to cumulative change in habitat availability will not influence the long-term sustainability of the regional population. This is consistent with habitat management directives outlines in the proposed Recovery Strategy for Marbled Murrelet (Brachyramphus marmoratus) in Canada (Environment Canada 2014). Aurora LNG is committed to following a mitigation hierarchy to avoid, limit, and mitigate for potential effects to marbled murrelet and will implement options that result in avoiding or reducing effects to the species. Mitigation measures applicable to marbled murrelet are listed in Table 4.7-17. Some Project activities (e.g., vegetation clearing within the PDA) will result in direct and indirect loss of habitat, however, to reduce potential effects on nesting habitat, Aurora LNG will retain a marine riparian disturbance buffer. The riparian buffer will be a minimum of 30 m wide, but may extend beyond 30 m in some areas on the east side of Digby Island (see Figure 4.7-7). To further address direct loss of suitable nesting habitat, Aurora LNG has committed to developing a Marbled Murrelet Management Plan that will outline avoidance, reduction, mitigation, and monitoring measures to effects from Project construction and operation activities. The management plan will follow the Operational Framework for Use of Conservation Allowances, as it applies to the Project (Environment Canada 2012). Aurora LNG will consult with the appropriate regulatory agencies during the development of the Marbled Murrelet Management Plan. References: Bertram, D.F., Drever, M.C., McAllister, M.K., Schroeder, B.K., Lindsay, D.J., Faust, D.A. 2015. Estimation of Coast-Wide Population Trends of Marbled Murrelets in Canada Using a Bayesian Hierarchical Model. PLoS ONE 10(8): e0134891. Environment Canada. 2012. Operational Framework for Use of Conservation Allowances. Environment Canada, Ottawa, ON. 17 pp. Environment Canada. 2014. Recovery Strategy for the Marbled Murrelet (Brachyramphus marmoratus) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa, ON. v + 49 pp.

2935.1	round 1	ECCC	Application 4.7.5.2 and 4.7.9; Appendix J	Wildlife Resources (Terrestrial)	The proponent has identified a Great Blue Heron fannini subspecies (GBH) rookery west of Dodge Cove (Application, 4.7.3, pdf p. 31), and has committed that "high-disturbance project-related activities (e.g. blasting, pile driving) will be avoided where practicable during the breeding window… within 500 m of the GBH rookery at Dodge Cove". The proponent states that this mitigation measure is "consistent with provincial guidelines (i.e. BC MOE 2014c)" (Application, Tables 4.7-10, 4.7-14, and 4.7-15). However, the provincial guidelines (BC MOE 2014) state that high disturbance activities such as "blasting or similarly excessive noises should not occur closer than 1000 m from a colony during the nesting window". Further, GBHs residing in developed urban areas may be more habituated to human disturbances. In comparison, those that nest and forage in undeveloped "pristine" landscapes are less tolerant (lower threshold) to human disturbance, including project activities, and as a result are more likely to abandon their nests. The proponent has "committed to monitoring the great blue heron rookery for changes in breeding activity when vegetation clearing for the Project construction overlaps with the breeding window for great blue herons". However, the Proponent did not indicate whether monitoring of the GBH rookery will also occur in other phases of the project, such as the operation phase (Application, 4.7.9, pdf p. 98). It is unclear why the Proponent has indicated that the GBH rookery is "approximately 500 m from the PDA boundary" (Application, 4.7.3, pdf p. 31). According to Figure 10 of Appendix J (pdf p. 75) and the "Regulatory Based on the summary for Bird Species of Known Presence on Digby Island" provided to ECCC on June 14, 2016 (pdf p. 3), it appears that the GBH rookery maybe approximately 300m away from the PDA boundary. With the already existing buffer radius for GBH nests outlined in provincial guidance documents (e.g. BC MOE 2014), having an accurate representation of the interaction between the rookery and project activities has important implications for assessing project effects and planning mitigation measures for GBH. Information Request ECCC requests that the proponent describe how it will meet its commitment to the setback distance outlined for GBH colonies in the provincial guidelines, "Develop with care 2014: Environmental guidelines for urban and rural land development in British Columbia" and the direction to avoid all project activities, in particular high disturbance ones (e.g. blasting, pile driving), within the 1000m buffer from the GBH rookery during the breeding window (Jan 15 – Sept 15). ECCC also requests that the proponent confirm provisions for monitoring the GBH rookery not only during project construction but also the operation phase. ECCC requests that the proponent clarify the apparent discrepancy in the reported distance between the GBH rookery and the PDA. Specifically, section 4.7.3 of the Application (pdf p. 31) indicates the distance is "approximately 500 m", whereas according to the Figure 10 of Appendix J (pdf p. 69) and the "Regulatory Summary for Bird Species of Known Presence on Digby Island" (pdf p. 3), the distance may be approximately 300 metres.	Aurora LNG is committed to maintaining setbacks to decrease the extent of sensory disturbance in the vicinity of active nesting sites for great blue heron and to reduce the potential for flushing during the nesting and rearing period. Aurora LNG acknowledges that Develop with Care recommends as a best management practice that excessive noises should not occur within 1,000 m of a great blue heron colony during the nesting window (BC MOE 2014). As per mitigation 4.7.4, high-disturbance Project-related activities (e.g., blasting, pile driving) will be avoided where practicable during the breeding window (i.e., January 15 through September 15) within 500 m of the great blue heron rookery at Dodge Cove. To address the uncertainty over the degree to which high disturbance activities occurring within 1,000 m of the heron rookery may result in disturbance displays by nesting herons (as per provincial guidelines), Aurora LNG has committed to monitoring for changes in breeding activity at the rookery if high disturbance activities for Project construction occur within 1,000 m of the rookery during the breeding window (January 15 to September 15 for great blue heron). Given the geography of the area and the fact that there is a ridge of land that visually separates the rookery from proposed road corridor it is unlikely that road construction activities will cause a change in breeding activity. Monitoring protocols will follow the Survey Protocol for Measurement of Nesting Productivity at Pacific Great Blue Heron Nesting Colonies (Vennesland and Norman 2006). Aurora LNG will apply an adaptive strategy to accommodate observed changes in breeding activity. Monitoring and adaptive approaches will be described in detail in the Wildlife Management Plan and be developed in consultation with the appropriate regulatory agencies. Activity in the road corridor will be highest during the construction phase of the Project due to road construction and transportation of the construction workforce to and from the airport and the site. Given that the rookery is located in a rural area, in close proximity to existing anthropogenic disturbances in Dodge Cove, operational activities are not expected to cause effects beyond which those that the rookery is already exposed to; accordingly, additional monitoring during the operational phase is currently not proposed. The rookery is located approximately 300 m from the PDA boundary, as is depicted on Figure 4.7-7, but is over 500 m from the nearest project component (i.e., access road) where the extent of clearing is expected. To address concerns from Dodge Cove related to the location of the access road relative to the Dodge Cove watershed, Aurora LNG has revised the access road right of way to move it further west (please see the technical memo "Dodge Cove Water Supply and Watershed" which will be filed with the BC EAO), which also increases the distance between the right of way and the heron rookery . An errata document has been created that captures revisions to Figure 4.7-7 for clarity of buffer extents, and it will be filed with the BC EAO. Reference: British Columbia Ministry of Environment (BC MOE). 2014. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: April 2016. Vennesland, R. G., and D. M. Norman, 2006. Survey Protocol: For measurement of nesting productivity at Pacific great blue heron nesting colonies. The Heron Working Group.
2936.1	round 1	ECCC	Appendix J-3	Wildlife Resources (Terrestrial)	The proponent conducted point counts for breeding birds throughout the PDA and LAA at 49 stations over the course of two years (June 22-24, 2014, July 1-3, 2014 and May 26-31, 2015). It is not clear from the Application how many times point counts were conducted at each station. In addition, while the proponent has provided what appears to be a sum of individuals per habitat type (Appendix J-3: Table 3-1, pdf p. 123) information on survey effort and area covered is lacking Establishing an accurate baseline that reflects natural inter-annual variation is important for assessing potential project impacts, focusing mitigation and monitoring, and addressing potential cumulative impacts. It is also important to note that a key purpose of collecting baseline data is to determine the presence of any biodiversity or distribution hotspots. ECCC guiding principles on this subject are found in Hanson et al. 2009, A framework for the scientific assessment of potential project impacts on birds - CWS Technical Report series No. 508. Available online at: http://publications.gc.ca/site/archivee-archived.html?url=http://publications.gc.ca/collections/collection_2010/ec/CW69-5-508-eng.pdf . However, it is not evident from the Application how many times point counts were conducted at each station. In addition, the Proponent provides what appears to be a sum of individuals per habitat type (Appendix J-3: Table 3-1, pdf pg. 123) without providing any proportional information including survey effort and area covered. This lack of information does not allow for accurate effects assessment, making it challenging to evaluate results of future monitoring and mitigation efforts for migratory bird species (see Hanson et al. 2009 for details). ECCC requests: • Clarification on sampling effort for point count surveys and stations; and • That, for each wildlife habitat community type identified throughout the LAA, the Proponent use appropriate baseline data to provide density and abundance estimates of migratory birds, particularly species at risk. This will allow a more accurate assessment of potential effects and plan for future monitoring and mitigation efforts on site. Details for how to most appropriately conduct these analyses can be found in Hanson et al 2009.	Breeding bird surveys followed protocols for point-count methods outlined in Inventory Methods for Swallows and Swifts (RIC 1998), Inventory Methods for Forest and Grassland Songbirds (RIC 1999a), Inventory Methods for Woodpeckers (RIC 1999b). In Appendix J, Section 5.5.2 provides an overview of the methods used to complete breeding bird surveys. As indicated therein, surveys were completed once across 49 point-count stations; individual surveys were 10 minutes in length for a total of 490 minutes of survey effort (or 10 minutes per station). Each station had a 100 m radius. To determine abundance and distribution of breeding songbird species among wildlife habitat communities present within the LAA, effort (number of surveyed stations), the average number of individuals, and the average number of species detected during point-count surveys was analyzed by wildlife habitat community. Point-count stations were distributed across six primary wildlife habitat communities within the LAA. The average number of species and individuals (mean ± standard deviation) recorded in each wildlife community are summarized in Table 12 of Appendix J. Presenting breeding bird survey data by wildlife habitat community was intended to support the assessment of change in habitat in Section 4.7, considering the relative availability of habitats in comparison to observed presence, abundance, and richness observed during field studies. This approach further facilitates characterizing residual effects and making a determination of ecological significance. This practice is consistent with the ecosystem approach, as recommended in Hanson et al. 2009. References: Hanson, A., I. Goudie, A. Lang, C. Gjerdrum, R. Cotter, and G. Donaldson. 2009. A framework for the scientific assessment of potential project impacts on birds. Canadian Wildlife Service Technical Report Series No. 508. Atlantic Region. 61 pp. Resources Inventory Committee (RIC). 1998. Inventory Methods for Swallows and Swifts. Ministry of Environment, Lands and Parks. Victoria, BC. Resources Inventory Committee (RIC).1999a. Inventory Methods for Forest and Grassland Songbirds. Ministry of Environment, Lands and Parks. Victoria, BC. Resources Inventory Committee (RIC).1999b. Inventory Methods for Woodpeckers. Ministry of Environment, Lands and Parks. Victoria, BC.
2937.1	round 1	ECCC	Appendix J, 3.3	Wildlife Resources (Terrestrial)	While the proponent did not detect Olive-sided Flycatchers (OSFL) in the LAA, the proponent does indicate that the species was observed on or near Digby Island in previous studies and projects (Appendix J, Table 2, pdf p 22). The precise locations of OSFL have not been provided. This information is required to determine potential project-related impacts and mitigation measures for this SARA-listed species. The posted recovery strategy for OSFL does not include a description of critical habitat because of a lack of adequate information. A schedule of studies is presently in place to obtain the necessary information for the identification of critical habitat. As such, an amended recovery strategy with finalized critical habitat may become available within a timeframe that overlaps with that of project activities. Presently, there is a lack of data related to OSFL presence and abundance in large portions of its range. Without this information any model used to predict critical habitat with current data may have a limited ability to do so in these areas (ECCC 2016). Reference: ECCC. 2016. Recovery Strategy for the Olive-sided Flycatcher (Contopus cooperi) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 52 pp. Information Request ECCC requests that the proponent identify the precise locations in which OSFLs were previously detected on/near Digby Island, using available resources from other studies and projects (as indicated in Table 2 of Appendix J) and supplement this information through additional surveys within the LAA (in particular within the PDA) to better determine OSFL presence and relative abundance. In this regard, the proponent is encouraged to contact ECCC during the assessment process for updated and publicly available critical habitat information and to facilitate the timely exchange of data important to understanding potential impacts and necessary mitigation.	For clarity, Table 2 of Appendix J was intended to indicate which species are known or are likely to occur on Digby Island based on a combination of habitat requirements present within the LAA and documented occurrences from regional occurrence records. Although forested habitats on Digby Island are within the breeding range of olive-sided flycatcher, and meet requirements for nesting activities, there are no documented occurrences of the species regionally (see Table 1-2 of Appendix J). To improve prediction confidence in the occurrence of, and potential Project effects to olive-sided flycatcher, additional information on species presence has been prepared as a technical memorandum, entitled "Wildlife Passive Acoustic Monitoring Program" and it will be filed with the BC EAO. Given that there were no records of detection of olive-sided flycatcher with the additional analysis provided within the memorandum, the assessment of potential Project residual effects provided in Section 4.7 of the Application remains unchanged in consideration of the additional information. Aurora LNG acknowledges that the current recovery strategy for olive-sided flycatcher includes a schedule of studies to obtain information for characterization of critical habitat. Aurora LNG will continue to monitor for potential changes in habitat designations that overlap with the Project boundaries. The field studies collected for the Project, however, contribute to the bank of existing regional data (i.e., 11 datasets spanning data collected between 1972 and 2014) that provide information to the Environment and Climate Change Canada about potential for presence and abundance of the species in this area, relative to other locations in British Columbia. Project data can be provided to the agency, upon request, to support recovery objectives.
2938.1	round 1	ECCC	Appendix J, 4.2 and 5.8	Wildlife Resources (Terrestrial)	While Myotis spp. were incidentally detected within/near the PDA, the proponent has not conducted specific surveys targeted at federally-listed bat species, including the Little Brown Myotis (Appendix J, 5.8.3.1, pdf p. 55). Survey efforts in this case is likely unable to provide sound baseline data (e.g. abundance, distribution, habitat use) or detect seasonal and inter-annual variations. As depicted by the proponent's modeling work, the amount of suitable habitat in the area suggests Little Brown Bats are likely to be present and thus subject to project-related impacts. In Appendix J, Table 5 "Rating Assumptions for Species Habitat Suitability Models" (pdf p. 31) and Appendix J-2 Species Accounts, Little Brown Myotis (pdf p. 108), the proponent states that High Suitability (1) habitats include "Open-canopy mature- or old- growth forest (structural stage 6 or 7) in proximity to foraging habitat and/or movement corridors." ECCC agrees with the importance of these habitats and their location "adjacent to feeding areas such as open water wetlands, streams and forest edges." However, ECCC notes that no surveys for suitable foraging habitat or movement corridors were conducted in the PDA or LAA. Information Request ECCC requests that the proponent • conduct baseline studies for federally-listed bat species that include: desktop surveys (see, for example, Bat Acoustic Monitoring Portal http://databasin.org/groups/59d81a3951fd4915909efacbe2317efb) in combination with field surveys; • conduct field surveys employing methodologies such as radio telemetry, visual surveys, and acoustic monitoring for use in acquiring baseline information on locations of hibernacula and maternity roosting sites taking into account provincial inventory standards, published methodologies, and provincial best management practices for guidance on surveying methodologies; • conduct surveys that account for inter-annual variations, in areas identified as quality hibernacula and roosting habitats (determined, for instance, via habitat suitability modeling) while following decontamination protocols to avoid contamination and spread of White Nose Syndrome in bats (For resources on White Nose Syndrome see http://www.cwhc-rcsf.ca/wns_resources.php); • identify and describe mitigation measures to avoid, minimize, or compensate (in that order of hierarchy, from most to least preferred) for each potential impact identified, consistent with the Little Brown Bat Recovery Strategy, and taking into consideration the Best Management Practices for Bats in BC (http://a100.gov.bc.ca/pub/eirs/viewDocumentDetail.do?fromStatic=true&repository=BDP&documentId=12460); • field verify Roosting Habitat Suitability Modeling for Little Brown Myotis (Appendix J, Figure 5, pdf p. 70) sung the collected baseline data ECCC requests that - in cases where maternity sites or hibernacula are identified - the proponent describe provisions for identifying, implementing and monitoring appropriate buffers to protect these habitats throughout all phases of the project, noting that the size of the buffer will depend on specific disturbance and site conditions. ECCC requests that the proponent provide additional details on how suitable foraging habitat or movement corridors were determined within the PDA and LAA in order to accurately inform the Little Brown Myotis habitat suitability modeling.	Aurora LNG has committed to implementing several bat-specific mitigations; measures applicable to little brown myotis (and other bat species) are listed in Table 4.7-17. Aurora LNG will adhere to a mitigation hierarchy to avoid, limit, and mitigate for potential effects to wildlife resources. Accordingly, the Project has proposed a Bat Management Plan that will specifically outline avoidance, reduction, mitigation, and monitoring measures to limit potential effects to bats from change in habitat or mortality risk from Project construction and operation activities. Aurora LNG will engage with appropriate regulatory agencies regarding the development of this plan. Collectively, these measures are expected to limit the Project's contribution to cumulative effects on little brown myotis and support the current objective to maintain current population levels in western Canada, in accordance with provincial and federal management objectives (Environment Canada 2015). Incidental information on bat occurrence was collected concurrently during marbled murrelet dawn audiovisual surveys in July 2015. Recordings of bat vocalizations indicated the potential presence of little brown myotis within the PDA and LAA. To improve understanding of bat species presence, seasonal occurrence, and patterns in habitat use (e.g., foraging and movement) within the LAA, and to support the development of the Bat Management Plan, additional studies were completed, and information on seasonal activity patterns for bats has been prepared as a technical memo entitled "Aurora LNG Project Bat Monitoring Program" and it will be filed with the BC EAO. Opportunities for winter hibernaculum in rocky outcrops or underground caverns or caves within the PDA or LAA were not identified during field studies. Wildlife habitat community models, supported by ground-truthed vegetation and wildlife habitat assessments, did not classify any portions of the PDA or LAA as a primarily rock-based community type (see Section 4.1 of Appendix J). Additional field studies for wildlife resources did not identify winter hibernacula features. It is expected that habitats within the PDA and LAA primarily support summer roosting and foraging habitat for bats. Accordingly, proposed project mitigations, including the Bat Management Plan will be tailored to address species, habitats, and seasonal patterns in use that have potential to be affected by Project activities and infrastructure. Reference: Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.

2939.1	round 1	ECCC	Appendix J, 5	Wildlife Resources (Terrestrial)	The proponent did not conduct baseline surveys targeting Common Nighthawks (SARA-listed Threatened). The species' nocturnal habits preclude their detection during surveys such as the breeding bird survey conducted by the proponent. The Application indicated Common Nighthawks are unlikely to occur within the LAA due to their habitat requirements and range (Appendix J, 3.3, pdf p. 20). This is not consistent with the Common Nighthawk recovery strategy that states that the species "breeds in a wide range of open habitats including… wetlands (e.g. bogs, marshes, lakeshores, and riverbanks), [and] gravelly or rocky areas." These habitat types are found within the project area, in particular bog wetlands (Application, 4.07, pdf p. 26). The recovery strategy also identified loss of insect-producing habitats as one of its threats, via wetland destruction, drainage of wetland and peat extraction. Given the amount of wetland and other potentially suitable habitat found within the project area, project-related activities may adversely impact the Common Nighthawk. An analysis of these effects is lacking. Information Request ECCC requests that the proponent conduct surveys for the Common Nighthawk in support of the environmental assessment given its SARA-listed status and the presence of suitable habitat conditions. In designing an appropriate baseline information collection program for Common Nighthawks, the Canadian Nightjar Survey Protocol (draft): http://wildresearch.ca/wp-content/uploads/2013/11/National-Nightjar-Survey-Protocol-Draft-WildResearch2.pdf is a helpful reference to be considered.	Common nighthawk is known to use a range of habitats for breeding, including beaches, logged areas, woodland clearings, grasslands, rock outcrops, and gravel rooftops (Brigham et al. 2011). Nest sites preferentially include logged areas, bare sand, fields, and gravel roofs, but can also include marshes, bogs, and river banks (Brigham et al. 2011, Environment Canada 2016). The determination that common nighthawks were unlikely to occur within the LAA was based on a comprehensive review of regional occurrence records, with secondary consideration that preferred breeding habitat is limited within the LAA (recognizing that bog habitat may still provide some nesting opportunity; Environment Canada 2016). As part of characterizing existing conditions for birds within the LAA, Aurora LNG compiled regional data across 11 datasets spanning 43 years of data (i.e., 1972 through 2014) (see Table 1-2 of Appendix J). Across all of the regional bird records, there has only beena single occurrence of common nighthawk in the Prince Rupert area, a single vocal detection near Lelu Island (PNW LNG 2014). To improve prediction confidence of potential Project effects to common nighthawk, additional information on species presence has been prepared as a technical memorandum, entitled "Wildlife Passive Acoustic Monitoring Program" and it will be filed with the BC EAO. A single record of nighthawk was recorded calling on July 27, 2014 as part of the Passive Acoustic Monitoring Program field studies completed. Nighthawks are crepuscular aerial foragers that feed over water and forest canopies. Although not well documented, birds may travel moderate distances from nesting sites to suitable foraging areas (Brigham et al. 2011). Species presence during field studies could indicate that foraging habitat is located within the LAA. Given that nighthawks are known to display some degree of fidelity to nesting sites, it is expected that regional and Project records would include more frequent detections if the species were breeding locally (Environment Canada 2016). With the additional analysis, the infrequency of detection for this species does not modify the assessment of potential Project residual effects provided in Section 4.7 of the Application. References: Brigham, R.M., Ng, J., Poulin, R.G., and Grindal S.D. 2011. Common Nighthawk (Chordeiles minor), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology. Available at: https://birdsna.org/Species-Account/bna/species/comnig. Accessed: March 2017. Environment Canada. 2016. Recovery Strategy for the Common Nighthawk (Chordeiles minor) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 49 pp. Pacific NorthWest LNG (PNW LNG). 2014. Pacific Northwest LNG: Technical Data Report—Terrestrial Wildlife and Marine Birds. Prepared by Stantec Consulting Ltd., Burnaby, BC. 121 pp.
2940.1	round 1	ECCC	Appendix J, 5	Wildlife Resources (Terrestrial)	Unlike most other amphibians, Western Toads are known to spend only a short amount of time in ponds to breed. Metamorphosis is usually complete by late July or early August; the toadlets then disperse up to several kilometers en masse to terrestrial habitats – in aggregations of tens of thousands (COSEWIC 2012). These migration corridors include marshes and riparian areas surrounding breeding sites, as well as forests, meadows, shrub lands, open forest patches. Protection of these migration corridors is important to ensure safe movement of adults between breeding and terrestrial habitats. The proponent conducted pond-dwelling amphibian surveys during late May and June, and detected juveniles at low numbers (1 - 25) at various locations across the LAA (Appendix J, 5.3.3, pdf p. 41). It appears that the proponent's surveys have not adequately taken into account terrestrial habitats that are crucial during other stages of Western Toad's life cycle such as the post-metamorphosis migration period or wintering habitat. ECCC also notes that the Proponent has conducted habitat suitability modeling for only the breeding habitat of Western Toad, but did not include any habitat types used for migration and wintering in their modeling. **Information Request** ECCC requests that the proponent: • conduct surveys at appropriate time of the year to identify migration corridors used annually by Western Toads, between breeding and terrestrial habitat, as well as to identify migratory timing windows, recognizing that inter-annual variability exists in Western Toad migratory movements; • use field data collected during surveys to verify breeding season habitat suitability models; • conduct an effects assessment for terrestrial habitat for Western Toads within the LSA within a buffer of 150–290 m (depending on buffer identified during baseline) plus a 50 m buffer surrounding all breeding ponds identified during baseline studies (Semlitsch and Bodie 2003; Bartelt et al. 2004). The effects assessment should include a description of all potential direct or indirect impacts to Western Toad arising from project activities; and • conduct habitat suitability modeling that takes into account all life stages in the annual cycle, including the migratory and wintering season. ECCC requests that the proponent identify appropriate mitigation measures be put in place to protect breeding and terrestrial habitat as well as migration corridors. Mitigation measures may include, but should not be limited to: setting speed limits on the road, avoidance of the area during the migration period, installation of signs to identify migration corridors, installation of wildlife crossings, fencing and access control measures. ECCC further requests that the proponent identify and describe measures to avoid, minimize, or offset for each potential impact identified, consistent with the Western Toad Management Plan (2016). and the mitigation hierarchy with a full rationale provided for moving from avoidance to minimization to offset. Please see attached Memo 03 "Environment and Climate Change Canada Standard Guidance for Environmental Assessments: Western Toad (Anaxyrus boreas)" for further details. **References:** Bartelt P.E, Peterson C.R., Klaver R.W. 2004. Sexual Differences in the Post-Breeding Movements and Habitats Selected by Western Toads (Bufo Boreas) in Southeastern Idaho. Herpetologica 60(4):455-467. COSEWIC. 2012. COSEWIC assessment and status report on the Western Toad Anaxyrus boreas in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 71 pp. Semlitsch R.D., and Bodie J.R. 2003. Biological Criteria for Buffer Zones around Wetlands and Riparian Habitats for Amphibians and Reptiles. Conservation Biology 17(5): 1219–1228.	Field studies for wildlife resources are considered sufficient to characterize presence and use of habitats within the PDA and LAA by western toad. Pond-dwelling amphibian field studies completed for the Project were completed in accordance with provincial guidelines scheduled to occur within the breeding period for western toad. Based on visual detections and habitat requirements, western toad was identified as a focal species with potential to interact with Project activities and infrastructure. Accordingly, the Application has considered potential effects to western toad and includes appropriate supporting mitigation measures to avoid, reduce, or mitigate for potential residual effects. Table 4.7-17 outlines the mitigation measures that Aurora LNG has committed to as a means to avoid, reduce, or mitigate potential Project effects. These include habitat protection, traffic speed and volume, and drift fencing installation measures. Aggregation at breeding ponds and post-breeding dispersal by adult and juvenile toads varies depending on latitude, elevation, and environmental conditions (e.g., ice break up) in any given year (COSEWIC 2012). Accordingly, the restricted activity period (mitigation 4.7.17) that Aurora LNG identified in Section 4.7 extends from March 1 to August 15 to accommodate interannual variation in the timing of both breeding and migration. Scheduling vegetation clearing outside of the restricted activity period for amphibians will reduce the risk of mortality or injury of breeding amphibians. Based on the documented occurrence and habitat availability of western toad from field studies and habitat suitability modelling provided in Appendix J of the Application, in combination with the expected efficacy of the proposed mitigations, Aurora LNG is not planning to undertake additional western toad surveys at this time. Guidelines for restricted activity periods to protect amphibians will be followed where practicable (BC MOE 2014; BC MFLNRO 2014). Clearing activities will occur outside of the breeding season for amphibians (March 1 through August 15), where possible. In accordance with mitigation measure 4.7.19, if clearing or disturbance of open water wetland sites within the PDA cannot avoid the amphibian breeding period, salvage will be completed subject to permit approval under the BC Wildlife Act. Procedures for amphibian salvage will be outlined in the Wildlife Management Plan and will be conducted following Best Management Practices for Amphibian and Reptile Salvages in British Columbia (BC MFLNRO 2016). Amphibian salvage during the breeding season is expected to be an effective means of reducing the likelihood of mortality as individuals are concentrated at breeding locations, and the ability to detect and capture individuals of all life stages (e.g., eggs, tadpoles or larvae, juveniles, or adults) is improved. Salvaged individuals will be relocated, subject to applicable permits, to proximal areas of suitable habitat beyond the PDA boundaries. Wetland habitats on Digby Island with similar habitat attributes and/or where western toads were previously detected will be preferred relocation areas. The species selected for habitat suitability modelling were determined to be good candidates for species-specific models, in part, because they each require a suite of habitat features that are best assessed at the species level (rather than at the community level). Provincial standards advise planners to select species for suitability modelling where there is a strong understanding of the relationship between habitat characteristics and species whose life requisites (e.g., breeding, feeding) compare well with terrestrial ecosystem map units (RIC 1999). While breeding habitats for western toad are well understood and can be reliably built into a species-specific habitat suitability model, less is understood about migration and overwintering habitats, and models for those habitat types may not be adequately supported using the criteria identified in RIC (1999). Despite this, western toad observations during Project field studies show a reasonable verification of the habitat suitability model (Figures 6 and 10 of Appendix J of the Application). Western toads were detected more frequently and in larger numbers in, or adjacent to high and moderate suitability polygons within the LAA. Adult and juvenile dispersing western toads were observed during Project field studies. Toads appeared to have some association with riparian corridors within the LAA, however, no large migration events were observed in these areas. Given that the LAA is primarily comprised of interspersion of mature or old coniferous forest, shrub-dominated bog, and treed swamp or bog, it is expected that western toad disperse from breeding habitats using forested, wetland, and riparian habitat features across the landscape. However, Aurora LNG is committed to reducing potential for toad mortality. Accordingly, Aurora LNG has committed to installing drift fencing to direct dispersal movements towards wildlife crossing features (e.g., culverts) and away from Project infrastructure to reduce interaction with Project activities (e.g., vehicle traffic). Drift fencing will be installed along riparian corridors that intersect with the access road. References: BC Ministry of Environment (BC MOE). 2014. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html#Main. Accessed: April 2017. BC Ministry of Forests, Lands, and Natural Resource Operations (BC MFLNRO). 2014. A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia, Interim Guidance, North Area. 212 pp. BC MFLNRO. 2016. Best Management Practices for Amphibian and Reptile Salvages in British Columbia. Victoria, BC. 57 pp. Committee on the Status of Endangered Wildlife in Canada . 2012. COSEWIC assessment and status report on the Western Toad Anaxyrus boreas in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 71 pp. Resource Inventory Committee (RIC). 1999. Wildlife Habitat Rating Standards, Version 2. Ministry of Environment, Lands and Parks. Victoria, BC. 98 pp.
2941.1	round 1	ECCC	Appendix J, 5.3	Wildlife Resources (Terrestrial)	The proponent conducted breeding bird surveys at 49 stations across the LAA in various wildlife habitat communities. The number of survey stations is not adequate for some habitat communities. For example, only 2 stations were situated in the 152 ha of "Young or Seral Coniferous Forest", and no survey stations in the 65 ha of "Estuarine Meadow/Marsh/Mudflats" (Appendix J, Table 12, pdf p. 47). It also appears that the proponent did not conduct breeding bird surveys in a majority of the PDA, that is, the western and northern portions where large areas of wetlands and old growth forests were identified (Appendix J, Figure 8, pdf p. 73). This information is required to access potential effects and identify appropriate mitigations measures. Information Request ECCC requests that the proponent update the baseline information to account for wildlife habitat communities that were not fully represented during the breeding bird survey, including "Young or Seral Coniferous Forest" and "Estuarine Meadow/Marsh/Mudflats". Further, ECCC requests that the proponent conduct breeding bird surveys in the western and northern portions of the PDA, where breeding bird information (e.g. abundance, habitat usage) have not been properly characterized in the baseline survey. The additional baseline data should be incorporated in the effects assessment so as to refine impact predictions and identification of mitigation and monitoring measures.	Breeding bird point-count survey locations were placed to provide survey effort that was generally proportional to the relative availability of each wildlife habitat community within the LAA. Sampling effort included surveys in young or seral forests within the LAA. Where possible, point-count stations were located in contiguous habitat to appropriately sample for species expected to be associated with any single community.Due to the size and shape of most young or seral forest community polygons, the observation radius for a single point count would intersect other adjacent wildlife habitat communities limit sampling within a contiguous habitat type (see Figure 8 of Appendix J). To limit bias in interpreting species presence, abundance, and habitat associations, every attempt was made to locate individual stations within a single habitat community.Survey effort included point-count stations in both the PDA and LAA. As noted in Table 12 of Appendix J, the majority of survey effort included sampling of mature or old coniferous forest and shrub-dominated bog. Sampling effort in these communities was expected to be representative of general species presence, abundance, and use of these same communities wherever they occur throughout the LAA, including areas that were not specifically sampled during Project field studies. The Estuarine Meadow/Marsh/Mudflats community is tidally influenced and is regularly inundated with saltwater and hence, provides negligible breeding opportunities for terrestrial bird species. These habitats were specifically surveyed for bird presence, richness, and abundance, as part of shoreline stationary counts completed to support the assessment of marine birds (see Appendix Q).
2942.1	round 1	ECCC	Appendix J, 5.4	Wildlife Resources (Terrestrial)	The Western Screech-Owl is COSEWIC-assessed as Threatened and SARA-listed as Special Concern. The proponent conducted nocturnal raptor surveys between May 26 and June 1, 2015 (Appendix J, pdf p 44), and did not detect the presence of Western Screech-Owls. This may not be the appropriate or reliable survey window because response rate to call-playbacks is likely low during this time period – i.e. beginning of incubation and nesting period (Kissling and Lewis 2009; RIC 2006). Response rates are known to be substantially higher during courtship and territory establishment. This peak calling period determined from Kissling and Lewis (2009) was between April 9 and May 8 in Southeast Alaska. Given that the proposed project is situated at a lower latitude, peak calling period may be even earlier. The proponent broadcasted the calls of various nocturnal raptor species for each sample station within the same night (Appendix J, pdf p 44). However, methods outlined in the Inventory Methods for Owl Surveys (RIC 2006) – which the proponent had reportedly followed for their baseline surveys – stated that "the use of multi-species call-playback techniques is no longer an acceptable method of surveying for owls", as multi-species call-playback may inhibit response from smaller owls, including Western Screech-Owls (Olson et al. 2005). Though the habitat suitability models for Western Screech-Owl appear to be well-constructed, the nocturnal raptor call-playback survey stations were situated in areas categorized as "anthropogenic" (Appendix J, Figure 8 pdf p 73), as well as in areas where "habitat suitability class" for Western Screech-Owls was rated as "Nil" or "Low" (Appendix J, Figure 4, pdf p. 69). Western Screech-Owls are typically found in low elevation riparian forests adjacent to bogs or large streams. Survey stations were situated outside of the PDA (Appendix J, Figure No. 8 pdf p. 73), which may not allow for a thorough evaluation of potential impacts from project activities. It is important that baseline data for Western Screech-Owls be collected accurately – i.e. in the appropriate time period, without its response being potentially inhibited from other nocturnal raptor species, and in suitable habitat types – so that false negatives are minimized (i.e. not detecting an owl when it is in fact present). Having reliable baseline data would allow the proponent to determine the species' existing conditions (e.g. abundance and distribution), and assess effects, mitigation measures, and residual effects resulting from project activities. **References:** Kissling ML and SB Lewis 2009. Distribution, abundance, and ecology of forest owls in Southeast Alaska. U.S. Fish and Wildlife Service, Juneau Field Office, Alaska, and Alaska Department of Fish and Game, Division of Wildlife Conservation, Douglas, Alaska. 215pp. Olson GS, Anthony RG, Forsman ED, Ackers SH, Loschl PJ, Reid JA, Dugger KM, Glenn EM and WR Ripple 2005. Modeling of site occupancy dynamics for northern spotted owls, with emphasis on the effects of barred owls. Journal of Wildlife Management 69:918-932. Resources Inventory Committee (RIC). 2006. Inventory Methods for Owl Surveys. Ministry of environment, Lands and Parks. Victoria, BC. **Information Request** ECCC requests that the proponent conduct targeted surveys within the project area for the Western Screech-owl which includes the following design considerations: - surveys are conducted during periods when the species in the region is reliably known to be responsive (i.e. courtship and territory establishment periods); - single-species call play-back, consistent with the Inventory Methods for Owl Surveys (RIC 2006) are conducted, as opposed to broadcasting calls in conjunction with other species; - surveys are conducted where habitat would be suitable for the species and survey transects are both within the PDA and the terrestrial component of 1.5km buffer extending from the PDA (within the LAA). and - in the event that surveys cannot be conducted due to safety and feasibility issues (e.g., late at night in dense forest), use of recording devices such as Autonomous Recording Units (ARUs) may be appropriate with advice from ECCC and other Western Screech-Owl kennicottii experts. ECCC requests that the proponent verify habitat suitability models using collected field data in order to best assess potential effects of the project to Western Screech-Owl in the PDA and LAA.	As described in Appendix J, nocturnal raptor call-playback stations were located in habitats expected to support target species and included survey effort adjacent to contiguous stands of young, mature or old-growth forest (see Figure 8 of Appendix J). Site selection was expected to target habitats within the PDA and LAA likely to support breeding by western screech-owl. Station NRAP7 was the only station that was positioned within habitat classed as 'anthropogenic', because it was situated adjacent to the railway line on Kaien Island (due to access constraints). Vocalizations of nocturnal raptors in forested stands on Kaien Island east the railway line would have been within the detection limits for this location, and survey data at this location contributes to understanding potential presence of western screech-owl in the LAA. To improve prediction confidence of potential Project effects to western screech-owl, additional information on species presence has been prepared as a technical memorandum, entitled "Wildlife Passive Acoustic Monitoring Program" and it will be filed with the BC EAO. Additional data presented in this memorandum provide further spatial and temporal survey coverage for potential presence of the species. Although there was no detection of western screech-owl during field studies (including the additional data provided in the memorandum), the assessment of wildlife resources also considers how change in habitat will potentially affect the species through the habitat suitability model developed for the species (see Section 4.2.3 of Appendix J and Section 4.7.5.2 of the Application). Table 4.7-17 outlines mitigation measures that Aurora LNG has developed, in part, to avoid, reduce, or mitigate potential effects from Project activities or infrastructure on western screech-owl. The assessment of potential Project residual effects provided in Section 4.7 of the Application remains unchanged in consideration of the additional information.

2943.1	round 1	ECCC	Appendix J, 5.4	Wildlife Resources (Terrestrial)	The Northern Goshawk laingii subspecies (Northern Goshawk) is SARA-listed as Threatened with a recovery strategy in development. These species are habitat specialists limited to dense forests with mature and old-growth structures including large trees and multiple canopy layering (Lewis et al. 2006; Greenwald et al. 2005). Diurnal raptor call-playback surveys (including for Northern Goshawk) were conducted by the proponent on only the perimeter of Digby Island "due to access constraints" (Appendix J, 5.4.2.2, pdf p. 44). These survey locations were consequently located at the edge of forest patches (Appendix J, Figure 8, pdf p. 73), which is not considered as suitable habitat to reliably detect Northern Goshawks during the surveyed period (RISC 2001). It is important that baseline data for Northern Goshawks be collected accurately (e.g. in suitable habitat types) so that false negatives are minimized (i.e. not detecting a bird when it is in fact present). Having reliable baseline data would allow the proponent to determine the species' existing conditions (e.g. abundance and distribution), to assess potential effects and to identify appropriate mitigation measures and monitoring programs. ECCC brings to the attention of the Proponent that the Northern Goshawk recovery is currently in development. References: Greenwald DN, Crocker-Bedford DC, Broberg L, Suckling KF, and Tibbitts T (2005) A review of northern goshawk habitat selection in the home range and implications for forest management in the western United States. Wildlife Society Bulletin 33:120–129. Lewis SB, Titus K, Fuller MR (2006) Northern goshawk diet during the nesting season in southeast Alaska. Journal of Wildlife Management 70:1151-1160. Information Request ECCC requests that the proponent conduct targeted surveys for the Northern Goshawk within the project area following widely accepted protocols (e.g. RISC), and in habitat types known to be suitable for Northern Goshawks (i.e. dense forest canopies). In addition, the survey transects should be both within the PDA and the terrestrial component of 1.5km buffer extending from the PDA (within the LAA). ECCC requests the proponent provide details on the measures are taken to avoid or lessen any Project-related effects on the species, and to monitor them.	As described in Appendix J, diurnal raptor call-playback stations were located in habitats expected to support target species and included survey effort in contiguous stands of mature or old-growth forest. Site selection was expected to target habitats within the PDA and LAA most likely to support breeding by northern goshawk. To improve prediction confidence of potential Project effects to northern goshawk, additional information on species presence has been prepared as a technical memorandum, entitled "Wildlife Passive Acoustic Monitoring Program" and it will be filed with the BC EAO. Although there was no detection of northern goshawk during field studies (including the additional data provided in the memorandum), the assessment of wildlife resources also considers how change in habitat will potentially affect the species through the wildlife habitat community model (see Section 4.1.3 of Appendix J and Section 4.7.5.2 of the Application). Table 4.7-17 outlines mitigation measures that Aurora LNG has developed, in part, to avoid, reduce, or mitigate potential effects from Project activities or infrastructure on northern goshawk. The assessment of potential Project residual effects provided in Section 4.7 of the Application remains unchanged in consideration of the additional information. Aurora LNG acknowledges that a recovery strategy for northern goshawk is scheduled for development. Aurora LNG will consult with Environment and Climate Change Canada regarding any changes to potential Project effects as a result of information provided in the recovery strategy, if applicable.
2944.1	round 1	ECCC	Application, 4.7.3.2; Appendix J-1	Wildlife Resources (Terrestrial)	The proponent did not including Black Swift (COSEWIC-listed Endangered) as a federally-listed species potentially occurring within the local assessment area (LAA) and regional assessment area (RAA) (Application, Table 4.7-7, pdf p. 23). These species may be listed within a timeframe that overlaps with project construction and operation. The distribution of the species has the potential to occur within the project area (COSEWIC 2015). While the proponent did not detect Black Swift, the proponent does indicate in Appendix J that these species have been observed several times within/near the project area by the BC Breeding Bird Atlas, eBird, and the North American Breeding Bird Survey (Table 1-2 of Appendix 1). References: COSEWIC (2015) COSEWIC assessment and status report on the Black Swift Cypseloides niger in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 50 pp. Information Request ECCC requests that the proponent conduct a survey for the species and an effects assessment based on survey results with reference to the attached Memo 02 "Black Swift – baseline survey protocol and effects assessment for Environmental Assessment".	Black swift is an uncommon migrant to the region and is most likely to occur within the LAA during breeding between June and August (Lowther and Collins 2002; Bird Studies Canada 2017). During the breeding season, black swifts nest on ledges or shallow caves in steep rock faces, usually behind waterfalls (Lowther and Collins 2002). An overview of wildlife habitat communities available within the LAA for wildlife resources is described in Section 4 of Appendix J of the Application. Habitats that meet the criteria to support nesting activities for black swift are not located within the LAA; accordingly, black swifts are not expected to interact with Project activities and infrastructure. The determination that black swifts occur in the LAA infrequently was based on a comprehensive review of regional occurrence records and consideration that preferred nesting habitat is not available within the LAA. As part of characterizing existing conditions for birds within the LAA, Aurora LNG compiled regional data across 11 datasets spanning 43 years of data (i.e., 1972 through 2014) (see Table 1-2 of Appendix J of the Application). Across all regional bird records, occurrences of this species are uncommon. However, potential effects of the Project on migratory birds, including black swift, are assessed in Section 4.7 of the Application. Potential effects to black swift from Project activities and infrastructure are considered to be accurately represented in Section 4.7. Aurora LNG has committed to several mitigations to reduce the potential for residual effects to migratory birds, and these are considered beneficial in reducing effects to potentially occurring black swifts, in Sections 4.11.5.2, 4.11.5.3, and 4.11.5.4. References: Lowther, P. E. and Collins, C.T. 2002. Black Swift (Cypseloides niger), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology. Available at: https://birdsna.org/Species-Account/bna/species/blkswi. Accessed: March 2017. Bird Studies Canada. 2017. Data accessed from NatureCounts, a node of the Avian Knowledge Network, Bird Studies Canada. Available at: http://www.naturecounts.ca/. Accessed: March 2017.
2945.1	round 1	ECCC	Appendix Q, 4.1; Application 4.7.5.2	Wildlife Resources (Terrestrial)	The proponent detected the presence of Great Blue Herons fannini subspecies (GBH) on the west and south sides of the PDA - i.e. Dodge Cove, Charles Point, Delusion Bay, Tremayne Bay (Appendix Q, Table 2-1, ; Appendix J, Figure 10, pdf p. 75). However, the proponent did not indicate the tidal levels during the surveys, a critical factor to consider when determining GBH abundance along the coast. GBH tend to forage in the intertidal zone at low and medium tides from early spring to late summer, and are rarely present on the foreshore at high tides (RISC 1998; Huang et al. 2015). While the proponent reportedly followed the RISC protocols, it is unclear whether surveys were conducted during low or medium tides when the abundance and presence of GBH can be more reliably determined. While GBH use open intertidal habitats in the summer months for foraging, these year-round residents switch to upland areas (e.g. marshes, grassy habitats, riversides) for foraging during late fall, winter, and early spring (Butler et al. 1997; ECCC 2016). GBH detections described in the Application were primarily located along the shoreline and during the summer months; however, it is unclear whether GBH surveys were conducted in upland foraging habitat and in other months of the year. Providing more comprehensive baseline data that captures annual and inter-annual spatial and seasonal variation of GBH ecology (e.g. movement, foraging requirement) would enable a reliable evaluation of potential project impacts and facilitate identification of mitigation and design of effects monitoring programs. The proponent indicated that its assessment will "incorporate information about presence and seasonal use of the heron rookery site and adjacent marine foraging habitats near Dodge Cove in developing mitigation measures" (Application, Table 4.11-2, pdf p 5), and that it will implement "a variable width shoreline setback" on the east side of Digby Island (Application, 4.7.5.2, pdf p. 43). However, it is unclear whether the foraging requirements of GBH (or other bird species) were considered when establishing this shoreline setback distance and whether the effectiveness of such mitigation measures will be assessed during and after construction (e.g., by comparing changes in GBH abundance). References: Butler, R. W. 1997. The great blue heron. – UBC Press. Huang AC, Essak M, O'Connor MI (2015) Top–down control by great blue herons Ardea herodias regulates seagrass-associated epifauna. Oikos 124:1492-1501 Information Request ECCC requests that the proponent: - identify the tidal level during the surveys conducted for GBH - and if these were not documented at the time of surveys - conduct a baseline survey in the appropriate time periods that would allow for reliable detection of GBH abundance, taking into account tidal levels and consistent with accepted protocols (e.g. RISC); - clarify / confirm that surveys were conducted in upland foraging habitat and accounted for seasonal variation including confirmation that GBH life stage requirements were considered (e.g. critical foraging areas during various months of the year during surveys); and - provide a monitoring plan that would allow the effectiveness of the proposed shoreline setback distances to be evaluated in relation to the foraging needs of GBH (and other birds using the area) with indices directly related to the response of GBH (e.g., changes in GBH abundance along any potentially impacted shoreline habitat, changes in foraging behaviour in relation to project-related disturbance).	Please note that the great blue heron observations shown on Figure 10 of Appendix J represent incidental records. Additional heron detections were recorded during marine bird surveys and described in Appendix Q. The information below provides a combined summary of heron observations across terrestrial and marine field studies. Consistent with sampling protocols referenced in Appendix Q, stationary shoreline counts were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use. Stationary shoreline points situated around mudflats (e.g., Delusion Bay, Casey Cove) were surveyed to optimize detection as well as to facilitate access to survey locations. Recognizing that surveys within two-hours of high tide is the best observation period for shorebirds, but may limit detection of other bird species that are more reliant on exposed mudflat, surveys were timed to coincide with mid to high-tide cycles to improve detection across multiple taxa. Note that for habitats in Delusion Bay, a modest decrease in tide height provides substantial access to mudflat habitat. A summary of heron observations within the LAA relative to the tide level is provided in the table below. Tide stage was not recorded as part of incidental records because observations were not completed during periods of targeted detection.Date (dd/mm/yy)LocationNumber of HeronsBehaviourTide Stage04/06/14Delusion Bay2ForagingIncidental05/06/14Delusion Bay2ForagingIncidental24/06/14Dodge Cove1FlyingIncidental01/07/14Charles Point (MBDI05)1FlyingMid – Rising01/07/14Dodge Cove (MBDI01)3Loafing on shoreMid – Rising03/07/17Auriol Point20Loafing on shoreIncidental03/07/14Gribell Islet10Loafing on shoreIncidental03/07/14Dodge Cove (MBDI02)2FlyingMid – Rising17/11/14Tremayne Bay (MBDI14)1Loafing on shoreMid – Falling18/11/14Dodge Cove (MBDI02)4Loafing on shoreMid – Falling Wildlife habitat community modelling identified 15 wildlife habitat communities within the LAA, but did not include upland grass, marsh or riverine habitat. The wildlife habitat communities present within the LAA were used to assess potential Project effects to the wildlife species assemblages that occupy them, including great blue heron. Methods and findings of the wildlife habitat community models are provided in Section 4.1 of Appendix J and carried forward in Section 4.7.5.2 of the Application. Because suitable upland habitat was not identified in the LAA, survey effort focused on coastal areas of greatest use. While outside of the LAA, the incidental records of herons on the north end of Digby Island were located in or adjacent to upland grass habitat. Although these detections occurred in July, this area of Digby Island may represent important heron habitat during other parts of their annual cycle as well. With respect to great blue heron, the riparian buffer will be a minimum of 30 m wide, but extend beyond 30 m in some areas on the east side of Digby Island resulting in greater retention of forested and shoreline habitat to support roosting and foraging opportunities. Given the width of the riparian buffer on the east side of Digby Island, this area is expected to retain habitat function during Project construction and operation.
2946.1	round 1	ECCC	Appendix Q, 4.1	Marine Wildlife - Marine Birds	The proponent detected the highest number of marine birds on Spire Island (MBDI20) of all survey stations (Appendix Q, Table 2-1, pdf p. 45) . Nearby islands (e.g. Metford Island, Tuck Island), which are situated in close proximity to the marine jetty as well, may also have high abundance and diversity of marine birds along the shoreline. The Application is lacking shoreline marine bird surveys in these islands. Noise and lighting from construction and operation of the marine jetty has the potential to affect birds in the area. Information Request: ECCC requests that surveys be updated to include shoreline marine bird surveys to characterize the abundance and diversity on islands near the proposed marine jetty, such as Metford Island and Tuck Island. This analysis will allow the effects assessments to be strengthened and appropriate mitigation measures for project effects (e.g. noise, lighting) to be identified.	Shoreline stationary counts were located to maximize survey coverage in habitats within the LAA. Specific placement of individual points was intended to survey across various nearshore environments within the LAA, targeting unique marine features. Some portions of the LAA were deemed unsuitable for placement of a survey location due to accessibility, safety, and to limit unnecessary disturbance to birds using rocky shoals and islets for roosting (consistent with Environment and Climate Change Canada's Avoidance Guidelines; ECCC 2017). A shoreline stationary count was located on Spire Island (MBDI20) and included Tuck Island in its radius of detection (see Figure 2 of Appendix Q). Although Metford Island is just beyond the observation radius of MBDI20 and others, marine bird presence and abundance is represented by survey coverage for similar rocky shoals and islets within the LAA, including Spire and Tuck Island.Proposed Project mitigation measures were developed in consideration of marine bird use of these collective habitats in the southern section of the LAA. References: Environment and Climate Change Canada (ECCC). 2017. Avoidance Guidelines. Available at: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=AB36A082-1. Accessed: March 2017.
2947.1	round 1	ECCC	Appendix Q, 4.3	Marine Wildlife - Marine Birds	The red-necked phalarope is COSEWIC-designated as a species of Special Concern. The proponent found a single large congregation of 3041 individuals of red-necked phalaropes reported as an "incidental observation" (Appendix Q, 4.3.3, pdf p. 18). A single flock of this size is unusually large for red-necked phalaropes (Tracy et al. 2002), and therefore could indicate that the area of observation serves as an important migration staging site for refueling. However, the proponent did not indicate the location of this observation relative to the PDA, and whether the birds were feeding in, roosting at, or flying by this area. While the phalaropes may have only been there for a short period of time (i.e. stopover for migration), understanding the exact location of this flock is of importance to the effects assessment and to identification of appropriate mitigation. Reference: Tracy, Diane M., Douglas Schamel and James Dale. (2002). Red Phalarope (Phalaropus fulicarius), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/redpha1 DOI: 10.2173/bna.698 Information Request ECCC requests that the proponent prepare a species-specific effects assessment for red-necked phalarope which includes the following: • clarity on where the 3041 individuals were reportedly observed (Appendix Q, 4.3.3, pdf p. 18); • clarity on how the location was used (e.g. feeding, roosting, flying by); and • a survey conducted in accordance with the RISC standard ("Shorebirds Version 1.1") to determine whether other potentially important migration staging areas exist within the LAA and RAA during other times of their migration season. ECCC requests that for each project phase, the proponent describe the project's potential effects on the red-neck phalatrhope and its habitat taking into account a current understanding of species ecology .	The record of 3,041 red-necked phalaropes is a total sum of five separate incidental observations made during vessel-based surveys in July 2014, and included a single detection of 3,000 individuals on July 9, 2014. This large congregation was observed in deep-farshore waters outside of the RAA, approximately 1 km east of Grey Islet in Orifalmme Passage. Birds were recorded as resting on the water. Field studies for marine birds were completed to provide a record of occurrence and patterns in habitat use within the LAA and RAA. The scope and timing of field studies were consistent with recommendations within applicable sampling protocols referenced in Appendix Q (Gjerdrum et al. 2012; RIC 1997a,b). Shoreline stationary counts and vessel-based surveys were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use during overwintering, migration, and breeding periods. Although surveys were generally completed once per season, survey effort was replicated across and within habitat types in LAA and RAA. To provide greater regional context, results of field studies were evaluated in consideration of regional datasets and information sources (see Appendix Q). Shoreline stationary counts were located to maximize survey coverage in habitats within the LAA. Specific placement of individual points was intended to survey across various nearshore environments within the LAA, targeting unique marine features. Vessel transects were stratified across four primary habitat guilds to account for potential differences in marine bird habitat use. Transects placement was random within each guild to provide an indiscriminate sample of species presence, richness, abundance, and distribution. As noted in Appendix Q, the number and placement of transects completed in each season (including distribution across habitat guilds) varied based on constraints in weather and sea conditions. A complete summary of marine bird detections by habitat guild is provided in Appendix 3 and discussed in Section 4.2.3 of Appendix Q. Collectively, field studies for marine birds are considered sufficient to characterize seasonal presence and use of habitats within the LAA and RAA. The large congregation of red-necked phalarope was located outside of the RAA, suggesting that the species has access to a range of valuable foraging and staging habitats beyond the area where residual Project effects are predicted to occur. Accordingly, potential effects to red-necked phalarope from Project activities and infrastructure are accurately represented in Section 4.11. Aurora LNG has committed to several mitigations to reduce the potential for residual effects to marine birds, including red-necked phalarope, in Sections 4.11.5.2, 4.11.5.3, and 4.11.5.4. References: Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) Standardized Protocol for Pelagic Seabird Surveys from Moving and Stationary Platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. Resource Inventory Committee (RIC). 1997a. Inventory Methods for Seabirds: cormorants, gulls, murres, storm-petrels, Ancient Murrelet, auks, puffins, and Pigeon Guillemot. Victoria, BC. Resource Inventory Committee (RIC). 1997b. Standardized Inventory Methodologies for Components of British Columbia's Biodiversity: Shorebirds. Plovers, oystercatchers, stilts, avocets, sandpipers, phalaropes and allies. Victoria, BC.

2948.1	round 1	ECCC	Appendix Q, 4.3	Marine Wildlife - Marine Birds	The proponent reports that two large congregations of 2520 surf scoters were observed in April 2015 and 120 in February 2015 (Appendix Q, Table 4-1, pdf p. 53), which suggest that these areas of observation may serve as important overwintering or migration stopover sites for the species. For example, during molt, winter, and spring migration periods, large numbers of surf scoters often feed in seagrass beds. Scoters flush easily, and thus repeated physical disturbance by boat traffic could affect them through exclusion from important feeding sites and/or reduction in energy stores as occurs in other waterfowl (Anderson et al. 2015). However, the proponent did not indicate the precise location of these observations relative the PDA and whether the birds were feeding in, roosting at, or flying by this area. Understanding the exact location of these congregations is important to the effects assessment and identification of mitigation measures for any project-related impacts. Reference: Anderson, Eric M., Rian D. Dickson, Erika K. Lok, Eric C. Palm, Jean-Pierre L. Savard, Daniel Bordage and Austin Reed. (2015). Surf Scoter (Melanitta perspicillata), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/sursco Information Request: ECCC requests that the proponent • identify the precise locations of the two congregations of surf scoters observed in April and February 2015 in relation to the project area; • indicate how the locations were being used (e.g. feeding, roosting, flying past); and • conduct a survey in accordance with the RISC standard ("Inventory Methods for Waterfowl and Allied Species") to determine whether other potentially important overwintering or migration staging areas exist within the LAA and RAA during other times of the year. ECCC further requests that the proponent consider the additional findings on surf scoters and: • refine its assessment of the project's potential effect on the species and its habitat • develop mitigation measures to reduce the project's potential impacts on the species, and • describe the follow-up monitoring it will conduct to determine mitigation effectiveness.	The congregation of 120 surf scoters was recorded during vessel-based surveys on February 7, 2015. The group of scoters was recorded incidentally between transect surveys in deep-farshore waters outside of the RAA, approximately 2 km northeast of Stephens Passage (see Figure 5 of Appendix Q for location). This group of birds was reported as resting on the water. The congregation of 2,520 surf scoters was recorded as an incidental detection during vessel-based surveys on April 10, 2015. The group of scoters was recorded on a transect located outside of the marine bird RAA, directly north of Tugwell Island (in the shallow-farshore habitat guild) and were demonstrating foraging behaviour (see Figure 6 of Appendix Q for transect location). Observations of large groups of surf scoter are common in the Prince Rupert region and are also reflected across regional datasets reported in Appendix 1 of Appendix Q (e.g., BC Coastal Waterbird Surveys and Christmas Bird Counts). Scoters use habitats in the LAA, RAA, and broader region for foraging, staging, and overwintering. Exceptionally large congregations can coincide with herring spawn (Lok et al. 2012). The large group of scoters observed in April 2015 likely reflects movements to local spawning events for forage. Field studies for marine birds were completed to provide a record of occurrence and patterns in habitat use within the LAA and RAA. The scope and timing of field studies were consistent with recommendations within applicable sampling protocols referenced in Appendix Q (Gjerdrum et al. 2012; RIC 1997). Shoreline stationary counts and vessel-based surveys were completed across different months, times of day, and at variable tide heights to account for seasonal, diurnal, or tidal patterns of use during overwintering, migration, and breeding periods. Although surveys were generally completed once per season, survey effort was replicated across and within habitat types in LAA and RAA. To provide greater regional context, results of field studies were evaluated in consideration of regional datasets and information sources (see Appendix Q). Shoreline stationary counts were located to maximize survey coverage in habitats within the LAA. Specific placement of individual points was intended to survey across various nearshore environments within the LAA, targeting unique marine features. Vessel transects were stratified across four primary habitat guilds to account for potential differences in marine bird habitat use. Transect placement was random within each guild to provide an indiscriminate sample of species presence, richness, abundance, and distribution. As noted in Appendix Q, the number and placement of transects completed in each season (including distribution across habitat guilds) varied based on constraints in weather and sea conditions. A complete summary of marine bird detections by habitat guild is provided in Appendix 3 and discussed in Section 4.2.3 of Appendix Q. Collectively, field studies for marine birds are considered sufficient to characterize seasonal presence and use of habitats within the LAA and RAA. Both detections of surf scoter were in locations outside of the RAA, suggesting that the species has access to a range of valuable foraging, staging, and overwintering habitats beyond the area where residual Project effects are predicted to occur. Accordingly, potential effects to surf scoters from Project activities and infrastructure are accurately represented in Section 4.11. Aurora LNG has committed to several mitigations to reduce the potential for residual effects to marine birds, including surf scoter, in Sections 4.11.5.2, 4.11.5.3, and 4.11.5.4. References: Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) Standardized Protocol for Pelagic Seabird Surveys from Moving and Stationary Platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. Lok, E.K., Esler, D., Takekawa, J.Y., De La Cruz, S.W. 2012. Spatiotemporal associations between Pacific herring spawn and surf scoter spring migration: evaluating a 'silver wave' hypothesis. Marine Ecology Press Series, 457:139-150. Resource Inventory Committee (RIC). 1997. Inventory Methods for Seabirds: cormorants, gulls, murres, storm-petrels, Ancient Murrelet, auks, puffins, and Pigeon Guillemot. Victoria, BC.
2949.1	round 1	ECCC	Appendix U, 4.2	Vegetation and Wetland Resources	The location of the proposed wetland compensation is unclear in the Wetland Compensation Plan (Appendix U, 4.2, pdf p. 21). In addition, the proponent has listed a number of "wetland compensation options" in conjunction with an ENGO, including wetland creation (Appendix U, 5.1 and 5.2, pdf pg. 22-23). With regards to monitoring, the plan also states that "actual details of the monitoring program will be determined in consultation with Aurora LNG, ECCC/CWS, and Aboriginal groups" (Appendix U, 5.3, pdf pg. 23), and thus it is currently unclear to what extent the Proponent will commit to monitoring as part of its wetland compensation program. Information Request Based on the above, ECCC requests that the proponent: • specify the location(s) in which the wetland compensation will be implemented, and provide a scientifically-sound rationale for how this would be appropriate in achieving no-net-loss goal of wetland function; • provide a list of the ENGOs which have committed to or may potentially commit to collaborate as part of the Wetland Compensation Plan. • demonstrate that a variety of criteria and construction methods were carefully considered in construction and design planning for any wetland creation (such as for e.g. Wetland Restoration and Construction, a Technical Guide, 2nd edition (2011) by Thomas R. Biebighauser) • elaborate and provide more comprehensive information on the proposed monitoring plan. The plan should include monitoring criteria that provide a quantitative benchmark to assess compensation success for wetland functions (including habitat functions). The proponent should also provide in its plan the time scale of the monitoring program and rationale that it is sufficient to ensure effectiveness of the compensation efforts in the long-term. ECCC requests that the proponent appropriately consider compensation sites, activities and monitoring for any wetlands within the project area (including mudflats and eelgrass beds; see above IRs) - not only for the 2 ha of red/blue-listed wetlands identified in the PDA	Aurora LNG will engage with appropriate regulatory agencies and the Aboriginal Groups identified in Schedule B of the Section 11 Order regarding the development of the Wetland Compensation Plan.Details to be developed include potential compensation locations, ENGOs that could potentially collaborate, design criteria, and monitoring criteria (including duration of the monitoring program). Aurora LNG will engage with ECCC to determine the extent that the estuarine habitat offsetting measures for marine fish and fish habitat also compensate for the wetland habitat functions of intertidal wetlands, including eelgrass and mudflats, to achieve no net loss of functions for these ecologically important wetlands. The request to consider compensation sites, activities, and monitoring for "any wetlands within the project area (including mudflats and eelgrass beds; see above IRs) - not only for the 2 ha of red/blue-listed wetlands identified in the PDA" has been noted; however, this request exceeds the scope of guidance issued by Environment Canada (2014). See also the memo titled "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation " for additional details. This technical memo will be filed with the BC EAO. Reference: Environment Canada. 2014. Federal Policy on Wetland Conservation – Guidance for Application and Implementation in Environmental Assessment. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p403/d37786/1404937173815_193684738c554031afd3fe7a5b3bf6196c13620cba3241eac8c3f318682e8f7f.pdf. Accessed: June 2016.
2950.1	round 1	ECCC	4.8.3.2, pp. 29-30	Water Quality	Water quality baseline data (pH, temperature, dissolved oxygen, conductivity and turbidity) were collected in 2014 and 2015. Total suspended solids (TSS) were also measured for use in Acidification/Eutrophication modelling. In this Section (p. 30), the proponent refers to detailed water quality data provided in Appendix K, except for TSS data which is cited as available in Section 4.5. ECCC could not locate water quality data or detailed discussion as per the references provided by the proponent. It is not clear where water quality baseline data can be found: Detailed information on the general baseline water quality parameters could not be located in Appendix K. For TSS data Section 4.5 (4.5.2.4., p. 4) refers back to Section 4.8. Information Request ECCC requests that the proponent provide the detailed data or references and all information/water quality data that was not included but is referenced in the Application.	Detailed water chemistry, including TSS results for the lakes and streams measured in 2015 and 2016 as part of the eutrophication and acidification assessment are provided in Table 1-1 of Appendix E.Aurora LNG acknowledges that detailed water quality data was not provided in Appendix K. A "Water Quality In-situ Data (Freshwater)" technical memorandum has been compiled containing the water quality data that is missing from the Freshwater Fish and Fish Habitat section and Appendix K and it will be filed with the BC EAO. The " Water Quality In-situ Data (Freshwater)" technical memo was presented to the Working Group in draft for a pre-read on April 17, 2017. The memo was updated as a result of the discussion during the Working Group meeting. It should be noted that Freshwater Fish and Fish Habitat did not collect TSS data during the baseline assessments. As per the Resource Inventory Committee (RIC) Standards (Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures), turbidity was assessed visually (turbid (T), moderately turbid (M), lightly turbid (L), clear (C)) and recorded as a snapshot view of the current water clarity conditions.
2951.1	round 1	ECCC	4.8.3.2, pp. 30	Water Quality	The proponent states that "the wide variability in the in-situ water quality parameters is likely a result of seasonal differences during the field program (Section 4.3.3.2, p. 30)". Information Request ECCC requests that the proponent explain how it assessed water quality under changing seasonal conditions if baseline data represents only one point in time. ECCC further requests that the proponent indicate whether it has or will consider the option of collecting baseline data for all relevant parameters over an extended period of time (minimum one year) to assess whether forecasted SOx/NOx air emissions from the project will affect water quality in all seasons and in "worst case" conditions.	In situ water quality data described in Section 4.8 of the Application were collected as part of the Freshwater Fish and Fish Habitat baseline assessment. These data were collected at locations in the LAA where fish surveys and fish sampling were completed. The variability in the in situ water quality data relates to the data collected in the different seasons (spring, summer, and fall (i.e., May, August-September, October 2014 and March-April 2015)), as part of the Freshwater Fish and Fish Habitat Program. Water quality data for the acidification and eutrophication assessment (Section 4.5 of the Application) were collected in separate field programs, as different locations and different parameters and sampling methods were required. There are no planned effluent discharges to lakes or streams, so for general assessment of freshwater quality, as part of fish habitat assessment, seasonal water quality data is not needed. For freshwater quality related to the potential for acidification and eutrophication, it has been common practice in other regional assessments to sample lakes during fall turnover to capture fully mixed conditions that represent times of maximum nutrient concentrations. Seasonal baseline data for identified areas of concern (e.g., lakes with predicted critical load exceedances) should be collected as part of future regional monitoring programs.
2952.1	round 1	ECCC	4.8.4, Table 4.8.9. and pp 4.8-34	Water Quality	Section 4.8.4 lists the project interaction with Freshwater Fish and Fish Habitat. Potential Acidification/Eutrophication of freshwater habitat is not listed as a project interaction because a biologically relevant change in pH is not predicted in Section 4.5.7.1. Although the proponent's modeling does not indicate a relevant change in pH, the potential for a project interaction remains. Should pH or eutrophication predictions require revision based on the comments from expert reviewers, it is important that the effect to fish and fish habitat also be re-evaluated. Information request ECCC requests that the proponent list all potential project interactions in Table 4.8.9 for assessment. For project components assessed in detail in Section 4.5., ECCC requests that the proponent make the appropriate cross-references to help ensure the assessment of potential effects on fish and fish habitat is complete.	Aurora LNG acknowledges the comment about Table 4.8-9. This table will be updated in an errata to recognize the potential project interaction between Freshwater Fish and Fish Habitat and LNG Production during operations to address the concerns about possible acidification and eutrophication. Additional information will be provided to clarify why this is not considered a project interaction for Freshwater Fish and Fish Habitat. As mentioned in the comment / information request, the predictions of the modelling does not indicate a relevant change in pH related to fish health, and this remains correct. An errata will contain the updated table, along with the clearer justification for why it is not considered to be a project interaction for Freshwater Fish and Fish Habitat. An errata document has been created is being compiled that captures these corrections and it will be filed with the BC EAO.
2953.1	round 1	ECCC	4.9.6.6	Marine Fish and Fish Habitat	The report indicates that the Prince Rupert Port Authority (PRPA) or ECCC may regulate construction schedules to mitigate potential cumulative effects on marine fish health. Specifically, the proponent has stated that "if there is temporal overlap in the construction schedules for these projects, the PRPA, which has jurisdiction in the area, or ECCC, which has jurisdiction over the disposal at sea location, may require adjustments to construction schedules to mitigate potential cumulative effects on marine fish health." (p. 4.9-117). Cumulative effects are not explicitly considered under the Disposal at Sea provisions of the Canadian Environmental Protection Act, and as such, the disposal at sea permitting process should not be identified as a mitigation measure. While ECCC would request input from other government departments, local First Nations, and public interest stakeholders on various aspects of dipsosal at sea permitting; cumulative effects are not directly addressed. Information Request ECCC requests that the proponent provide an assessment of cumulative effects related to potential temporal overlap in project construction schedules along with options for managing those effects.	The assessment of residual cumulative effects for changes in marine fish health (Section 4.9.6.6 of the Marine Fish and Fish Habitat VC) did not assume that the construction schedules of reasonably foreseeable future projects would not overlap with that of Aurora LNG. As stated on Page 4.9-188, "If construction schedules do overlap with the Project, a relatively larger area within the RAA could be affected by suspended sediment, which could affect the health of a greater number of marine fish, or, result in longer-duration effects on individual fish if they happen to migrate through multiple sediment plumes." The characterization of residual cumulative effects for changes in marine fish health considered the possibility that construction schedules could overlap, and did not assume that regulatory agencies would schedule project works to avoid overlap.
2954.1	round 1	ECCC	4.9.3.2	Vegetation and Wetland Resources	Estuarine mudflats are by definition a wetland under the Canadian Wetland Classification System (CWCS 1991; see attached Annex 1 for further details). It is unclear whether estuarine mudflats adjacent to the PDA were categorized as wetland areas. For instance, the proponent states that Delusion Bay is "primarily mudflat habitat" (Application, 4.9, pdf p 25) while Figure 1 of the Wetland Compensation Plan (pdf p 29) describes Delusion Bay as having <50% wetland coverage. Information Request ECCC requests that the proponent provide the following information that allows for a fuller understanding of the wetlands that could be impacted by the project 1. a clear accounting of estuarine mudflats as wetlands (e.g. Delusion Bay) within the project area 2. the spatial extent (in ha) to which estuarine mudflats are expected to be affected by project activities 3. mitigation measures to maintain wetland function taking into consideration the annual cycle (breeding, wintering, and migration) of species at risk and migratory birds using the wetland as habitats.	Mudflat habitat located from 2m below mean tidal water elevation up to the mean high water elevation within the greater Skeena estuary could be considered a type of shallow water wetland called, 'estuarine shore water wetlands' by the Canadian Wetland Classification System. Existing conditions and potential effects on intertidal wetlands including mudflats and eelgrass are addressed by the Marine Fish and Fish Habitat VC (Section 4.09 of the Application) and the Marine Birds VC (Section 4.11 of the Application). The latte addresses potential effects on species at risk and migratory birds due to loss of habitat including eelgrass and mudflats.The assessment includes the area captured under the definition for estuarine shore water wetlands. No direct effects on estuarine wetlands within Delusion Bay are anticipated due to the fact that no Project infrastructure is located in that bay, and that a buffer will be applied to the marine riparian area along the shoreline of Delusion Bay. Based on assumptions stated in the memo titled, "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation ", a conservative estimate of the area of intertidal estuarine wetlands within the PDA is 2.8 ha, which includes both eelgrass and estuarine shore water wetlands located within the footprint of the materials offloading facility (concrete caission option), and marine jetty. This technical memo will be filed with the BC EAO. Mitigation measures that address species at risk and migratory birds are provided in the Application, in Table 4.11-9 related to Mitigation Measures Proposed to Avoid or Reduce Change in Habitat for marine birds and Table 4.7-10 related to Mitigation Measures Proposed to Avoid or Reduce Change in Habitat for Wildlife Resources (Terrestrial). In response to comments received, a new mitigation measure has been added: Mitigation 4.6.16 commits to monitoring wildlife habitat attributes for species and risk and migratory birds in wetlands subject to the no net loss goal of the Federal Policy that are immediately adjacent to the PDA. This is documented in the technical memo 'Mitigation Measures Categorization Table" which will be filed with the BC EAO. Section 14 summarizes the environmental management plans, including the Wildlife Management Plan, which includes management plans for identified species at risk (bats and marbled murrelet). Aurora LNG will consult with ECCC to determine the degree to which the offsetting measures associated with marine fish and fish habitat address the habitat functions of estuarine wetlands such as eelgrass and estuarine shore water wetlands (i.e., mudflats) to achieve no net loss of functions for these ecologically important wetlands.
2955.1	round 1	DFO	4.8	Freshwater Fish and Fish Habitat	1. Is Aurora LNG planning to do any in-water works (i.e. infilling) during spawning season or when eggs are expected to be in the gravel? Does the Proponent plan any measures to mitigate the death of fish from infilling during spawning or when eggs are expected to be in the gravels? If so, can these measures be provided?	The majority of the suitable spawning habitat identified within the local assessment area is located in watercourse reaches J1-J5, and J1.1. These watercourses are to be retained with associated riparian areas and all construction near these watercourses will occur outside of the riparian reserve zone. Detailed timing of project components has not yet been determined; however, the following considerations will be given to construction work in relation to potential spawning activity: Areas of suitable or potential spawning within watercourses to be infilled will be identified and assessed in detail prior to construction planning. If there is potential that construction activity is required to take place outside of the window of least risk for instream works, then measures to prevent fish from accessing these areas (e.g., exclusion fencing), will be implemented prior to spawning season to prevent fish from spawning in these reaches. If necessary, fish salvage activities to remove fish, eggs, or other life stages of fish in these reaches will be conducted prior to any infilling activities.

2956.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	"2. Currently, the Proponent is only planning to offset the loss of habitats that have limited availability at both Casey Cove and South Digby Island. DFO would like to note that all habitats impacted, including those relatively common in the PDA (i.e., subtidal mud) contribute to the productivity of commercial, recreational and aboriginal fisheries. "	Comment noted. Aurora LNG plans to offset any and all instances of residual serious harm to fish, as per the definition in the Fisheries Act. Specifically: the death of fish; a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; the destruction of fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. Calculations of offsetting requirements have been based on Aurora LNG's interpretation of this legislated definition of serious harm to fish. Aurora LNG asserts that not all alterations or losses of habitats "that contribute to the productivity of commercial, recreational and Aboriginal fisheries" species would meet the definition of serious harm to fish. This assertion underpins the rationale for not proposing offsetting for some habitat impacts. Aurora LNG will continue to engage with Fisheries and Oceans Canada to develop and finalize the Project's Fish Habitat Offsetting Plan, including quantification of serious harm to fish and associated offsetting requirements.
2957.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	3. The Proponent states that the risk of residual effects is considered 'high' for the change in mortality to fish. Is the Proponent planning any measures to mitigate the death of fish from infilling, dredging and pile installation? If so, could these measures be provided?	Yes, Aurora LNG is proposing several mitigation measures to reduce the potential for death of fish during dredging and pile installation. These measures are described in Table 4.9-18 of the Marine Fish and Fish Habitat VC, and include:Mitigation # 4.9.4: Pile installation procedures will follow the Best Management Practices for Pile Driving and Related Operations (BC Marine and Pile Driving Contractors Association and DFO 2003). Mitigation # 4.9.8: Dredging and Disposal activities will be conducted during DFO's least risk timing window (November 30 to February 15) (DFO 2014). Mitigation # 4.9.11: During impact pile driving, enclosed bubble curtains will be installed around piles to provide noise attenuation and reduce underwater sound levels emitted to the marine environment. Mitigation # 4.9.12: A ramp-up procedure will be used for impact pile driving that will involve the steady and gradual build-up of underwater acoustic energy output from a lower energy level to full output. Mitigation # 4.9.14: An Environmental Monitor will be onsite during active in-water impact pile driving and underwater blasting to monitor for fish kills. If a fish kill is observed, the activity will be temporarily suspended and additional mitigation measures will be discussed with DFO. References: BC Marine and Pile Driving Contractors Association and DFO. 2003. Best Management Practices for PileDriving and Related Operations in British Columbia. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p351/d32211/1273516310337_a8f9af96262d9ff325e4452109b72a5c6e2c4828796e47dd8ed0c732bc322dfb.pdf Accessed: July, 2016. Fisheries and Oceans Canada (DFO). 2014. British Columbia Marine/Estuarine Timing Windows for theProtection of Fish and Fish Habitat – North Coast Area. Available at: http://www.dfompo.gc.ca/pnw-ppe/timing-periodes/bc-n-eng.html. Accessed: August 2016.
2958.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	4. The Proponent concludes that propeller wash associated with the Project (Construction, operation, and decommissioning) is not expected to cause any changes to marine fish habitat including eelgrass habitat. How did the proponent arrive at this determination? Did the Proponents analyses include modelling?	Propeller wash was not modelled; however, modelling was conducted for sediment dispersal caused by dredging at the same locations where propeller wash would occur. Several insights from this modelling support theassertion assessment that propeller wash is not expected to affect marine habitat, especially eelgrass. The amounts of sediment being resuspended (i.e., total suspended solid [TSS] concentrations) and subsequently deposited ion by dredging would be far greater than via propeller wash. Importantly, even these comparatively high TSS and deposition levels (and distances) associated with dredging are not expected to adversely affect fish habitat, including eelgrass. Productivity and mortality of eelgrass shoots decline when at least 25% of the photosynthetic surface is rapidly buried (Mills and Fonesca 2003). Eelgrass shoot length is reported in Appendix L, Section 5.4, and is (on average): Casey Cove - 51 cm; south Digby Island - 46 cm. Therefore, 25% coverage (again, occurring instantaneously) would be, respectively, 12.75 cm and 11.5 cm. Theresults of the sediment dispersion model(Technical Memorandum Aurora LNG: MOF and Terminal Dredge Modelling, Appendix G) predict that deposition beyond dredge boundaries(where remaining eelgrass could be affected) will be less thanare expected to be lower than 1 cm in Casey Cove and, therefore, well below the smallest possible depth for a 25% coverage. At South Digby, maximum cumulative sediment deposition is predicted to be less than 1 cm within 500 m (northern berth) or 200 m (southern berth) of the LNG jetty dredge areas. Consequently, there is very low likelihood that eelgrass will experience anything close to the 25% coverage postulated to affect growth and mortality(as reported by Mills and Fonesca [2003]) as a result of sediment dispersal caused by dredging. Therefore, adverse effects to eelgrass associated with sediment deposition from dredging activities, and propeller wash, are not expected. Theresults of the sediment dispersion modelling(Appendix G) also predicts that TSS concentrations fall rapidly with distance from the source of sediment disturbance, and that once the disturbance activity ceases, concentrations drop almost immediately. Effects on eelgrass as a result of TSS-mediated reductions in light penetration (and, hence, photosynthetic rates) are also not expected to occur as a result of dredging. Given the amount of sedimentexpectedlikely to be resuspended as a result of any instance of propeller wash is likely to be orders of magnitude smaller than what is predicted during dredging, it is deemedhighly unlikely that effects on eelgrass will be incurred via propeller wash. Although propeller wash is expected to occur repeatedly, any instance of resuspended sediment caused by this mechanism is expected to bevery short-lived, and occurring over ahighlylimited area. Reference: Mills, K. E. and M. S. Fonseca. 2003. Mortality and productivity of eelgrass Zostera marina under conditions of experimental burial with two sediment types. Marine Ecology Progress Series 255: 127-134.
2959.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	5. Is the Proponent planning any measures to mitigate impacts from propeller wash during construction, operations and decommissioning? If so, could these measures be provided?	To mitigate the potential effects of propeller wash on marine fish and fish habitats, Aurora LNG will investigate various potential mitigation options including the use of tugs equipped with propulsion systems that reduce sediment scour (see mitigation measure # 4.5.6 in Table 4.5-26, Marine Water Quality VC) and potentially laying concrete mats on the sea floor to reduce potential for scour. It is expected the technical and economic feasibility of these options will be investigated during detailed design and will include additional discussions with DFO.
2960.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	6. Is the Proponent planning any measures while pile driving to mitigate impacts to juvenile salmonids during juvenile outmigration from the Skeena River? If so, please provide these measures in the application.	Yes, Aurora LNG is proposing several mitigation measures to reduce potential effects to juvenile salmon outmigrating from the Skeena River during pile installation. These measures are described in Table 4.9-18 of the Marine Fish and Fish Habitat VC, and include:Mitigation # 4.9.4: Pile installation procedures will follow the Best Management Practices for Pile Driving and Related Operations (BC Marine and Pile Driving Contractors Association and DFO 2003). Mitigation # 4.9.11: During impact pile driving, enclosed bubble curtains will be installed around piles to provide noise attenuation and reduce underwater sound levels emitted to the marine environment. Mitigation # 4.9.12: A ramp-up procedure will be used for impact pile driving that will involve the steady and gradual build-up of underwater acoustic energy output from a lower energy level to full output. Mitigation # 4.9.14: An Environmental Monitor will be onsite during active in-water impact pile driving and underwater blasting to monitor for fish kills. If a fish kill is observed, the activity will be temporarily suspended and additional mitigation measures will be discussed with DFO. References: BC Marine and Pile Driving Contractors Association and DFO. 2003. Best Management Practices for PileDriving and Related Operations in British Columbia. Available at: https://a100.gov.bc.ca/appsdata/epic/documents/p351/d32211/1273516310337_a8f9af96262d9ff325e4452109b72a5c6e2c4828796e47dd8ed0c732bc322dfb.pdf Accessed: July, 2016.
2961.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	7. The construction of offsets may result in adverse effects on existing marine and freshwater habitats. Did the Proponent consider adverse effects to existing habitats from the development of offsets when determining Project offset requirements?	Aurora LNG acknowledges that construction of marine offsetting features may result in serious harm to fish through the permanent alteration or destruction of existing habitats. Aurora LNG will seek to avoid or minimize such serious harm to fish through the careful placement of offsets; however, where this cannot be avoided, additional offsetting will be provided. Aurora LNG will continue to consult with DFO on the proposed fish habitat offsetting program during Application review and subsequently in Project design.
2962.1	round 1	DFO	4.9	Marine Fish and Fish Habitat	8. Northern abalone, which is endangered, is potentially in the PDA. The Proponent has not provided any information on abalone in the application. DFO has standard recommended protocols for assessing project related impacts to abalone. Has or will the Proponent be assessing abalone with this protocol?	Aurora LNG deemed the likelihood of Northern abalone occurring within the PDA as "low" (see Table 4.9-7). This determination was based on the following: Lack of suitable habitat. Habitat requirements for Northern abalone are described in the Action Plan for Northern Abalone (Haliotis kamtschatkana) in Canada (DFO 2012). While certain habitat requirements for abalone are met at the south end of Digby Island (e.g., presence of rocky habitats between 0 and 10 m chart datum, presence of macroalgae), seawater salinity in the area is below that required for abalone due to freshwater runoff from the Skeena River. As stated in Section 2.2.4 of the Action Plan for Northern Abalone, "Abalone require a water column with salinity > 30 ppt, and are therefore not found near areas of freshwater run-off or in estuarine habitats". Salinity measurements for south Digby Island are available from two permanent water quality stations monitored four times per year by the Prince Rupert Port Authority.Raw data obtained by Aurora LNG for sampling conducted in May 2015 at these two stations indicate salinity values ranging from 21.51 ppt (at 1 m depth) to 27.90 ppt (at 10 m depth). These data indicate that, at least seasonally, salinity at south Digby Island is below that required by abalone.No field observations. Aurora LNG conducted extensive field surveys to characterize marine habitats and associated biota within the PDA. This included intertidal transect surveys, subtidal remotely operated vehicle surveys, marine fish surveys, and an eelgrass survey, covering Casey Cove, east Digby Island, south Digby Island, and Delusion Bay (for details, see Appendix L: Marine Fish and Fish Habitat Technical Data Report). No abalone were observed during any of these field surveys. Based on the above information, Aurora LNG believes that there is a low likelihood of abalone occurring within the PDA. Nevertheless, Aurora LNG does recognize that there is potential for abalone to occur in the PDA. Currently there are no plans to conduct a dedicated abalone survey. However, additional follow-up programs may be identified during ongoing regulatory consultation and engagement. If a Northern abalone survey is deemed necessary, the standard recommended protocols will be followed (DFO 2016). References: Fisheries and Oceans Canada (DFO). 2012. Action Plan for the Northern Abalone (Haliotis kamtschatkana) in Canada. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa. vii + 65 pp. Fisheries and Oceans Canada (DFO). 2016. Review of dive survey methods for Northern abalone in British Columbia. Canadian Science Advisory Secretariat Science Response 2016/044. Available online at: http://publications.gc.ca/collections/collection_2016/mpo-dfo/Fs70-7-2016-044-eng.pdf. Accessed: March 2017.
2963.1	round 1	DFO	4.11	Marine Wildlife - Marine Mammals	9. The application states that underwater noise levels associated with rock socket drilling are proposed to be above thresholds that cause behavioural response changes in marine mammals at a distance of up to 7km. Why are no mitigation measures proposed for this activity?	As discussed during the meeting with DFO April 25, 2017 rock socket drilling will produce lower underwater noise emissions than impact pile driving and is similar in nature to vibratory pile installation. Underwater noise levels as a result of rock socket drilling exceed the behavioural response thresholds modeled to a maximum of 3.9 km (using the R95% extent; Appendix P, Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting, pg. 27). The modeled levels of underwater noise from rock socket drilling, when compared to the injury thresholds as proposed by Southall et al. 2007, did not reach the peak pressure level injury thresholds for any functional hearing group and only reached the SELcum threshold for pinnipeds (in water) at distances of < 0.01 km from the sound source (using the R95% extent; Appendix P, Aurora LNG Acoustic Study: Modelling of Underwater Sounds from Pile Driving, Rock Socket Drilling, and LNG Carrier Berthing and Transiting, pg. 26 & 27). The levels of underwater noise from rock socket drilling, as modeled, also did not reach the National Marine Fisheries Service (2016) SPLrms pinniped (in water) or cetacean injury thresholds. Typically, the application of mitigation measures and subsequent monitoring of a marine mammal exclusion zone during construction is required due to the potential for an activity to result in the injury of marine mammals. Due to the similarity between rock socket drilling and vibratory pile installation, for which specific mitigation and monitoring are typically not required, and underwater noise modeling that reports an exceedance of marine mammal injury thresholds at a distance of <0.01 km, additional mitigation measures specific to rock socket drilling have not been recommended.
2964.1	round 1	DFO	4.11	Marine Wildlife - Marine Mammals	10. The Proponent has determined pile driving will result in significant residual effects to harbour porpoise. Can the Proponent provide mitigation measures to further reduce the impacts from pile driving to marine mammals in the area? If so, can these measures be provided in the application?	As discussed during the meeting with DFO April 25, 2017further mitigation measures will be explored (e.g., double bubble curtain, hydrosound dampener)to reduce the extent of underwater noise that exceeds the NOAA interim behavioural threshold for impulsive noise (160 dB re 1 µPa SPLrms) as a result of impact pile driving. As noted in the assessment, impact pile driving will occur only during daylight hours, and an underwater noise field verification program will be conducted to verify predicted sound pressure levels and the size of the exclusion zone. As part of the Marine and Freshwater Resources Management Plan a monitoring program will be developed and implemented to effectively monitor and enforce the agreed upon exclusion zone during in-water impact pile driving.
2965.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	"Issue Background and Justification: The questions raised in this IR and any other comments provided to the Proponent will likely lead the Proponent to change assumptions, data, methods and conclusions, or the way they are presented in the report. Comment 1: ECCC requests that the proponent provide a revised version of the upstream GHG assessement report that is complete and incorporates all ECCC information requests."	Please see revised report: "Review of Upstream Greenhouse Gas Emissions Estimates". This report will be filed with the BC EAO.
2966.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: If Aurora just sources from the western Canada gas grid, it likely contains some Alberta gas. ECCC'S original upstream assessments assumed a certain amount of Alberta gas. This assumption was revised for the PNW assessement because the proponent owns the upstream assets and was able to confirm that its facility would only source gas from its own Montney assets. Montney Basin has very low formation CO2 amounts, which results in a lower CO2 emission intensity factor. Aurora did not indicate sourcing of the gas, or at least provide a rationale or justification for using BC-only gas. Therefore, unless demonstrated otherwise, it is preferable to use ECCC's original assumption that a certain amount of Alberta gas is included in the source. This would result in a higher upstream emissions factor is higher because the upstream emissions factor is higher with Alberta shale gas, than it is with BC shale gas. Unless a change is made, the emissions may be under-estimated. Comment: ECCC requests that the proponent explain the basis for the assumption that 100% BC gas will be used? Previous LNG upstream assessments assumed partial gas supply from Alberta in Montney basin, unless it was demonstrated that the supply was only from BC. If there are unique gas-sourcing aspects to the project, these should be stipulated. Including Alberta gas will likely result in a higher emission factor and higher emissions.	Aurora LNG is confident that the assumption in its "Review of Upstream Greenhouse Gas Emissions Estimates" that 100% of the natural gas will be sourced from basins in northeastern BC is supported by the current circumstances surrounding the Project. As indicated in its Application to the National Energy Board (NEB) for a 25-year export licence (November 29, 2013), the Aurora LNG joint venture currently has shale gas resources within three British Columbia supply basins: the Liard, Horn River and Cordova basins. Aurora LNG is of the view that this diversified portfolio of shale gas assets will allow it to address a key project risk of production deliverability inherent in any LNG project through a prudent approach to developing secured assets to fulfill long-term supply commitments. Furthermore, Aurora LNG notes that this assumption is generally consistent with the assumptions relied on by the NEB in its Canada's Energy Future 2016 reporting. As part of the analysis regarding the "Liquefied Natural gas Export Case" in Chapter 11 of the primary report issued in January of 2016, it is assumed that the majority of the production (93% in the Reference Case) is produced in the Montney basin (BC and Alberta), with the remainder of the production from the Horn River Basin, Liard Basin, and Cordova Embayment (see pg. 104-105).

2967.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: The fourth paragraph of the executive summary notes that emissions are not necessarily incremental. It is important to state the baseline that is being used for comparison to make such a claim. For example, compared to a scenario in which no LNG projects are built, building this project would result in increased natural gas production largely equal to the throughput (and on-site energy use) of the project. ECCC's position would be that this would all be incremental production, compared to that baseline, because if projects represent a new source of demand for upstream production or, in the case of a pipeline, represents the sole means by which to transport upstream production, the Project would be expected to cause incremental upstream production and associated GHG emissions. In this case, the Project would represent a new source of demand. The next section could then discuss the incremental emissions in relation to the production projections, noting that some LNG production is already reflected in the NEB projections. The report should not conclude that, if the Project is not built, another will be built. While NEB projections show that some LNG capacity (or a lot under the high LNG case) could be built, this is only a projection and the future may be different. Again, this matter relates to the baseline chosen for comparison in assessing the conditions for incrementality. Comment: ECCC requests that the proponent clarify what baseline scenario they are using as a comparison to assess conditions for incrementality? It is not clearly supported that, if this project were not built, other LNG projects would be, particularly if one were assessing incrementality relative to a baseline in which no LNG projects were built. Please reconsider its inclusion in the report and adjust the discussion on incrementality to reflect the fact that upstream production from the project is likely incremental to a scenario in which no LNG project is built.	The Review of Upstream Greenhouse Gas Emissions Estimates report has been revised to explicitly define "incrementality" (see pg. 22) and address the potential upstream GHG emissions associated with predicted LNG production in the three NEB scenarios discussed (see Section 3.4.5). The analysis in Section 3.4.5 (Discussion on Incrementality of Project GHG Emissions) describes the proportion of upstream GHG emissions associated with Aurora LNG production that are not accounted in each of the three NEB scenarios. This section of the revised report is also drafted to reflect Aurora LNG's view the most suitable NEB scenario to assess incrementality based on is the Reference Case (Scenario 2), which is based on a moderate view of future energy prices and economic growth, as opposed to the other two cases (No LNG and High LNG) which are sensitivities developed to capture the uncertainty related to eventual volumes of LNG exports. Regarding incrementality, as part of the analysis in Section 3.4.5, the revised report makes reference to a key uncertainty that the NEB Energy Futures 2016 report identifies in relation to proposed changes to domestic energy and climate policy. Such unaccounted for policy considerations (e.g. coal phase-out initiatives, carbon pricing, GHG cap and trade systems), many of which would favour natural gas use over more GHG intensive fuel sources, could have a profound outcome on the upstream resources relevant to the Project. As indicated in the revised report, these considerations could result in increases in domestic gas prices, which would result in all or a portion of the upstream resource being developed, regardless of the advancement of Canadian LNG projects, a consideration which would suggest that such GHG emissions would not be directly attributable to the Project being constructed (i.e. incremental).The Executive Summary has been revised to capture this additional information and analysis.
2968.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: Table 1 (pg 5) only goes to 2035 and this is comparable to when the proponent expects the project to reach full capacity. Is it possible to extend Pembina B.C. Shale Scenario Tool breakdown beyond 2035? Comment: ECCC requests that the data, if available, be used by the proponent or provided to ECCC?	The Pembina Tool can be used to forecast emissions beyond 2035. However, the accuracy of the forecasts becomes less reliable if extended too far into the future. The Aurora Upstream Assessment has included a 10 year forecast using ECCC data as well as Pembina data. This same approach was taken by ECCC in the reports prepared for other LNG projects proposed in BC. However, to acknowledge this request, the Aurora Upstream Assessment has been updated to forecast emissions to 2040. Please see the updated version of "Review of Upstream Greenhouse Gas Emissions Estimates".
2969.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: The information presented in table 2 of Section 2.3 and surrounding paragaphs suggests that the Pembina B.C. Shale Scenario Tool accounts for the same activities as the ECCC Emissions Forecast, but does not clearly state it. It would be important to clearly state this. Further, the fact that the emission factor is lower in the Pembina B.C. Shale Scenario Tool may lead some readers to misinterpret the table or question if all activities are included in the Pembina B.C. Shale Scenario Tool. Comment: ECCC requests that the proponent clearly states that production, processing and tranmission activities are inlcuded in the emission factor and emission estimates, though not broken out in the Pembina B.C. Shale Scenario Tool.	This request for additional clarity on what activities are included in the Pembina BC Shale Scenario Tool has been added to the updated upstream GHG assessment. Please refer to updated report "Review of Upstream Greenhouse Gas Emissions Estimates". This report will be filed with the BC EAO.
2970.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: The proponent provided a good discussion of how varying levels of LNG production in the NEB's forecasts would influence overall natural gas development. The report puts the associated upstream production from the project in context with projected production and notes, in Scenario 2, where the expected upstream production associated with the project exceeds the expected production growth in the reference case. While this section discusses scenarios and the potential incrementality of upstream production associated with the project, the authors do not specify the baseline used to determine whether production is incremental leading the reader to wonder "if the upstream production is incremental, what is it incremental to?" The section seems to assess conditions for incrementality relative to the NEB's production projections. However, that comparison is only one approach. Compared to a scenario in which no LNG projects are built (Scenario 1), building the Project would lead to incremental production largely equal to the Project's throughput because the project represents a new source of demand. This is never explicitly stated in the report. Scenario 1 appears to be an appropriate baseline scenario. The authors could relate Scenarios 2 and 3 to Scenario 1 in discussing the upstream impacts of the project. For example, the authors could compare the upstream production from a scenario in which only the project is built to one in which no project is built (Scenario 1). The report should not conclude that, if the Project is not built, another will be built. While NEB projections show that some LNG capacity (or a lot under the high LNG case) could be built, this is only a projection and the future may be different. Comment: ECCC requests that the proponent clarify what baseline scenario they are using as a comparison to assess conditions for incrementality? It is not clearly supported that, if this project were not built, other LNG projects would be, particularly if one were assessing incrementality relative to a baseline in which no LNG projects were built. Please reconsider its inclusion in the report and adjust the discussion on incrementality to reflect the fact that upstream production from the project is likely incremental to a scenario in which no LNG project is built.	The Review of Upstream Greenhouse Gas Emissions Estimates report has been revised to explicitly define "incrementality" (see pg. 22) and address the potential upstream GHG emissions associated with predicted LNG production in the three NEB scenarios discussed (see Section 3.4.5). The analysis in Section 3.4.5 (Discussion on Incrementality of Project GHG Emissions) describes the proportion of upstream GHG emissions associated with Aurora LNG production that are not accounted in each of the three NEB scenarios. This section of the revised report is also drafted to reflect Aurora LNG's view the most suitable NEB scenario to assess incrementality based on is the Reference Case (Scenario 2), which is based on a moderate view of future energy prices and economic growth, as opposed to the other two cases (No LNG and High LNG) which are sensitivities developed to capture the uncertainty related to eventual volumes of LNG exports. Regarding incrementality, as part of the analysis in Section 3.4.5, the revised report makes reference to a key uncertainty that the NEB Energy Futures 2016 report identifies in relation to proposed changes to domestic energy and climate policy. Such unaccounted for policy considerations (e.g. coal phase-out initiatives, carbon pricing, GHG cap and trade systems), many of which would favour natural gas use over more GHG intensive fuel sources, could have a profound outcome on the upstream resources relevant to the Project. As indicated in the revised report, these considerations could result in increases in domestic gas prices, which would result in all or a portion of the upstream resource being developed, regardless of the advancement of Canadian LNG projects, a consideration which would suggest that such GHG emissions would not be directly attributable to the Project being constructed (i.e. incremental). Also see the revisions to Sections 3.4.1, 3.4.2 and 3.4.3.
2971.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: The section concludes that the increase in Canadian natural gas production from 2015 to 2040 in the NEB's reference case represents 91% of Aurora's capacity. The previous paragraph relates the Aurora LNG capacity to total expected LNG capacity, noting that forecast LNG production growth between 2015 and 2040 would represent 73% of Aurora's capacity. This is likely a more representative figure since the 91% comparison implies that Aurora also uses the natural gas volumes expected to meet Canada's demand growth. Comment: ECCC requests that the proponent provide more detail on the consequences to their analysis of using the 91% figure? For example, the 73% figure does not rely on other assumptions related to sources of supply for Canadian domestic demand growth. The proponent should specifically identify the quantity of upstream production expected as a result of the project in m3/d terms, not just provide a comparison to NEB projections based on a percentage.	Potential incremental annual upstream GHG estimates, expressed in mega-tonnes of CO2e, have been provided for each of the three scenarios addressed in sections 3.4.3 - 3.4.5 of the revised Review of Upstream Greenhouse Gas Emissions Estimates report
2972.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: Section notes that scenario assumes that LNG capacity would be built and operated by another LNG developer. Important to consider that NEB Forecasts only include LNG export volumes and do not specify which projects supply these volumes. In fact, based on the finding of this section, if the proponent's project were not built, around 10% less natural gas production would be required in Canada based on the forecast under the reference case. Furthermore, the point that "another project would be built and operated" is not an effective means to characterize this scenario. As noted above, a more useful approach would be to compare a scenario in which ONLY the Aurora project were built to one in which no LNG facilities were built (Scenario 1). This would give a clearer view as to the amount of incremental upstream production associated with the project and the associated emissions. Comment: It is not clearly supported that, if this project were not built, other LNG projects would be, particularly if one were assessing incrementality relative to a baseline in which no LNG projects were built. Please reconsider its inclusion in the report and adjust the discussion on incrementality to reflect the fact that upstream production from the project is likely incremental to a scenario in which no LNG project is built.	The Review of Upstream Greenhouse Gas Emissions Estimates report has been revised to explicitly define "incrementality" (see pg. 22). "Incremental" is defined as any additional upstream GHG emissions that would be directly attributable to the Project being constructed (i.e. not the emissions that could occur even if the Project were not built). See revisions to Sections 3.4.1, 3.4.2 and 3.4.3 and the new Section 3.4.5. Section 3.4.5 (Discussion on Incrementality of Project GHG Emissions) address the potential upstream GHG emissions associated with predicted LNG production in the three NEB scenarios discussed. This analysis describes the proportion of upstream GHG emissions associated with Aurora LNG production that are not accounted in each of the three NEB scenarios. This section of the revised report is also drafted to reflect Aurora LNG's view the most suitable NEB scenario to assess incrementality based on is the Reference Case (Scenario 2), which is based on a moderate view of future energy prices and economic growth, as opposed to the other two cases (No LNG and High LNG) which are sensitivities developed to capture the uncertainty related to eventual volumes of LNG exports. Regarding incrementality, as part of the analysis in Section 3.4.5, the revised report makes reference to a key uncertainty that the NEB Energy Futures 2016 report identifies in relation to proposed changes to domestic energy and climate policy. Such unaccounted for policy considerations (e.g. coal phase-out initiatives, carbon pricing, GHG cap and trade systems), many of which would favour natural gas use over more GHG intensive fuel sources, could have a profound outcome on the upstream resources relevant to the Project. As indicated in the revised report, these considerations could result in increases in domestic gas prices, which would result in all or a portion of the upstream resource being developed, regardless of the advancement of Canadian LNG projects, a consideration which would suggest that such GHG emissions would not be directly attributable to the Project being constructed (i.e. incremental).
2973.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: Document cites the conversion from LNG to m3/d in a number of sections, but it is not framed consistently which gives the reader the impression that the conversion could be done differently in different sections. Final paragraph misinterprets the use of the term incremental natural gas production and should likely read "In summary, natural gas production growth in Canada…" As above, the same change could be considered for the final sentence in the paragraph, which should likely read "The magnitude of Canadian natural gas production and LNG growth depends on…" Finally, the paragraph ends with the phrase "and will occur regardless of whether or not the project is constructed". As noted above, the report should not conclude that, if the Project is not built, another will be built. While NEB projections show that some LNG capacity (or a lot under the high LNG case) could be built, this is only a projection and the future may be different. Comment: ECCC requests that the proponent confirm the volume conversions in the document to ensure they are consistently undertaken given uncertainty created in the text? Proponent should consider suggested wording change "in summary, natural gas production growth in Canada...." ECCC requests that the proponent adjust wording of the document to clearly use the term incremental in cases where they are referring to upstream production growth that is enabled by the Project. Proponent should consider wording change for the final sentence in the paragraph, which should likely read "The magnitude of Canadian natural gas production and LNG growth depends on…" It is not clearly supported that, if this project were not built, other LNG projects would be, particularly if one were assessing incrementality relative to a baseline in which no LNG projects were built. Please reconsider its inclusion in the report and adjust the discussion on incrementality to reflect the fact that upstream production from the project is likely incremental to a scenario in which no LNG project is built.	Volume conversions used in sections 3.3.1, 3.3.3, and 3.3.4 of the report were based on the NEB conversion factor of 1 billion cubic metres of natural gas per day (Bcf/d) = 7.495 million tonnes of LNG per year (i.e. 1.0 billion cubic metres of natural gas = 0.73 tonnes of LNG). In the scenario analyses in sections 3.4.1 to 3.4.3, the GHG conversion factor within Pembina's B.C. Shale Scenario Tool was used, which has as a slightly different conversion factor of 1.0 billion cubic metres of natural gas per 0.74 million tonnes of LNG). For consistency, the report will be revised so that the Pembina conversion factor is used throughout. The Review of Upstream Greenhouse Gas Emissions Estimates report has been revised to explicitly define "incrementality" (see pg. 22). "Incremental" is defined as any additional upstream GHG emissions that would be directly attributable to the Project being constructed (i.e. not the emissions that could occur even if the Project were not built). See revisions to Sections 3.4.1, 3.4.2 and 3.4.3 and the new Section 3.4.5 (Discussion on Incrementality of Project GHG Emissions).
2974.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: The section seems to compare the direct GHG emissions of the project to overall Canadian emissions. Recommend considering using the information laid out in the scenario analysis to relate potential upstream emissions to forecast emissions. For example, Scenario 2 finds that LNG production would have to be 37% higher than under the NEB reference to accommodate the Aurora project. Thus, building the project would be expected to increase total GHG emissions beyond the reference case by the emissions associated with that amount of production, provided domestic demand remains constant. Previous analyses undertaken by ECCC, in particular the Tower Birch pipeline, have used the global section to discuss the degree to which incremental production from the project (Aurora built versus a scenario where no LNG project is built) would either i) displace other sources of global natural gas/LNG supply or ii) add to total supply and potentially affect price. The upstream emissions impact based on displacement would be the difference in upstream emissions between the production supplying Aurora and production supplying another LNG plant in the world. The addition to global LNG supply would be expected to affect LNG prices and could affect overall demand. This would then better lead into the discussion on life-cycle impacts and the potential to displace coal-fired electricity generation (the downstream impacts) since the portion of incremental production that adds to total supply would add the full life-cycle of emissions. While the discussion of life-cycle emissions (natural gas versus coal) is out of scope of the upstream assessment, the proponent may feel it provides important context. Comment: ECCC request that the authors include a discussion of upstream emissions in the Canadian and Global context section as outlined in the methodology shared for reference.	The Review of Upstream Greenhouse Gas Emissions Estimates report has been revised to explicitly define "incrementality" (see pg. 22) and address the potential upstream GHG emissions associated with predicted LNG production in the three NEB scenarios discussed (see Section 3.4.5). The new Section 3.4.5 (Discussion on Incrementality of Project GHG Emissions) includes additional wording that discusses how changes in Canadian natural gas demand not captured by the NEB's estimate in its 2016 Energy Futures report (such as future climate policies and programs) could also affect the incrementality of upstream GHG emissions associated with the Aurora LNG project. Additional wording on upstream GHG emissions associated with the Project has been provided in Section 3.6 (Conclusions) of the revised report. Aurora LNG maintains that because LNG is a global commodity in which supply is generally balanced with demand, over the long term, building the project will result in equivalent LNG capacity being displaced (i.e. not built) elsewhere. Therefore, the net effect of the project on global GHG emissions will depend on the relative GHG intensity of the Project and its upstream gas supply relative to the GHG intensity of the displaced capacity.

2975.1	round 1	ECCC	GHG Upstream Report	Greenhouse Gases	Issue Background and Justification: The document confuses “incremental” production with production growth in the projections from the NEB. Sentence could read: “Natural gas production growth in Canada…” Document ends with note that “emissions may occur regardless of whether the Project is built because they ultimately depend on the extent of growth in demand or Canadian natural gas”. As noted above, the project represents a new source of demand for natural gas and, therefore, the upstream emissions associated with it are largely incremental to a scenario without the project that assumes no other project is built (Scenario 1). However, current NEB projections from its reference case factor in LNG growth equivalent to 73% of the Aurora project at full build. So, around 73% of upstream emissions from the project are accounted for in the reference case, and the upstream emissions associated with the production for the entire project are covered if one examines the NEB’s high LNG case. The upstream production from the Project is incremental, but a large amount of LNG supply is already factored into Canada’s natural gas production and emissions projections. However, even in comparing the upstream production impact to the NEB reference case, building the Project would lead to an increase in upstream natural gas production beyond what is currently projected. This section comes to the conclusion: “However, these incremental emissions may occur regardless of whether the project is built because they ultimately depend on the extent of growth in demand for Canadian natural gas products”. The emissions from the project are incremental, and they would not occur if the project is not built when comparing to a baseline in which no LNG facilities are built. The issue of growth in Canadian domestic demand, as projected by the NEB, and demand induced by the project are separate. Specifically, upstream GHG emissions would increase as a result of the construction of the project, because it would represent a new source of demand, and induce incremental natural gas production relative to a scenario in which no other LNG project is built. Comment: ECCC requests that the proponent clarify what baseline scenario they are using as a comparison to assess conditions for incrementality? Proponent should consider suggested wording change “Natural gas production growth in Canada…” It is not clearly supported that, if this project were not built, other LNG projects would be, particularly if one were assessing incrementality relative to a baseline in which no LNG projects were built. Please reconsider its inclusion in the report and adjust the discussion on incrementality to reflect the fact that upstream production from the project is likely incremental to a scenario in which no LNG project is built.	The Review of Upstream Greenhouse Gas Emissions Estimates report has been revised to explicitly define "incrementality" (see pg. 22) and address the potential upstream GHG emissions associated with predicted LNG production in the three NEB scenarios discussed (see Section 3.4.5). The analysis in Section 3.4.5 (Discussion on Incrementality of Project GHG Emissions) describes the proportion of upstream GHG emissions associated with Aurora LNG production that are not accounted in each of the three NEB scenarios. This section of the revised report is also drafted to reflect Aurora LNG’s view the most suitable NEB scenario to assess incrementality based on is the Reference Case (Scenario 2), which is based on a moderate view of future energy prices and economic growth, as opposed to the other two cases (No LNG and High LNG) which are sensitivities developed to capture the uncertainty related to eventual volumes of LNG exports. Regarding incrementality, as part of the analysis in Section 3.4.5, the revised report makes reference to a key uncertainty that the NEB Energy Futures 2016 report identifies in relation to proposed changes to domestic energy and climate policy. Such unaccounted for policy considerations (e.g. coal phase-out initiatives, carbon pricing, GHG cap and trade systems), many of which would favour natural gas use over more GHG intensive fuel sources, could have a profound outcome on the upstream resources relevant to the Project. As indicated in the revised report, these considerations could result in increases in domestic gas prices, which would result in all or a portion of the upstream resource being developed, regardless of the advancement of Canadian LNG projects, a consideration which would suggest that such GHG emissions would not be directly attributable to the Project being constructed (i.e. incremental). Section 3.6 (Conclusions) has been revised to capture this additional information and analysis.
2976.1	round 1	CEAA	GHG Upstream Report	Greenhouse Gases	• The report did not estimate emissions using the LNG Greenhouse Gas Life Cycle Analysis Report issued by the Government of British Columbia as suggested in the ECCC methodology.	The LNG Greenhouse Gas Life Cycle Analysis Reports was not cited in the Aurora LNG Upstream Assessment because in the Review of Related Upstream Greenhouse Gas Emissions Estimates for the Pacific NorthWest LNG Project (ECCC 2016), it states "this study is less appropriate to use as a reference for an analysis of upstream-only emissions." As this statement came directly from ECCC (the authors of the report), it was not considered to be an appropriate reference for a like-project such as Aurora LNG.
2977.1	round 1	CEAA	GHG Upstream Report	Greenhouse Gases	• The report did not provide a numeric estimate of the potential impact of GHG emissions associated with the project on global emissions.	The purpose of the Upstream Assessment, as per the guidance published in Part 1 of the Gazette on March 19, 2016, is to evaluate the potential upstream emissions. Upstream emissions were defined to be "all activities from the point of resource extraction to the project under review" (Government of Canada. 2016). Therefore, completing a numeric estimate of the project emission on global GHG levels is not part of the scope of this assessment.
2978.1	round 1	CEAA	GHG Upstream Report	Greenhouse Gases	• Since Nexen has not yet determined the natural gas feed source, or the specific information regarding the pipeline, a number of assumptions were made regarding upstream components associated with the project.	Comment noted.
2979.1	round 1	CEAA	GHG Upstream Report	Greenhouse Gases	• While the report concludes that natural gas production equivalent to the project would likely occur globally even if the project is not built, it does not conclude as to whether this production level would likely occur in Canada.	Correct, as discussed in Section 3.3.5 there are numerous other proposed LNG projects worldwide, and it is not possible to predict where the next LNG project approved for construction will be located.
2980.1	round 1	CEAA	GHG Upstream Report	Greenhouse Gases	• The report does not quantify the % contribution of upstream GHG emissions to provincial and national outputs, and while the Gazette guidance does not require such a comparison, it is useful information to have since it provides valuable contextual information to help the public understand the relative magnitude of the project’s environmental impacts.	The percent contribution of upstream emissions to provincial and national inventory totals is not required by the ECCC methodology, as published in Part 1 of the Gazette on March 19, 2016. Aurora LNG cannot comment on the forecast of provincial and national inventory totals to make comparisons to the forecasted upstream emissions. Many factors outside of this Project may affect the provincial and national inventory totals; therefore this was considered to be outside of the scope of this assessment.
2981.1	round 1	WG Action Item - April 19, 2017		Air Quality	Provide estimates of the amount and types of waste that would be produced and incinerated at the construction camp, as well as the air emissions anticipated to be generated from the incinerator. Information should reflect actual operational values based on similar-sized incinerators. These values will then be used to determine if the operations phase is still the worst case or if additional air dispersion modelling is required during the EA to assess potential effects on VCs.	See Section 6.3.5.2 of the Application for additional information on solid waste management. The preferred option is to utilize existing permitted waste facilities for the various Project waste streams. Aurora LNG is considering the use of an incinerator for potential food wastes from the worker accommodation. Aurora LNG intends to limit the size of the incinerator to below the BC MOE defined threshold of 400kg/hr and to limit the incinerated waste streams to organic food wastes. The incinerator, if utilized, will help to limit potential food waste odors that could attract wildlife or other pests. Please see the "Assessment of Work Camp Waste Incineration" technical memo which will be filed with the BC EAO.
2982.1	round 1	WG Action Item - April 19, 2017		Air Quality	Develop a draft modelling plan (including timelines) to assess the plume rise for the ground flare during the EA process to be approved by MOE.	Aurora LNG provided MOE with a draft ground flare model plan on May 8, 2017, and held a conference call with MOE on May 10 to confirm approach and clarify technical details. The outcome of this conference call was MOE providing verbal approval of the modelling plan and approach. Please refer to the technical memo "Ground-Flare Dispersion Model Assessment" for the results of the ground flare modelling, which will be filed with the BC EAO.
2983.1	round 1	WG Action Item - April 19, 2017		Air Quality	Provide OGC with additional information regarding what flaring will look like during commissioning, including a range for frequency of flaring activities.	Commissioning of a liquefaction train is expected to typically occur over a two week period with start-up taking approximately one day although it is not expected that flaring activity would occur for that entire duration. Commissioning is a controlled activity so it will be planned and managed to minimize the flaring events. The flare usage is dependent on commissioning of different systems e.g. utilities, storage, pretreatment, liquefaction, etc. which can be planned to occur simultaneously or sequentially to optimize the commissioning schedule. The Aurora LNG facility will adopt the latest technologies such as efficient turbine drivers and liquefaction technology; which are important criteria to minimize the flaring. Aurora LNG has not determined the final configurations of the facility so the flare length and duration cannot be predicted during the commissioning activity where the flaring rates can vary up to normal design loads. Aurora LNG will engage with the BC Oil and Gas Commission during the LNG Facility application process and will provide more detailed information regarding flaring activity expected while commissioning the facility once the Project has progressed into front end engineering and design.
2984.1	round 1	WG Action Item - April 19, 2017		Air Quality	Request a license agreement from ECCC for MEIT version 4.1.0.	Aurora LNG forwarded the PDF version user manual and PDF version summary document of the ECCC 4.1.0 version MEIT database to the BC EAO and ECCC on May 11, 2017. Aurora LNG asked ECCC to advise the BC EAO on whether the BC EAO can post those two PDF version files.
2985.1	round 1	WG Action Item - April 19, 2017		Human Health	Display the grid points spatially on a map and identify the maximum point of impingement for 1-hour NO2 concentration (based on the 98th percentile of the daily 1-hour maximum) for Digby Island, Prince Rupert and Port Edward.	Please refer to the technical memo titled "Maximum Points of Impingement (MPOI) for 1-Hour Nitrogen Dioxide Concentrations", which will be filed with the BC EAO.
2986.1	round 1	WG Action Item - April 19, 2017		Air Quality	Provide a clear description of how best technology/standards in Project design would meet a potential reduction in AAQOs in the future.	Aurora LNG will assess relevant current regulations such as AAQO's as part of the facility basis of design while in front end engineering and design. The basis of design will also consider any publicly announced expected changes to relevant regulations (e.g AAQO's) to ensure that the facility will meet the regulatory requirements anticipated to form part of facility operational permits. If changes to regulations occur during the facility design period, the options to adjust technology or standards are varied. However, once the facility is constructed and in operation, the potential options to meet emission permit changes related to AAQO's would likely be limited to adjusting the feed gas composition and/or considering the installation of customized scrubber units.
2987.1	round 1	WG Action Item - April 19, 2017		Marine Water Quality	Share the tables in the marine TDR that compare the maximum concentrations of COPCs in sediment with the CCME Interim Sediment Quality Guideline (ISQG).	The technical memo "Supplemental Information for Traditional Marine Foods", which will be filed with the BC EAO, includes the requested screening table. This screening table includes the number of sediment samples, CCME ISQG and PEL, and measured concentrations (min, max, 95% UCLM) in the sediment for metals, polycyclic aromatic hydrocarbons, polychlorinated biphenyls and dioxins and furans.
2988.1	round 1	WG Action Item - April 19, 2017		Human Health	Provide a revised calculation of health risk using an agreed-upon maximum consumption rate. Appropriate consumption rates to be informed in consultation with MOH and HC with reasonable time for Aboriginal groups to share known consumption rates for their communities for consideration. If no further rates are provided by Aboriginal Groups, or they are not substantially different from those identified in consultation with MoH and HC, the latter will suffice.	Please refer to the technical memo titled "Supplemental Information for Traditional Marine Foods", which will be filed with the BC EAO.
2989.1	round 1	WG Action Item - April 19, 2017		Water Quality	Provide a table that shows the numbering/naming nomenclature of fisheries streams that correspond with the same streams considered in the streams assessed for acidification/eutrophication.	Please see the technical memo "Additional Information about Eutrophication and Acidification in Freshwater" for a cross-referencing of naming/numbering. The technical memo will be filed with the BC EAO.
2990.1	round 1	WG Action Item - April 19, 2017		Water Quality	Update the draft access road and Dodge Cove watershed memo to describe that some Dodge Cove residences have copper piping while others have PVC piping. Also note that the predicted change in pH due to the Project would not alter the current effectiveness of existing filter systems in the Dodge Cove residences.	Please refer to the technical memo titled "Dodge Cove Drinking Water Supply and Watershed", which will be filed with the BC EAO.
2991.1	round 1	WG Action Item - April 19, 2017		Water Quality	Provide additional information on the desalinization facility and anticipated effluents from the power plant/cooling towers, and review existing technologies currently being used for these components. Consider which potential contaminants could cause harm and complete a literature review of which guidelines may be applicable in the absence of provincial guidelines .	Please see the technical memo "Discharges to the Marine Environment" which will be filed with the BC EAO.
2992.1	round 1	WG Action Item - April 21, 2017		Marine Water Quality	Regarding the draft Aurora LNG Memo “Discharges to the Marine Environment” • if the effluent assessment relies on a 200 m Initial Dilution Zone, Aurora LNG needs to provide specific examples of where a 200 m IDZ has been used in the province, identify the circumstances that might have justified a larger IDZ, and identify any special management plans or monitoring programs that were required to support a larger IDZ.	In the absence of previous discussions with MOE regarding an Initial Dilution Zone (IDZ), the draft memo (Discharges to the Marine Environment) mentioned a 100 or 200 m IDZ (we are aware of a 200 m IDZ approved in freshwater in northwestern British Columbia), but acknowledge that 100 m is more common. The memo "Discharges to the Marine Environment" has been revised.
2993.1	round 1	WG Action Item - April 21, 2017		Water Quality	Nutrient Nitrogen in Lakes • It is necessary to show the calculations used to estimate the concentration of nitrogen in the lakes. It is not possible to review the estimates without clearly showing the calculations.	Please see the revised technical memo "Additional Information about Eutrophication and Acidification in Freshwater" which will be filed with the BC EAO.
2994.1	round 1	WG Action Item - April 21, 2017		Water Quality	Access Road and Dodge Cove Watershed • The average annual water pH of the Dodge Cove reservoir is reported as 4.34 pH units. This value requires additional information about the sample size and the variability of pH measurements.	The "Dodge Cover Water Supply and Watershed" technical memo was presented to the Working Group in draft for pre-read on April 17, 2017 under the title of "Access Road and Dodge Cove Watershed." The memo was updated as a result of the discussion during the Working Group meeting and this comment, to clarify that the measurement of water pH in the Dodge Cover reservoir was based on a single point value measured in October 2015 and does not represent an annual average.
2995.1	round 1	WG Action Item - April 21, 2017		Water Quality	Water Quality In-Situ Data (Freshwater) • This memorandum requires a map showing the locations of sample sites. It also requires information about the turbidity classes, specifically, what are the range of values used to delineate C, L, M and H?	The technical memo "Water Quality In-situ Data (Freshwater)" has been updated to reference the site map in Appendix M of the Application, showing the sampling locations for water quality completed by Triton/Khtada field crews are shown. The memo will be filed with the BC EAO.
2996.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Include information in the memo regarding the potential avoidance of previously-used areas due to increased noise levels.	Please see the technical memo "Low Frequency Noise Assessment" for information regarding previously-used areas. This technical memo will be filed with the BC EAO.
2997.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Confirm the procedure for hearing protection of workers on LNG vessels.	There are no specific provincial publications outlining hearing protection requirements on LNG vessels operating in British Columbia waters. Recommendations from Transport Canada for hearing protection of crew members will be considered on the LNG vessels. Transport Canada publication TP5021E ""Personal Safety on Ships"" recommends the use of proper hearing protectors when working in noisy environments on a ship. The Transport Canada publication TP 3685 ""Standards Respecting Noise Control and Hearing Protection in Canada Towboats"" provide additional information on hearing protection requirements on towboats that can be applied on a LNG carrier. Any crew member entering any space of the ship where the sound level is 85 dB(A) or more shall use a hearing protector of appropriate quality (Class A, B or C as defined in CSA Standard Z94.2-1979), as follows: in spaces where the level is not in excess of 95 dB(A), the protector shall be of Class A, B or C; in spaces where the level exceeds 95 dB(A) but is not in excess of 100 dB(A), the protector shall be of Class A or B; in spaces where the level exceeds 100 dB(A), the protector shall be of Class A.
2998.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Update the cumulative noise assessment memo to reflect the discussion regarding the consideration of Altagas, Canpotex and Prince Rupert LNG in the cumulative effects assessment of noise.	Please see the revised technical memo "Cumulative Noise Assessment" which will be filed with the BC EAO.
2999.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Update low frequency noise assessment memo to reflect the discussion regarding potential noise effects on the west side of Digby Island.	Please see the revised technical memo "Low Frequency Noise Assessment" which has been updated to include receptors on the west side of Digby Island. The technical memo will be filed with the BC EAO.

3000.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Confirm with Stantec's wildlife expert that potential effects of low frequency noise on wildlife were considered.	Wildlife-related literature has primarily centered on A-weighted decibel noise effects as it represents the most common weighting used in noise measurement. There is limited information available on the effects of C-weighted decibel noise to wildlife. Although there is limited information available on effects of C-weighted decibel noise to wildlife, a discussion on potential effects to human receptors is provided in Section 4.4 of the Application. The low frequency noise effect analyses for construction and operation are summarized in Table 4.4-17 to Table 4.4-18. The results indicate no predicted exceedances when compared to the ANSI 12.9 standard threshold for human receptors. Section 4.7.5.2 of the Application considered the potential indirect effects of change in habitat and incorporated information on noise-based effects available in scientific literature, for species occurring within the LAA (or for similar species whose effects are expected to be representative).
3001.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Update sleep memo to include response to EAO's question: the noise of all four trains operating together was considered for the assessment, and that this is a worst-case (or more conservative) scenario than the levels of noise from construction of trains 3 and 4 overlapping with facility operations. Update the sleep memo regarding the potential avoidance of traditional use/camping sites due to increased noise levels.	Please see the revised technical memo "Sleep Disturbance and Speech Interference" which has been updated to reflect this request. The technical memo will be filed with the BC EAO.
3002.1	round 1	WG Action Item - April 24, 2017		Acoustic Environment	Review Gitxaala comment 1853 and add reference to sleep disturbance memo if appropriate.	References to the technical memos "Low Frequency Noise Assessment" and "Sleep Disturbance and Speech Interference" have been included in response to the noted comment #2196.1.
3003.1	round 1	WG Action Item - April 28, 2017		Marine	Determine if it's possible to correlate subsurface sediment type and bathymetry and the potential presence of coral.	Aurora LNG has reviewed the publically available data for the Chatham Sound region to determine whether it is possible to test for a correlation between benthic habitat type, bathymetry, and the presence of cold-water corals and glass sponges. Based on this review, Aurora LNG has determined that, for the following reasons, such a test cannot be performed at this time. Limited spatial distribution of data on cold-water corals and glass sponges. While detailed data on the distribution of corals and sponges was collected during baseline field surveys for the Prince Rupert Gas Transmission Project (McGregor GeoSciences Ltd. [McGregor] 2014), the data are limited to four north-south oriented corridors in the northern and eastern areas of Chatham Sound. This study used multibeam echo sounder and side scan sonar to identify benthic habitat features characteristic of biogenic sponge reefs. Dense aggregations of mounds (potential sponge reefs) were identified in water depths between 40 and 200 m, and were most concentrated to the east of Melville Island, Dunria Island and Baron Island (i.e., between Melville Island and the Tsimpsean Peninsula). Such detailed data are not available for the majority of Chatham Sound. Lack of detailed data for benthic habitat type and bathymetry. The available data for benthic habitat types and bathymetry in the region are coarse, and do not identify fine-scale features that might influence the presence/absence of sponges and corals (e.g., rocky outcrops or ridges). Higher-resolution data are available for areas within the corridors studied by McGregor (2014); however, observed correlation between habitat type, bathymetry, and presence of corals and sponges within these corridors cannot be extrapolated to the wider region without comparably high-resolution data for the particular areas of interest (e.g., at the candidate disposal at sea sites).Variable growth forms of glass sponges. Glass sponges require a hard substrate for attachment, and are often found on rocky substrates (e.g., bedrock, boulders). However, sponges also grow as reefs (bioherms), whereby successive generations of sponges settle and grow on the silica skeletons of dead sponges (Chu and Leys 2010). These reefs may occur in areas that lack bathymetric complexity, and may be surrounded by otherwise featureless soft sediment seafloor habitats. Given these variable growth forms, habitat type (e.g., rocky vs. soft sediment) may not be a good predictor of sponge presence. Indeed, many of the sponge reefs identified by McGregor (2014) were surrounded by relatively flat, featureless soft sediment habitat. Given the above, it is not possible to confidently predict the potential distribution of corals and sponges across Chatham Sound. However, as part of the disposal at sea permitting process, Aurora LNG will undertake detailed investigations including subtidal remotely operated vehicle (ROV) surveys at the specific candidate disposal at sea sites that are carried forward for disposal at sea permitting. These intensive surveys will provide site-specific information on the potential presence of corals and sponges at the selected sites, will support further assessment of potential environmental effects, and should allow the proposed candidate site to be refined to avoid the identified areas.. References: Chu, J.W.F. and Leys, S.P. 2010. High resolution mapping of community structure in three glass sponge reefs (Porifera, Hexactinellida). Marine Ecology Progress Series 417: 97-113. McGregor GeoSciences Limited. 2014. TransCanada Prince Rupert Gas Transmission Project, Benthic Habitat Mapping Survey, Prince Rupert, British Columbia. Appendix L-4 to Application for Environmental Assessment Certificate. 87 pp + Appendices.
3004.1	round 1	WG Action Item - April 28, 2017		Marine	Engage with commercial fishers to discuss suitability of alternative disposal sites and potential interactions with commercial fisheries.	Aurora LNG will engage with commercial fishers as part of its ongoing review of potential candidate DAS sites.
3005.1	round 1	WG Action Item - April 28, 2017		Marine	Consider including PNCIMA information on salmon migratory patterns and critical rearing habitat for juvenile salmon in the Skeena Estuary in the DAS constraint maps.	Aurora LNG has reviewed the PNCIMA publications (http://www.pncima.org/site/about-pncima/document-library/pncima-publications.html) for information on salmon migratory patterns and critical rearing habitat for juvenile salmon in the Chatham Sound / Skeena Estuary region. While no spatial data were located, Aurora LNG identified pertinent information in a PNCIMA report authored by Hyatt et al. (2007), titled 'Ecosystem Overview: Pacific North Coast Integrated Management Area (PNCIMA) - Appendix I: Pacific Salmon'. Sections 4.4 and 4.5 of this report describe migratory routes and important rearing habitats within the PNCIMA area. Regarding salmon migratory routes, the report states: "Although the detailed migratory routes and timing variations of individual stocks and species are known in only the most general terms, it is clear that key zones of egress and ingress (potential Ecologically and Biologically Significant Areas) may be initially identified in association with the watersheds within PNCIMA that support the largest populations of salmon. The distribution and abundance of spawning salmon may be used as a crude, first approximation of the relative importance of key marine zones in PNCIMA for actively migrating juvenile and adult salmon." Given that the Skeena River is a major producer of salmon on the north coast of BC, proximity to the mouth of the Skeena River can be used as a proxy for the relative importance of marine habitats for migrating juvenile and adult salmon. Areas that fall within migratory corridors to and from the Skeena River (i.e., between the mouth of the Skeena River and offshore habitats) can also be considered important habitats for migrating salmon. Aurora LNG has considered this information in its analysis of potential candidate sites for disposal at sea, as presented in the technical memo "Analysis of Alternative Sites for Disposal at Sea", which will be filed with the BC EAO. Regarding important rearing habitats for juvenile salmon, the Hyatt et al. (2007) report provides the following general description of salmon habitat utilization within Queen Charlotte Basin (QCB), which includes Chatham Sound and the Skeena Estuary: "The diverse marine habitats that salmon utilize in the QCB are created by complex, seasonal interactions among bathymetry, wind, freshwater runoff, and tidal currents that control both the circulation of water and its properties within the QCB (Thomson 1981). Although the detailed patterns of salmon utilization of these varied marine habitats are less well studied than their use of freshwater habitats, several generalizations are possible. From a salmon habitat perspective, the waters of the QCB may be viewed as consisting of: (1) transitional, estuarine staging, and rearing areas for juvenile and adult stages of all species (e.g., coastal inlets and major estuaries of the Nass and Skeena rivers); (2) upwelling areas of productive underwater shoals and banks that are especially important as rearing areas for aggregations of sub-adult coho and Chinook salmon (Dogfish, North Island, Goose and Cook banks); (3) continental-shelf, surface-water eddies that may entrain juvenile salmon and plankton for periods of days to weeks (e.g., clockwise rotating Rose Spit Eddy and the counter-clockwise flowing Queen Charlotte Sound Eddy, Crawford et al. 1995); and (4) advection zones along the continental shelf where surface waters move rapidly seaward as filaments or plumes with replacement from depth by upwelling nutrient rich waters." From the above description, most of the waters of Chatham Sound, particularly nearshore areas close to the mouth of the Skeena River, would be considered transitional, estuarine staging, and rearing areas for juvenile salmon. In recognition of this, Aurora LNG has committed to restricting disposal at sea activities to the DFO least-risk work window for the Lower Skeena Region, which is from November 30 to February 15. This window coincides with a period of low abundance of juvenile salmon in the coastal waters of Chatham Sound, when most juveniles are found farther offshore, over the continental shelf. Restricting disposal at sea activities to this window will substantially reduce potential effects to rearing juvenile salmon. References: Hyatt, K., M.S. Johannes, and M. Stockwell. 2007. Ecosystem Overview: Pacific North Coast Integrated Management Area (PNCIMA) - Appendix I: Pacific Salmon. Canadian Technical Report of Fisheries and Aquatic Sciences 2667.
3006.1	round 1	WG Action Item - April 28, 2017		Marine	Share the references for the two 2006 PNCIMA reports completed by Clark and Jamieson.	The process for identifying DFO Important Areas (IAs) for the Pacific North Coast Integrated Management Area (PNCIMA) is described in the following two references. They are both available online here: http://www.pncima.org/site/about-pncima/document-library.html Clarke, C.L. and G.S. Jamieson. 2006. Identification of Ecologically and Biologically Significant Areas in the Pacific North Coast Integrated Management Area: Phase I – Identification of Important Areas. Canadian Technical Report of Fisheries and Aquatic Sciences 2678. Clarke, C.L. and G.S. Jamieson. 2006. Identification of Ecologically and Biologically Significant Areas in the Pacific North Coast Integrated Management Area: Phase II – Final Report. Canadian Technical Report of Fisheries and Aquatic Sciences 2686.
3007.1	round 1	WG Action Item - April 28, 2017		Marine	Confirm if there are any marine heritage sites identified in traditional use studies that have not been carried forward into the DAS siting analysis.	Aurora LNG reviewed the traditional use studies completed by Aboriginal Groups for the Project to identify marine heritage sites that might overlap with the four candidate disposal at sea sites identified in the technical memo "Analysis of Alternative Sites for Disposal at Sea", which will be filed with the BC EAO. This review did not identify any traditional marine heritage sites that would overlap with the four identified candidate disposal at sea sites.
3008.1	round 1	WG Action Item - April 28, 2017		Marine	Develop a technical memo that compares Brown Passage with one or more identified alternative DAS sites using the additional constraints layers discussed in this meeting. Nexen will engage with appropriate agencies and Aboriginal groups regarding the DAS site alternatives. This process would inform the selection of one or more preferred DAS sites, which would then be assessed against the five pillars for the EA.	Please see the "Analysis of Alternative Sites for Disposal at Sea" technical memo which will be filed with the BC EAO.
3009.1	round 1	WG Action Item - April 28, 2017		Marine	Develop a work plan for addressing DAS including a schedule of key tasks, a description of the outcomes of each tasks, and how EAO, Aboriginal groups and agencies will be involved.	Aurora LNG has developed the "Aurora LNG - Disposal at Sea Workplan" technical memo outlining the proposed workplan for DAS permitting. It is based on the four phases of the ECCC DAS permitting process, with the expectation that the majority of Phase 1 of the ECCC process would fall within the Application Review process under BC EAO. This technical memo will be filed with the BC EAO.
3010.1	round 1	WG Action Item - April 28, 2017		Fish Habitat Offsetting Plan	Provide a technical memo with more information regarding the characterization of residual serious harm to fish and the suitability of the proposed conceptual offsetting measures to offset residual serious harm to fish	Please see the "Assessment of Project Effects and Proposed Offsetting for Residual Serious Harm to Fish" technical memo which will be filed with the BC EAO.
3011.1	round 1	WG Action Item - April 28, 2017		Wetland Compensation	Provide clarity on working group comments 2578, 2587, 2606 and 2611.	Please see the technical memo "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation" which will be filed with the BC EAO.
3012.1	round 1	WG Action Item - April 28, 2017		Wetland Compensation	Provide a memo that provides additional information regarding the extent and functions of intertidal estuarine wetlands in the PDA, and including Delusion Bay and how adjacent wetlands may be affected and a plan for compensation. Clarify which components of the wetland compensation requirement are addressed by the Fish Habitat Offsetting Plan and which are to be addressed by the wetland compensation plan. Provide additional information about monitoring and mitigation for wetlands adjacent to the Project development area.	Please see the technical memo "Supplemental Information Regarding Estuarine Wetlands and Wetland Compensation" which will be filed with the BC EAO.
3013.1	round 1	EAO		Human Health	See attached memo "Aurora LNG Digby Island Project - Information Request (May 19, 2017) - Air Emissions and Human Health Effects"	Please see the "Maximum Points of Impingement for 1-Hour Nitrogen Dioxide Concentrations" technical memo, which will be filed with the BC EAO.
3014.1	round 1	EAO	8.0	Human Health	The Ministry of Health has further input on the consumption rates applied in your re-analysis expected for May 31st. In careful consideration of the MOH feedback, the EAO would like Nexen's re-analysis to include both the adjusted rates you provided in your May 9th note below, as well as the 220 g/day suggested by MOH. I understand that the 220 g/day would also align with the rate applied in the LNG Canada analysis. This approach to considering a range of consumption rates will be helpful to move forward in our assessment on this topic.	Please see the "Supplemental Information for Traditional Marine Foods" technical memo, which will be filed with the BC EAO. The "Supplemental Information for Traditional Marine Foods" technical memo was presented to the Working Group in draft for a pre-read on April 18, 2017. The memo was updated as a result of the discussion during the Working Group meeting.
3015.1	round 1	CAS	GHG Upstream Report	GHG Upstream Report	In March 2016, ECCC published suggested methodology for estimating the upstream GHG emissions from major projects undergoing federal environmental assessments. Emissions estimates were later developed for the Woodfibre LNG and Pacific Northwest LNG projects using this methodology. , These assessments, and the current one completed for Aurora LNG, highlight certain challenges inherent to the estimation of upstream emissions and its use in environmental assessments to determine the potential implications of a specific project on national or global GHGs. First, ECCC's natural gas upstream emissions estimates do not vary over time, which is inconsistent with observed trends in British Columbia (B.C.) and unlikely to represent the actual emissions associated with the project. Provincially reported GHG and natural gas production data show clear declines in the GHG-intensity of natural gas produced in BC between 2000-2015. These declines are due to a number of factors, including the shift from conventional gas production to tight and shale gas production (with typically lower GHG-intensities), and the use of newer production techniques and technologies. Similarly, the methodology and emissions factors used to develop the estimates do not take into account recent climate policy announcements that will influence natural gas upstream emissions over the project's operational lifetime. For example, B.C.'s Climate Leadership Plan includes direction for the development and enforcement of standards to reduce methane emissions in the upstream prior to the Aurora project coming on-line. Changes in natural gas supply as well as any provincial GHG reduction policies put in place will impact the amount of upstream GHG emissions in the future. As the ECCC analysis does not take these potential changes into account, the total expected upstream GHG emissions from a specific project may be overestimated when forecasted over its lifetime. As such, the estimates provided can be considered a higher-end estimate of the maximum potential annual emissions associated with a facility. The estimates may not be representative of the annual upstream emissions later on in the project's lifetime or indicative of the actual impact of the project on global greenhouse gas emissions. In terms of the project's potential impact on global GHGs, as Aurora notes, both downstream GHG emissions impacts (including fuel switching from coal-fired power plants to natural gas plants) and the counter-factual scenario (where other projects may come on-line if the Aurora project is not developed) would need to be considered to determine the net result of the project on global GHGs.	Aurora LNG notes the CAS comments on the published ECCC methodology. However, the intent and scope of this assessment was to evaluate upstream emissions as provided in the methodology, where upstream includes, as defined by ECCC, "all industrial activities from the point of resource extraction to the project under review." A review of downstream GHG emissions is therefore outside of the scope of this assessment.

3016.1	round 1	MNGD	GHG Upstream Report	GHG Upstream Report	B.C.'s Ministry of Natural Gas Development (MNGD)has completed internal analyses to determine the potential upstream emissions from proposed major projects in the province. Given the uncertainties associated with forecasting potential upstream emissions as described above, ranges in potential emissions are preferred by MNGD. These ranges can broadly account for potential variations that could occur between projects, including the source of the feedstock natural gas, the production techniques, and technologies used at the wellsites that produce that feedstock. For example, projects that receive the majority of their feedstock from the Montney basin (which has much lower formation CO2) would be on the low end of the range, while projects that receive their feedstock from areas with higher formation CO2 (including the Horn River Basin and the Liard Basin) would be at the high end of the range. Given Aurora LNG's description that the source of their feedstock gas would be from "proprietary and third party gas" and given the state of their partner's holdings in areas such as the Horn River Basin, it is reasonable to assume that upstream emissions associated with the project would be higher than projects that source their feedstock gas from areas with lower formation CO2. The estimates provided in the Aurora LNG report are in line with the ranges developed by MNGD and can be considered a reasonable estimate of the potential annual upstream GHG emissions associated with the project. As stated previously, these estimates are most applicable in the near term of a project's life, as changes to production techniques and technologies, as well as government policy, will reduce these values over time. In particular, carbon capture and sequestration (CCS) projects would greatly reduce the emissions intensity of natural gas produced in the Horn River Basin. MNGD was directed in the B.C. Climate Leadership Plan to complete the regulatory policy framework to ensure CCS projects, like those being considered for the Horn River Basin, can proceed. It should be noted that there will be uncertainty associated with all of these estimates, given the use of average, province-wide emissions factors as opposed to project-specific emission factors. The level of detail provided in the analyses and the results obtained may be appropriate for the purposes of this interim approach to this specific environmental assessment. More accurate estimates would require significantly more analysis to better understand the exact production and throughput characteristics for the project. Taking these uncertainties into account, compared to the MNGD analysis, the estimates provided by Aurora can be considered a reasonable higher-end estimate of the maximum potential annual emissions associated with the project. It is expected that over the project's life, the upstream emissions associated with the project will decrease due to changes in production techniques, the use of new technologies and additional government policies to reduce GHGs.	It is agreed that the Review of Upstream Greenhouse Gas Emissions estimates are a "reasonable higher-end estimate of the maximum potential annual emissions associated with the project." Given that Project specific details about upstream sources are not finalized yet, the "Review of Upstream Greenhouse Gas Emissions" utilized average emission factors from Environment and Climate Change Canada (ECCC) and The Pembina Institute as opposed to project-specific emission factors. To this effect, ranges in upstream emission estimates are limited to ECCC and Pembina data, as presented in the Application. Further details are not available to add additional Project-specific prospective ranges. in upstream emissions. Aurora LNG agrees that actual project upstream emissions will decrease "due to changes in production techniques, the use of new technologies and additional government policies to reduce GHGs."
3017.1	round 1	Gitga'at First Nation	12.3 and Appendix S.1	Aboriginal Consultation	"This comment was made during screening, and stills stands. Please respond. ""Gitga'at First Nation has the following comments on Appendix S1 (Aboriginal Consultation Report #2), which should also be considered throughout the Application where Appendix S1 is referenced: • Gitga'at First Nation has not been provided the opportunity to review and comment on the Aboriginal Consultation Plan (ACP). However, as described in Section 1.3 the ACP has been amended, so Gitga'at First Nation requests that the ACP be amended to reflect the recent Section 13 Order, and any other amendments identified during Gitga'at First Nation's review of the ACP. This is important because the Aboriginal Consultation Objectives outlined in Table 3-1, to date, have not been afforded to Gitga'at First Nation. • The Aboriginal Interests listed in Table 2-1 for Gitga'at First Nation are limited; for example, terrestrial harvesting, use of trails and travelways, and traditional governance are also Aboriginal Interests. Gitga'at First Nation should be consulted on this table. • A note should be added to Table 4-1 that no "Early Engagement" was conducted with Gitga'at First Nation. Also the specific "Pre-Application Consultation" activities conducted with Gitga'at First Nation should be clear as not of the activities listed included Gitga'at. • A list of technical workshops, field trips and attendees should be added to Section 4.2.3.1 and 4.2.3.3 as Gitga'at First Nation was not included. • The statement in Section 4.2.3.3 that "Aurora LNG has held meetings with Gitga'at to provide similar information" is incorrect; to date no such meeting has taken place. • No "Additional Workshops" in a one-on-one setting with Gitga'at First Nation occurred to review baseline information, and as such, Aurora LNG interpreted and incorporated information provided by Gitga'at on their own. • To date, Gitga'at First Nation has not been engaged in "Consultation on Related Authorizations during the Reporting Period" (Section 4.3.1). • Section 4.3.2 lists that "Aurora LNG provided a number of employment opportunities that provided economic benefits and built capacity for Aboriginal community members in the Prince Rupert area"; what opportunities have been provided to Gitga'at First Nation? • Section 10.2.2.1 states "… Aurora LNG worked with Gitga'at to develop a technical workshop with Gitga'at to discuss the topics that are relevant to Gitga'at, which include topics covered with the other Aboriginal Groups as part of the Technical Workshops held to date"; this did not occur so this statement should be removed. • Section 10.2.2.3 states "… Aurora LNG worked with Gitga'at to develop workshops on October 13 and 14, 2016. The topics covered during these workshops included topics that were covered with the other Aboriginal Groups as part of the First and Second Workshops"; this statement is misleading as Aurora LNG set the agenda for the October 13 and 14 workshops, focusing on drafts Section 11.3 and Part C. • Gitga'at First Nation requested to be consulted in identifying high value viewpoints (Table 10-1); however, this did not occur. • As commented throughout the screening Table of Concordance, Gitga'at First Nation continues to request Aurora LNG to assess impacts to Economic Conditions, Infrastructure and Services, and Community Health in Hartley Bay (listed in Table 10-1). • The Aboriginal Groups involved in the activities, and recipients of the reports listed in Appendix 1 should be listed. Also the dates of such activities and report sharing should be provided.""	During screening, the EAO provided guidance that "Gitga'at's comments are not screening level; however, please consider the feedback in updates to the ACR." As such, this comment was not included in the table of responses to screening comments. Aurora LNG will continue to track the views and feedback received from Gitga'at First Nation (including specific issues related to ACR #2), Aurora LNG's response to these views and feedback as well as the status of any outstanding items. The results of this process will be reported on in ACR #3. Aurora LNG will provide a draft of ACR #3 to Aboriginal Groups for review and comment before it is submitted.
3018.1	round 1	Gitga'at First Nation	12.3 and Appendix S.2	Aboriginal Consultation	"This comment was made during screening, and stills stands (Note, thank you for sending the full version for Application Review). Gitga'at First Nation was not provided the opportunity to review and comment on the Aboriginal Consultation Plan, and the Aboriginal Consultation Report #1. The Aboriginal Consultation Plan should be amended to include the recent Section 13 Order. In addition, Gitga'at First Nation has the following screening comments on Appendix S2 (Aboriginal Consultation), which should be considered throughout the Application where Appendix S2 is referenced: • This Appendix is missing Figures. • Table 9-5 is limited and missing other Gitga'at First Nation Businesses. • Gitga'at First Nation should have been provided the opportunity review this table prior to Aurora LNG submitting Application for screening. During the October 13 and 14th workshop with Aurora LNG, this Appendix was not provided. • Table 9-8 has limited information, and references LNG Canada 2014b and Inglis 2014 – what about the Traditional Use and Occupancy Study completed for this Project, i.e., Inglis 2016? • For Gitga'at First Nation to effectively screen this Appendix, the full version should be provided and not the public version."	During screening, the EAO provided guidance that "Gitga'at's comments are not screening level; however, please consider the feedback in updates to the ACR." As such, this comment was not included in the table of responses to screening comments. Aurora LNG will continue to track the views and feedback received from Gitga'at First Nation (including specific issues related to ACR #2), Aurora LNG's response to these views and feedback as well as the status of any outstanding items. The results of this process will be reported on in ACR #3. Aurora LNG will provide a draft of ACR #3 to Aboriginal Groups for review and comment before it is submitted.