

NOTICE

The following table contains Technical Working Group comments and BURNCO Rock Product Ltd. responses.

Additional responses to federal Information Requests (IRs) will be posted to the EAO's Project Information and Collaboration page within seven days of receipt.

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Application Review Issues T	racking
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Line No.	Rev (Date)	REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)	
1	EAC Application / EIS (July 2016)	SN-056	24-Aug-16	Squamish Nation	The Application makes no mention of Squamish Nation's Wildlife Focus Area for Elk in West Howe Sound, within which the Project is located. This is described in the Agreement on Land Use Planning Between The Squamish First Nation and The Province of British Columbia (2007). The management intent of this focus area for elk is "To expand the provincial elk reintroductions within Squamish Territory in order restore naturally occurring populations, and, provided conservation needs have been met, to provide future opportunities for Squamish Nation hunting of social and ceremonial purposes" [sic]. This objective should be recognized in the assessment and the Project should be evaluated against this objective to understand whether the Project will help or hinder this objective for the Squamish Nation.	The Squamish Nation's Wildlife Foc Therefore, conclusions of the effec Focus Area for Elk in West Howe So Squamish Territory. The management of elk population affected by the Proposed Project. mortality associated with the Proje protocol to enable safe use of Proje
2	EAC Application / EIS (July 2016)	SN-057	24-Aug-16	Squamish Nation	The title should be clear that this is winter habitat suitability	Figure 19 of Volume 2, Section 5.3
3	EAC Application / EIS (July 2016)	SN-058	24-Aug-16	Squamish Nation	For the ungulate camera observations, it is important to report the abundance between seasons at each location. These bar charts could show the relative abundance for each season. Please provide this breakdown for deer and elk.	The primary purpose of the remote mammals present in the Terrestria the wildlife baseline study. Estimai ranging unmarked or uncollared ell time) is an appropriate approach d
4	EAC Application / EIS (July 2016)	SN-059	24-Aug-16	Squamish Nation	Regarding the remote camera survey, the baseline report says that "Data from such studies can be particularly helpful in assessing the presence of wildlife in the landscape, and in assessing wildlife activity and movement patterns, on a seasonal basis." (s.2.2.6.1). Interpretations of the camera data in 3.6.5.1 and 3.6.7.2 does not attempt to describe potential movement patterns on a seasonal basis for elk and deer. What do the data tell us about important movement routes? It appears that the preferred routes are along the main road (elk observations high at camera locations 18, 14 and 20; deer observations highest at 18). This interpretation is important to understand how the project will affect seasonal movements of ungulates along this route and to determine how mitigation measures may be applied. Please describe what we know and don't know about seasonal movement patterns of elk and deer in and around the LSA.	The primary purpose of the remote mammals in the Terrestrial LSA. Q intent of the camera program. How Terrestrial LSA. The seasons when are described in Section 3.6.5.1 of t
5	EAC Application / EIS (July 2016)	SN-060	24-Aug-16	Squamish Nation	The Application should recognize the importance of wildlife planning and management objectives such as the provincial Management Plan for Roosevelt Elk in British Columbia (draft 2014). How does the Project help or hinder the objectives for elk populations in this plan?	BURNCO recognizes the importanc Management Plan for Roosevelt Ell Roosevelt elk throughout their curr achieve this through appropriate m Volume 2. The fourth objective is to "provide to SN-056 for more information on The fifth objective is to "mitigate p constructing new roadways, restric restricting traffic speeds to below 4 will also be posted on access roads summarized in Section 5.3.1.5.4.3.
6	EAC Application / EIS (July 2016)	SN-061	24-Aug-16	Squamish Nation	The Application says that 36 ha of high and moderate suitability winter elk habitat will be directly lost. Also, 128 ha (52 ha of high + 76 ha of moderate) will be indirectly affected by disturbance. Overall, 164 ha of high/moderate suitability winter habitat will be effectively lost to elk during the project operations. This is about half (48%) of the suitable winter elk habitat in the LSA. The Application argues that the direct habitat loss is "Low" in context of the RSA (3% of high/moderate habitat). What is the % effective habitat loss (direct+indirect) in the RSA? What is the effective loss in the McNab Creek watershed?	Overall, construction and operatio sensory disturbance) of high and m suitable habitat in the Terrestrial R habitat conservatively estimated to habitat affected represents approx ha. Loss of suitable Roosevelt elk winte through progressive reclamation an pit-lake at the end of the life of the
7	EAC Application / EIS (July 2016)	SN-062	24-Aug-16	Squamish Nation	The Application states: "If the Proposed Project is determined to be having an effect on listed species for which adequate data are available, BURNCO will work with regulators to determine appropriate methods for applying additional mitigation or avoidance measures or to reduce these effects, where possible." Please also include Squamish Nation in these discussions regarding mitigation options.	BURNCO will work with the Squam implementation of wildlife mitigat

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cus Area for Elk in West Howe Sound is located entirely within the Terrestrial RSA. cts assessment for Roosevelt elk are considered applicable to the Squamish Nation's Wildlife ound. The Project does not introduce any restrictions on reintroductions of elk into the

ns is the responsibility of the Province of BC and the release of hunting permits will not be Hunting will be restricted within the active Project area due to safety concerns and to avoid ect. BURNCO will work with the Squamish Nation to develop a practical communication ject areas for terrestrial harvesting activities (C-3.3 of Table 19-1 of Part F).

refers to winter habitat suitability.

e camera program was to determine the presence and distribution of medium and large al LSA. Determining species abundance using remote camera data is beyond the scope of tes of abundance require individual recognition of animals, which is difficult for freelk or deer. For camera surveys the use of photographic rate (i.e., photographs per sampling describing presence and distribution in the Terrestrial LSA.

e camera program was to determine presence and distribution of medium and large quantifying landscape level movement routes and seasonal movement patterns was not the wever, remote camera data were reviewed to provide insights into wildlife use of the nelk and deer were most frequently recorded and the habitat types most frequently utilized the Wildlife Baseline Report.

ce of wildlife planning and management objectives stated in the provincial draft Ik (BC FLNRO 2015). The first objective is to "maintain self-sustaining populations of rrent range" in the South Coast region (BC FLNRO 2015). The proposed Project aims to nitigation, reclamation, and compensation of elk habitat as described in Section 5.3 of

opportunities for consumptive and non-consumptive use" (BC FLNRO 2015). See response n hunting within the Terrestrial LSA.

bublic safety risk of vehicle collisions" (BC FLNRO 2015). This will be achieved by not cting traffic to designated access roads and daytime hours, restricting traffic volumes, 40km/hr, and taking extra caution when driving during dawn and dusk. Elk crossing signs s if necessary and defensive driving techniques will be followed. This information is

ons of the Project is predicted to affect 165 ha (36 ha direct and 128 ha indirect due to noderate suitability winter elk habitat in the Terrestrial RSA, which represents 3.9% of the RSA. However, habituation by elk to sensory disturbance is expected, and much of the o be indirectly affected will be available to elk over time. The area of suitable Roosevelt elk ximately 2.5% of the McNab Creek watershed, which covers an area of approximately 6,498

er habitat will be limited to the Proposed Project Area and is expected to be fully reversible and replanting after Project completion, with the exception of the area that will become the e Project.

hish Nation to develop a mechanism for their involvement in the development and tion measures.

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8	EAC Application / EIS (July 2016)	SN-063	24-Aug-16	Squamish Nation	Regarding the mitigation measures proposed: "Habitat clearing within Roosevelt elk winter range during winter months (November to March [Nyberg and Janz 1999]) will be minimized to the extent practical", this is not specific enough to ensure effectiveness. The effect we want to avoid is beginning significant clearing during the winter occupancy by elk and forcing them to find winter habitat elsewhere during a stressful period of their life cycle. It would be preferable to ensure that clearing activities begin prior to elk arrival at low elevations which would allow them to move elsewhere for suitable winter habitat while they are . Prior to the finalization of the proposed Elk Management Plan, we propose that BURNCO use monitors or cameras to estimate the beginning of winter use of the LSA by elk and specify a mitigation measure that ensures that clearing will not begin after the winter arrival of elk in the LSA.	Habitat clearing within elk winter ra and clearing will be avoided during Terrestrial RSA has been re-introdu evidence suggests that the Rooseve Therefore, the Roosevelt elk popula of Volume 2, Section 5.3). Rooseve those areas over time. Given the av the Project would represent a meas LSA outside of the Project Area, and composed of early seral forest. A detailed wildlife mitigation and m Management (Protection) Plan to m effectiveness of implemented mitig involvement in the development ar closure/reclamation.
9	EAC Application / EIS (July 2016)	SN-064	24-Aug-16	Squamish Nation	This section describes habitat fragmentation as entirely a positive outcome for elk. There are certainly negative aspects that should be recognized, such as the potential reduction of shelter that occurs when a large contiguous tract is fragmented into smaller pieces and forest edges are exposed leading to further loss of mature trees from windthrow. Please describe the negative effects for elk from habitat fragmentation.	BURNCO acknowledges negative ef assessment. However, once mitigat not expected. Vegetation in the Ter clearcut logging activities on site. El disturbances and associated change Habitat clearing will be minimized a reclamation will include planting na forage. Existing disturbed areas, ro elk winter range will be minimized avoided during calving periods (mic travel. Mitigation measures are de Please see response to SN-072 for n
10	EAC Application / EIS (July 2016)	SN-065	24-Aug-16	Squamish Nation	Regarding the mitigation measure proposed: "Maintain/provide habitat linkages and vegetation buffers to minimize habitat fragmentation between winter ranges for elk. These buffer areas act as travel corridors for wildlife", please explain the specific actions and timing that will take place to ensure this will be implemented and effective. This is an important measures to ensure that elk can continue to persist undisturbed during the winter. The planning should include identification of winter no-go zones to contain the disturbance effects. The prolonged use of wildlife cameras will also help to monitor the use of protected travel corridors.	The Project is predicted to affect 16 includes 36 ha of suitable habitat th disturbance. However, the prediction Roosevelt elk are expected to habit which will occur progressively over suitable winter habitat for elk in the Please see response to SN-072 for n
11	EAC Application / EIS (July 2016)	SN-066	24-Aug-16	Squamish Nation	Regarding the mitigation measure proposed: "Efforts will be made to restrict noises to below 50dBA within 500m from the Proposed Project Area (i.e., within the ZOI for elk, see Section 5.3.1.5.3.7.1.1)", please commit to monitoring noise effects to ensure that disturbance to elk is contained within the 500m ZOI, and specificy the measures that will be taken should there be a detectable effect beyond the ZOI.	Noise monitoring will be included a for the Project. The sources of nois levels will be mitigated, where feas
12	EAC Application / EIS (July 2016)	SN-067	24-Aug-16	Squamish Nation	Regarding mitigation for barriers to wildlife movement, please commit to ensuring safe passage of elk herds across roads or past operating equipment should elk be moving through the project area. This should include a temporary stop-work to permit undisturbed passage.	Please see response to SN-063 Road upgrades beyond the Propose barge. The speed of vehicle movem vehicles will yield to wildlife to perr
13	EAC Application / EIS (July 2016)	SN-068	24-Aug-16	Squamish Nation	Regarding the mitigation measure proposed: "All employees and contractors will be prohibited from hunting, including Roosevelt elk and grizzly bear, within the LSA", we request that employees and contractors should be prohibited from hunting in the entire McNab Creek watershed. This is a reasonable measure to limit the added effects of hunting on the populations that will already be impacted by the development and operations of the project.	Please see response to SN-056. Wo McNab Creek watershed, or elsewh

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range will be minimized during winter months (November to March) to the extent practical g calving periods (mid-May to mid-July). The population of Roosevelt elk within the luced and is predicted to be stable or increasing (Quayle and Brunt 2003). The available relt elk population in the RSA is self-sustaining and maintaining its ecological function. lation within the RSA is determined to be resilient to imposed stresses (Section 5.3.1.5.6.1.7 elt elk are expected to avoid areas where clearing activities are occurring or to habituate to vailability of habitat in the LSA and elsewhere in the RSA, it is unlikely that construction of asureable impact on the population of Roosevelt elk. Forage is relatively abundant in the nd snow interception cover is much more abundant outside the LSA, which is mostly

nonitoring plan has not yet been developed but will be developed as part of the Wildlife ninimize impacts on terrestrial resources and to collect data that will help evaluate the gations. BURNCO will work with the Squamish Nation to develop a mechanism for their nd implementation of the Habitat Compensation Plan for Roosevelt elk at

Affects can occur due to habitat fragmentation and carried this forward in the effects ation measures are applied, residual effects from Roosevelt elk habitat fragmentation are errestrial LSA is in various stages of regeneration following historical rock quarrying and Elk are expected to adapt and be resilient to existing natural and human-related ges in habitat availability (Section 5.3.1.5.6.1.7 of Volume 2, Section 5.3).

and vegetation buffers will be maintained to facilitate elk movement. Progressive ative species to result in forest for cover in winter and riparian species and forest edges for ads and right-of-ways will be used and no new roads are planned. Habitat clearing within during winter months (November to March) to the extent practical and clearing will be d-May to mid-July). The pit-lake will be designed to allow for wildlife escape routes and escribed further in Table 5.3-15 of Volume 2, Section 5.3.

more information on habitat fragmentation and barriers to movement.

65 ha (or 3.9%) of high and moderate suitability habitat in the Terrestrial RSA. That that will be directly lost to clearing, and 128 ha that are predicted to be affected by sensory ion of habitat affected due to sensory disturbance is a conservative estimate because tuate to sensory disturbance. Habitat lost due to clearing will be reclaimed and replanted, r the life of the Project. The creation of the pit lake will result in the loss of 36 ha or 0.8% of the RSA.

more information on habitat fragmentation and barriers to movement.

as part of the noise management plan, which will be developed as part of the requirements se above 50dBA within 500 m of the Proposed Project Area will be evaluated and noise sible.

ed Project area are not planned. Crews and equipment will be moved to the site via boat or nent on site will be limited to minimize the risk of collisions with elk or other wildlife, and nit safe passage.

orkers will be prohibited from using Project-related access to the site to hunt in the LSA, the nere in the RSA or beyond.

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14	EAC Application / EIS (July 2016)	SN-069	24-Aug-16	Squamish Nation	Regarding the mitigation measure proposed: "A Habitat Compensation Plan for Roosevelt elk will be developed and implemented prior to and during the reclamation and closure phase of the Project, with specific recommendations to address habitat compensation for Roosevelt elk": elk habitat compensation plan should be provided to Squamish Nation for approval prior to construction with implementation underway within 2 years of construction beginning. The permanent removal of habitat needs to be replaced reasonably quickly to offset the impact; it can't wait for the reclamation phase 16 years later. Squamish Nation will require this, with further details to be discussed during ongoing deep consultation, as per commitments in Volume 3 in the Application.	See the response to SN-065 for a d the Habitat Compensation Plan for (i.e., occur throughout the life of th Squamish Nation to develop a mec Compensation Plan at closure/recla
15	EAC Application / EIS (July 2016)	SN-070	24-Aug-16	Squamish Nation	What does the camera data tell us about important elk travel routes? it appears that the preferred routes are along the road (elk observations high at 18, 14 and 20; deer observations highest at 18). How will the project affect the movement of ungulates along this route? It may be expected that the project activities will disrupt the use of this route by ungulates.	Please see responses to SN-059
16	EAC Application / EIS (July 2016)	SN-071	24-Aug-16	Squamish Nation	The Application states: "The net effect of loss of Roosevelt elk habitat, barriers to movement and change in Roosevelt elk mortality are predicted to result in low and negligible magnitude. Therefore the magnitude of net effects of the Proposed Project on Roosevelt elk is also predicted to be low." This conclusion is based on very vague expectations of mitigation success and very simplified reductive reasoning. No convincing rationale is provided that considers the population needs for elk in the McNab valley and particularly the unique qualities of the river delta and shoreline area. Please discuss the importance of the McNab river valley for the local elk population, and in particular the value of the low elevation river delta winter habitat and travel corridors.	Please see the response to SN-075. known Roosevelt elk ecology; know sensitivities, available information of Roosevelt elk and other wildlife spe increasing (Quayle and Brunt 2003) the RSA due to clearing and the 3% disturbance. Elk are predicted to ha cease at the end of the life of the P mortality to Roosevelt elk or to bar the reclamation and closure phase The McNab valley has a long histor evidence collected during three yea with the exception of the long histor existing conditions of the Project an The McNab Creek and riparian area Creek will remain intact. Crushing, proprietary enclosures to avoid and fugitive dust and noise emissions. noise BMP, controlling traffic and s 5.3-15).
17	EAC Application / EIS (July 2016)	SN-072	24-Aug-16	Squamish Nation	The Application argues that the project will have a "Negligible" barrier to movement for elk. Please provide a rationale for this determination, based on what is known about elk travel corridors in this area. Please note that any non-significant conclusion of the Project's effects on Squamish Nation's Aboriginal Rights caused by impacts to terrestrial resources is contingent on clear and defensible conclusions on this topic, as outlined in Section 11.3 (particularly 11.3.3.2.1, 11.3.3.2.3.1, 11.3.5.1.1, 11.3.6, and 11.3.8) (Volume 3 of the Application).	The McNab Creek and riparian area Creek will remain intact. Existing di Vegetation buffers will be maintain elk will no longer be able to move o suitability habitat in the marine for access these areas. However, typic al. 1989; Quayle and Brunt 2003) a movement patterns given the smal
18	EAC Application / EIS (July 2016)	SN-073	24-Aug-16	Squamish Nation	The Application argues that the project's effect from direct habita loss will be "Fully Reversible", even though there will be a pit-pond replacing high/moderate suitability elk habitat. Please provide a rationale for this determination, or acknowledge that this is "Partially Reversible". Please indicate how much area (ha) of habitat will be lost by the pit-pond.	Direct habitat loss due to the Propo could not be reclaimed with curren provide additional habitat for wildl in the Terrestrial RSA covers 165 ha phase of the Project. Creation of the moderate suitability, but no high su
19	EAC Application / EIS (July 2016)	SN-074	24-Aug-16	Squamish Nation	The Application argues that the population of Roosevelt Elk in the McNab Creek area is "Resilient" because, "The available evidence suggests that the Roosevelt elk population in the RSA is self-sustaining and maintaining its ecological function. Therefore, the Roosevelt elk population within the RSA is determined to be resilient to imposed stresses." What eveidence exists that this population is resilient to the stresses of industrial development within key winter habitat? Please provide a rationale for this determination, considering that there may be ~100 individuals of a relatively recently reintroduced population of a Blue-listed species.	The population of Roosevelt elk in t Therefore, this self-sustaining popu barriers to movement, and change (Table 5.3-54 of Volume 2, Section

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description of the predicted effects of the Project on Roosevelt elk habitat. Development of r Roosevelt elk will occur early in the life of the Project, as reclamation will be progressive he Project as areas are no longer needed for operation). BURNCO will work with the chanism for their involvement in the development and implementation of the Habitat lamation.

5. The assessment of the effects of the Proposed Project on Roosevelt elk was based on win habitat associations, life history requirements, and behavioural and demographic on population demographics, as well as known effects of anthropogenic disturbances on becies. The population of Roosevelt elk within the Terrestrial RSA is predicted to be stable or 8), and therefore likely to be resilient to the predicted loss of 0.8% of the suitable habitat in % of suitable habitat in the RSA predicted to be temporarily affected due to sensory habituate to sensory disturbance due to the Project over time, and sensory disturbance will Project. The Proposed Project will not result in a measureable increase in the risk of rriers to movement. Project infrastructure will be removed and habitat reclaimed during e of the project.

ry of mining and logging activities (Section 2.4.2.1 of Volume 1 Part A). There was no ears of field studies to suggest that the habitat in the Terrestrial LSA is unique in the RSA, cory of industrial use and extensive anthropogenic disturbance that characterizes the area.

as will not be affected by the proposed Project. Travel corridors for elk along the McNab screening and washing facilities will be enclosed above ground in the Proponent's d limit fugitive dust and noise emissions. The installation of a clamshell will also limit Sensory disturbance will also be limited through vegetation buffers, minimized clearing, speed, minimizing fugitive dust, and limiting operational activities to daylight hours (Table

as will not be affected by the proposed Project. Travel corridors for elk along the McNab listurbed areas, roads and right-of-ways will be used and no new roads are planned. ned or planted to minimize habitat fragmentation between winter range for elk. Roosevelt directly between the high suitability habitats north of the Proposed Project Area to high reshore, and will need to travel around the Proposed Project Area to the east or west to cal elk range is 5 to 10 km2 (500 to 1,000 ha) on the mainland coast (Blood 2000; Brunt et and elk are expected to travel around the Proposed Project Area with negligible effects to all area affected (see response to SN-071).

nosed Project is fully reversible. To be not fully reversible would suggest that the habitat lost nt technology. However, the reclamation plan involves creation of a pit lake, which will life species such as waterfowl and amphibians. Suitable winter habitat loss for Roosevelt elk (or 3.9%) and will mostly be reclaimed and replanted during the reclamation and closure he pit lake will affect 36 ha of habitat for elk, the pit lake affects habitat predicted to be suitability habitat.

the Terrestrial RSA is predicted to be stable or increasing (Quayle and Brunt 2003). ulation is considered resilient to imposed stressed. Net residual effects from habitat loss, es in mortality are considered to be not significant for Roosevelt elk in the Terrestrial RSA n 5.3).

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20	EAC Application / EIS (July 2016)	SN-075	24-Aug-16	Squamish Nation	The determination that the project will not have a significant effect on Roosevelt Elk is based on the prediction that there is enough suitable habitat elsewhere in the RSA, which comprises several adjacent watersheds. If the project does inhibit the ability of a self-sustaining population to persist in the McNab watershed, what evidence exists that elk can access and thrive in the other watersheds, considering the impacts and stresses existining in those locations?	Roosevelt elk in the Terrestrial RSA of net cumulative effects to elk is pr Mountain Woodfibre Gas Pipeline F suitable Roosevelt elk habitat in the (Section 5.3.3.7.2 of Volume 2, Sect moderate suitability in the Terrestri Project will not have a significant ef habitat available elsewhere in the R and poachers, will not introduce or predicted to affect only 0.8% of suit impacts are not predicted to be sign stable or increasing (Quayle and Bro			
21	EAC Application / EIS (July 2016)	SN-076	24-Aug-16	Squamish Nation	The Application proposes that "Communication and planning with other proponents within McNab Valley" will manage cumulative effects on elk. Please explain this commitement in more detail, including the objectives for the planning and how it will link with monitoring studies. Further, BURNCO's conclusion that the cumulative effect on elk is not significant relies on there being enough habitat in the rest of the RSA, so BURNCO should commit to communicating and planning with land users more broadly than the McNab Valley to ensure that the elk population is resilient enough to be self-sustaining. Please commit to broader coordination, and provide a conceptual plan for how that coordination will achieve success.	BURNCO will develop and impleme Nation and stakeholders (i.e., propo Compensation Plan, as appropriate be developed as part of the Wildlife data that will help evaluate the effe			
22	EAC Application / EIS (July 2016)	SN-077	24-Aug-16	Squamish Nation	Overall, 164 ha of high/moderate suitability winter habitat will be effectively lost to elk during the project operations. Yet, the cumulative effects assessment only focuses on the 36 ha of directly impacted habitat. Likewise, the other projects are only considered in terms of the direct habitat lost that is projected to be lost. This is a narrow view of the overall cumulative impact on the elk population. The cumulative effect assessment should consider how all stressors (direct habitat loss, indirect effects, impacts to movement etc) from all land uses may affect the population. This would boil down to a much more meaningful and descriptive (albeit complex) assessment than merely stating that 16% of the RSA winter habitat loss, mortality, and barriers to movement are predicted to be medium, negligible and negligible, respectively" with virtually no evidence or rationale to explain these determinations of the cumulative effect within the RSA. Please provide a thorough discussion and analysis of the cumulative risks to sustaining this elk population, considering all stressors on this vulnerable population.	This assessment used a combinatio combined with other reasonably fo defined project footprints for RFDs mortality and barriers to movemen uncertainty around the exact locati effects of RFDs on Roosevelt elk hal cumulative effects of RFDs on habit assessment of cumulative effects o required to implement standard mi movement for elk.			
23	EAC Application / EIS (July 2016)	SN-078	24-Aug-16	Squamish Nation	In the context of the cumulative effects on this population, please provide a science-based comparison of the value of the high/moderate suitability habitat in the low-elevation McNab river shoreline and delta with the high/moderate suitability habitat in other areas (e.g., hillsides, higher elevation, etc) for the current elk population. The assessment treats all habitat modelled as high as having equal value when in reality there is likely a difference in the importance of high suitability habitat for the elk population if distinguishing features are considered. How may the high/moderate habitat in the McNab Creek delta be of different value to the high/moderate suitability habitat in other types of landscapes? What did the field data tell us about the difference in elk use between high suitability winter habitat that may indicate preferences or unique qualities of the McNab Creek shoreline and shoreline? We believe that this is worthy of examination to understand the importance of the McNab Creek shoreline and fan to the population, rather than simply dismissing it as equivalent to other areas nearby that are assumed to be adequate to sustain and grow the population.	See the response to SN-071 and SN			
24	EAC Application / EIS (July 2016)	SN-079	24-Aug-16	Squamish Nation	The Application states that the future Wildlife Protection Plan will include "Procedures on how to minimize habitat fragmentation between winter elk ranges". What options exist for this project to implement habitat fragmentation reductions strategies? Please describe the actions that will be undertaken to achieve this	Please see response to SN-064 and anthropogenic disturbance to minir			

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are considered resilient to imposed stresses (Quayle and Brunt 2003) and the magnitude predicted to be moderate. Reasonably foreseeable developments (RFDs), such as Eagle Project, Woodfibre LNG Project and logging activities, are estimated to affect 16% of e Terrestrial RSA. Net cumulative effects are not considered significant for Roosevelt elk tion 5.3). Approximately 84% (3,560 ha) of the Roosevelt elk habitat ranked as high and rial RSA under existing conditions will remain available. However, the conclusion that the ffect on Roosevelt elk is not based solely on the prediction that there is enough suitable RSA. The project will also not increase access to the Roosevelt elk population for hunters r increase other sources of mortality to the population, and direct habitat losses are table habitat in the Terrestrial RSA during construction and operations. These combined nificant for the Roosevelt elk population in the Terrestrial RSA, which is likely to be either runt 2003).

ent a Wildlife Management (Protection) Plan. BURNCO will work with Squamish First onents, landowners, and government representatives) in the development of the Habitat e. A detailed wildlife mitigation and monitoring plan has not yet been developed but will e Management (Protection) Plan to minimize impacts on terrestrial resources and to collect ectiveness of implemented mitigations.

on of quantitative and qualitative mean to assess cumulative effects of the Project oreseeable developments (RFDs). Direct elk winter habitat loss was quantified using the s and the predicted amount of forest harvest in the foreseeable future. Effects to changes in nt were assessed qualitatively using a reasoned narrative approach because there is some tion, geographic extent, and feasibility of the RFDs and forestry activities. The potential abitat, mortality and barriers to movement are discussed in detail in Section 5.3.3.5.1. The itat were assessed without considering their reclamation to result in a conservative on Roosevelt elk and other terrestrial wildlife species. It is expected that RFDs will be nitigations to limit cumulative effects on habitat loss, changes in mortality, and barriers to

I-075.

Please see response to SN-064 and SN-074. The Project footprint has been sited in a location with a long history of anthropogenic disturbance to minimize the fragmentation of undisturbed areas and mature forest. In addition, the Project footprint will be progressively reclaimed throughout the life of the Project.

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			BURNCO Aggregate Project Application Review Issues Tracking	
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REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)	
SN-080	24-Aug-16	Squamish Nation	The Application states that the future Wildlife Protection Plan will include "A Roosevelt elk habitat compensation plan will also be developed and implemented prior to and during the reclamation and closure phase of the Proposed Project." The elk habitat compensation plan should be provided to Squamish for review/comment prior to construction with implementation underway within 2 years of construction beginning. The permanent removal of habitat needs to be replaced reasonably quickly to offset the impact; it can't wait for the reclamation phase 16 years later. Please commit to this. Considering the sensitivity of this species, a careful consideration of the compensation commitments is required at the Application stage. Please provide a terms of reference for the compensation plan that describes the specific objectives of the plan (what is it compensating for?) so that compensation plannig will be targeted and potentially effective in replacing some of what will be lost.	Please see response to SN-069
SN-081	24-Aug-16	Squamish Nation	The monitoring and follow-up is far too vague (2 paragraphs for all wildlife) for there to be any confidence that monitoring will be sufficient to judge compliance and detect unanticipated effects. Furthermore, the Application lacks sufficient detail for EAO to articulate effective certificate conditions for monitoring requirements. We request a complete explanation of the monitoring commitments for the specific effectiveness monitoring required. What specific monitoring will be done for elk and deer? (who, what, when, where, how) How will this monitoring ensure that project effects on the elk population are being adequately managed?	Please see response to SN-063
SN-082	24-Aug-16	Squamish Nation	The Application states that "The results of the wildlife monitoring program will be evaluated annually to determine if changes in abundance for wildlife VCs are within acceptable limits." This implies that monitoring will be done for wildlife VCs at a frequency and extent to monitor abundance for each wildlife VC population with reasonable statistical power. Please confirm.	A detailed wildlife mitigation and moni Wildlife Protection Plan to minimize im effectiveness of implemented mitigatio
SN-083	24-Aug-16	Squamish Nation	How will elk monitoring contribute to the population monitoring for the Squamish – BC Land Use Agreement (2007) and the provincial elk management plan?	Where appropriate, BURNCO will be plu for the Squamish – BC Land Use Agreer
SN-084	24-Aug-16	Squamish Nation	In general, as detailed in the preceding comments, the Application fails to provide sufficient detail to convey the expected effects on ungulates at a local or regional study level. Consequently we find the residual effects characterization is not adequately supported by the evidence in the Application. Furthermore, Squamish Nation must re-iterate that any non-significant conclusion of the Project's effects on Squamish Nation's Aboriginal Rights caused by impacts to terrestrial resources is contingent on clear and defensible conclusions on this topic, as outlined in Section 11.3 (particularly 11.3.3.2.1, 11.3.3.2.3.1, 11.3.5.1.1, 11.3.6, and 11.3.8) (Volume 3 of the Application).	As noted in Section 11.3.8, the conclusi contingent on mitigation described in t Skwxwú7mesh Nation's Aboriginal Righ Part B - Section 5.3 Terrestrial Wildlife specific to Skwxwú7mesh Nation are o regulatory review of the EAC Application management and monitoring plans relation
VCH-011	31-Aug-16	Cindy Watson, CVH	VCH has a potable water hauling guideline. A Construction Permit for the container and storage tanks and distribution will be required. An Operating Permit for the system(s) is also required.	The VCH bulk potable water hauling gu bulk drinking water to the Proposed Pre therefore the potable water hauling gu be required. In the event that a potable

For MAPA addition investigations and analysis will be required for pit design

For MAPA field confirmation of desktop terrain mapping will be required.

For MAPA a detailed pit slope stability monitoring and a trigger action response plan will be required.

For MAPA detailed flood analysis and designs for McNab Creek Flood Control Dike will be required.

		EIS (July 2016)					
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nonitoring plan has not yet been developed but will be developed as part of the Project e impacts on terrestrial resources and to collect data that will help evaluate the gations.

e pleased to share elk monitoring data with the Squamish Nation and BC FLNRO biologists reement (2007) and the provincial elk management plan.

clusions on "acceptable impacts" on Skwxwú7mesh Nation's Aboriginal Rights are in the EAC Application/EIS. With respect to potential effects on the exercise of Rights related to ungulates, the relevant mitigation measures are described in Volume 2, life and Vegetation and in Volume 3, Part C - Section 11.3.4. The mitigation measures re ongoing consultation between BURNCO and Skwxwú7mesh Nation during the cation/EIS and involvement in the development and implementation of mitigation, related to deer and elk.

g guideline (VCH 2009) will be followed, as applicable, if the Proposed Project transports d Project site. It is likely that potable water will be transported to the site in bottles, g guideline and the construction and operating permits of water tanks and systems will not able water system is required, these permits will be sought and the guidelines followed.

The two water tanks described in the Section 2.5.1 of the EAC Application/EIS will be for the use of wash water for the processing of aggregate only. This water will come from the groundwater well and will be recycled on a continuous basis. The groundwater well will be subject to permitting under the Water Sustainability Act.

VCH. 2009. Regional Health Protection Guideline, Bulk Water Hauling Guideline. DW-002.

Please refer to conceptual pit design cross sections provided in EAC Application/EIS Volume 2, Section 5.4 Geotechnical and Natural Hazards (Figures 5.4-8 to 5.4-12).

Pit slope analysis is provided Appendix 5.4-Q entitled BURNCO Aggregate Project - Geotechnical Stability Analysis of Pit Slopes (EAC Application/EIS Volume 4, Part G).

A pit slope stability monitoring and trigger action response plan will be provided in the MAPA

Dike will be provided in the MAPA.

Field confirmation of desktop terrain mapping will be conducted in advance of submission of the MAPA.

A detailed flood analysis is provided in Appendix 5.4-C entitled Hydrological and Hydraulic Characterization McNab Valley Aggregate Project Howe Sound BC. Appropriate geotechnical designs and stability analysis of the McNab Creek Flood Control

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35	EAC Application / EIS (July 2016)	MEM-034	7-Sep-16	Michael Cullen MEM	For MAPA detailed analysis and designs for pit flood control dike will be required.	Design criteria for the Pit Lake Com been determined. MEM is reviewir Containment Berm. Appropriate g
36	EAC Application / EIS (July 2016)	MEM-035	7-Sep-16	Michael Cullen MEM	For MAPA additional stability analysis of project area and fan delta will be required.	Stability assessments of the Project 5.4-Q (Geotechnical Stability Analy Groundwater Channel McNab Valle provided in Volume 2, Part B, Secti are presented in Volume 2, Part B, EAC Application/EIS Appendix 5.4-1 No changes to the fan delta are pla Application/EIS, Volume 2, Section: portions of the fan delta deposits. ⁻ the steep slopes of the fan delta. The processing facilities is generally flat resulting from excessive ground mo- low to very low.
37	EAC Application / EIS (July 2016)	MEM-036	7-Sep-16	Michael Cullen MEM	For MAPA detailed analysis and designs for channel plug and spillway will be required.	Preliminary channel plug and spillw B). Appropriate geotechnical desig
38	EAC Application / EIS (July 2016)	MEM-037	7-Sep-16	Michael Cullen MEM	For MAPA additional details of stockpile stability along with an Operation, Maintenance and Surveillance manual will be required.	To maintain stability, stockpiles wil puddling of water does not occur o Construction and Protection in the activities are presented in Sections G, Appendix 3). Appropriate opera
39	EAC Application / EIS (July 2016)	MEM-038	7-Sep-16	Michael Cullen MEM	For MAPA additional details of pile and dock stability and design will be required.	A pile stability assessment and des have not been developed at this tir m) piles driven to sufficient depths very small compared to the existing conditions.
40	EAC Application / EIS (July 2016)	MEM-039	7-Sep-16	Michael Cullen MEM	For MAPA additional details on proposed mitigation for Geotechnical and Natural Hazards will be required.	A section will be provided in the M
41	EAC Application / EIS (July 2016)	ITNO-013	9-Sep-16	KL Stamford, GLTC	There should be specific noise regulations for aggregate mining	The Environmental Objectives and management practices for noise ar does not provide noise limits or reg environmental noise from the Proj Commission in the document Britis for Environmental Assessments, ar
42	EAC Application / EIS (July 2016)	ITNO-014	9-Sep-16	KL Stamford, GLTC	Noise regulations - how to enforce. Provide a response plan for property owners who have specific noise concerns during construction, operation and remediation.	A Noise Management Plan will be oppoperty owners.
43	EAC Application / EIS (July 2016)	ITNO-015	9-Sep-16	IKL Stamford, GLTC	Operation hours - confusion of operational hours is it 7am to 10pm or daylight hours only (10pm is always pretty dark even at mid-summer). Although there is specific mention of processing hours being for 5 days per week does that include barge loading? Also would like assurance that construction will be limited to a Mon-Fri work week excluding holidays.	The Sunshine Coast Regional Distri with the exception of holidays.
44	EAC Application / EIS (July 2016)	ITNO-016	9-Sep-16	KL Stamford, GLTC	Noise annoyance factor - Mitigation for certain more annoying nosies including the back-up beep in industrial vehicules such as front end loaders, dump trucks and backhoes. A vehicle backup alarm is designed to be annoying and cut through ambient background nosie. I have noticed at a log sort site at Lang Bay that this particular noise is noticable across 2.5km of water even with the ambient engine noise of the log sort. Other annoying noises include crane squeeks etc at the loading facility	Backup alarms were included in the of the EA). Human annoyance was strobe lights are commonly used in
45	EAC Application / EIS (July 2016)	ITNO-017	9-Sep-16	KL Stamford, GLTC	Look at specific reference to how noise travels more efficiently over water and to areas within a direct line of sight (ie marine loading conveyor, barge winch and barge load out jetty) to the north west area of Gambier Island.	The noise model developed for the attenuation (or lack thereof) due to a downwind condition in every dire

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ntainment Berm (referenced as the pit flood control dike in comment MEM-034) have not ng requirements for regulating the McNab Creek Flood Control Dyke and the Pit Lake geotechnical designs and stability analyses will be provided in the MAPA.

ct area have already been carried out, and are summarized in EAC Application/EIS Appendix ysis of Pit Slopes) and Appendix 5.4-B (Geotechnical Stability Assessment Compensation ley Project). Summaries of the Project area desktop terrain stability assessment are ion 5.4.4.4.4 of the EAC Application/EIS and interpretations of subsurface fan delta stability , Section 5.4.5.2.1.1. Fan delta interpretations were also based, in part, on data presented (Bathymetric and Sub-Bottom Acoustic Profiling Survey McNab Creek Docking Facilities).

anned other than the pile supported conveyor and dock facility. As stated in the EAC ns 5.4.4.6, and 5.4.4.1, there is some potential for liquefaction of the less dense upper The proposed aggregate pit and processing facilities are offset by more than 500 m from The terrain between the steep offshore fan delta slopes and the onshore aggregate pit and It to gently sloping. Consequently, the risk to the aggregate pit and processing facilities novements or potential instability of the fan delta has been considered and stated as being

way designs are presented in the Fish Habitat Offset Plan (Volume 4, Part G, Appendix 5.1gns and stability analysis of the channel plug and spillway will be provided in the MAPA.

ill be constructed with 3H:1V side slopes, slopes will be contoured so that ponding or on or near the piles, and slopes will be revegetated progressively (see Section 7.5 Stockpile e Reclamation and Effective Closure Plan). Inspections, Maintenance and Surveillance s 7.1 and 8.0 of the Erosion and Sediment Control Plan (EAC Application/EIS, Volume 4, Part rational monitoring will be conducted to maintain appropriate pile and slope stability.

sign is not suitable since detailed design and final planning for the conveyor and dock facility me. It is anticipated that the facilities will be supported on a series of small diameter (0.42 s to provide support for vertical and horizontal loads. Resulting loads are anticipated to be ng subsurface conditions and are not expected to significantly modify the subsurface

IAPA describing proposed mitigation for Geotechnical and Natural Hazards.

Best Management Practices for Aggregate Extraction in BC (BC MWLAP 2002) includes best nd is referenced in the Noise Management Plan in the EA (Section 16.2.2.9). However, it gulations. As discussed in Section 9.2.2 of the EA, in the absence of formal guidance, the ject was assessed in accordance with noise regulations specified by the BC Oil and Gas sh Columbia Noise Control Best Practices Guideline, by Health Canada in Useful Information nd in the SCRD's Noise Control Bylaw.

developed, which will include a response plan to noise concerns received from nearby

ict Noise Control Bylaw No. 597, 2008, clarifies this issue being approximately 7AM to 9PM,

e operations noise emissions, based on measurements at a similar facility (Appendix 9.2-G considered by quantifying the Percent Highly Annoyed (%HA). Broadband alarms and operations to reduce environmental annoyance.

prediction of noise effects for this project accounted for noise propagation over water and o barriers and topography. The model included conservative assumptions such as modelling ection from the project.

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46	EAC Application / EIS (July 2016)	ITNO-018	9-Sep-16	KL Stamford, GLTC	The bowl shaped valley of the McNab creek will amplify noise especially towards Gambier Island.	The noise model developed for the
47	EAC Application / EIS (July 2016)	ITNO-019	9-Sep-16	KL Stamford, GLTC	Operation - does the 10-12 hours per day include barge loading? 5 days per week - are statutory holidays excluded?	Yes.
48	EAC Application / EIS (July 2016)	ITNO-020	9-Sep-16	KL Stamford, GLTC	Were receptor measurments made across Jervis Inlet from the Treat Creek operation to determine noise impacts similar to those that could be experienced at the R4 receptor site on Gambier Island?	They were not. Measurements at the project. The noise model developed these sources to nearby receptors.
49	EAC Application / EIS (July 2016)	ITNO-021	9-Sep-16	KL Stamford, GLTC	Tables 9.2 -23-30 Annoyance factor - as vehicular back-up alarms (designed to be annoying and noticeable) have not been addressed specifically, I am questioning the results of this table as being "negligable" to residential areas within the LSA and RSA	Backup alarms were included in the of the EA). Human annoyance was strobe lights are commonly used in
50	EAC Application / EIS (July 2016)	ITNO-022	9-Sep-16	KL Stamford, GLTC	As there seems to be no noise attenuation options available for the barge loading area, I would recommend tha barge loading be restricted to the mid part of the working day (ie 9am-5pm)	Barge loading has been included in PM, , with the exception of holiday:
51	EAC Application / EIS (July 2016)	ITNO-023	9-Sep-16	KL Stamford, GLTC	Construction - clarify that construction will only occur during regular work days and that weekends and statutory holidays will be excluded.	Construction would take place M-S
52	EAC Application / EIS (July 2016)	ITNO-024	9-Sep-16	KL Stamford, GLTC	Recommend putting a air quality monitoring station on Gambier Island	Within Section 5.7.6 of the applicat Management Plan. This plan will in parameters to be monitoring and ir meteorological monitoring progran The predicted air quality concentra predicted to be well below the relev
53	EAC Application / EIS (July 2016)	ITNO-025	9-Sep-16	KL Stamford, GLTC	what is considered a "high wind event" and will there also be a shutdown of barge loading during a similar event during operations?	In this context (for calculating fugiti events that result in wind blown fug Control of Open Fugitive Dust Sourc dust management control actions a can be the absolute measured wind fugitive dust that may occur at lowe the Air Quality and Dust Control Ma
54	EAC Application / EIS (July 2016)	ITNO-026	9-Sep-16	KL Stamford, GLTC	what does it mean to air quality that 5 of 7 aggregate types will have material silt content less than 1.5%. What about the other 2 types? What is the volume expectation of those two types?	During wind erosion it is the unbou 1.5% indicated that there is not a lo The silt (fine) content of the other t emissions from these piles can be for For context the US EPA has publishe 2006. AP 42, Chapter 13.2.4 Aggre
55	EAC Application / EIS (July 2016)	ITNO-027	9-Sep-16	KL Stamford, GLTC	Table 7.4-13 when will assement conclusions be available for review in regards to visual effect of specific aspects of the project?	Vol. 2 Part B, Section 7.4 Visual Res during construction, operation, rec are included to characterize day-tin artificial light. Assessment conclusio cumulative effects of other certain
56	EAC Application / EIS (July 2016)	ITNO-028	9-Sep-16	KL Stamford, GLTC	Use the lateset dark sky recommendations and technology	The visual change resulting from th modelling and a qualitative evaluat criteria to determine the potential Illumination (abbreviated CIE for its produces internationally recognized
57	EAC Application / EIS (July 2016)	ITNO-029	9-Sep-16	KL Stamford, GLTC	No indication of how much night-time light source there will be from the loading facility. Approx how many lights? I suggest provide a night-time photo of the facility at Treat Creek, if of similar, size from across Jarvis Inlet to provide better sense of what the loading facility will look like at night.	Appendix 7.4-B Figures 10 to 17 illu images were developed from the P mitigation. Site photos and descriptions of the
			ļ		l	Figures 11 (0 13.

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prediction of noise effects for this project accounted for topography and reflections.

the Treat Creek operation were done to quantify the noise sources similar to those for the ed for the prediction of noise effects for this project accounted for noise propagation of

e operations noise emissions, based on measurements at a similar facility (Appendix 9.2-G considered by quantifying the Percent Highly Annoyed (%HA). Broadband alarms and operations to reduce environmental annoyance.

the noise assessment. As per the SCRD noise bylaw, operations will be limited to 7 AM to 9 s.

with no work on Sundays or statutory holidays.

tion the Project Proponent has committed to developing an Air Quality and Dust Control nclude details on ambient air and meteorological monitoring such as monitoring locations, instruments used to monitor. In addition, establishment of an air quality and m has been identified as a specific mitigation measure within Section 5.7.

tions as a result of the Proposed Project, in combination with existing levels were vant air quality criteria at Gambier Island (Ekins Point).

ive wind blown dust from stockpiles), high wind events are generally referred to as wind gitive dust. In general the US EPA define this as winds 19.3 km/h or greater (US EPA. 1988. ces. Report EPA-450/3-88-008). Within an Air Quality and Dust Control Management Plan, are typically driven by a specific trigger. In the case of wind blown fugitive dust, this trigger d speed and/or the trigger can be based on other factors such as visual identification of er wind speeds. Full details on dust management actions and triggers will be provided in anagement Plan

und fine content (silt content) that is typically most easily eroded. A silt content of less than ot of wind erodible material in 5 of the 7 aggregate piles.

two piles (10mm Crushed Gravel and 20mm Crushed Gravel) is 8%. The wind erosion found in Appendix 5.7-A Table A1.

ed that the silt content of various limestone projects range between 0.8 to 14 % (US EPA. agate Handling and Storage Piles)

sources of the EAC Application/EIS addresses the potential effects of the Proposed Project clamation and closure phases related to Visual Resources. Aspects of the Proposed Project me effects and effect on night-time visual environment through the introduction of ions were provided in consideration of mitigation measures for residual effects, and or reasonable foreseeable future projects.

he Proposed Project lighting design was characterized based on the results of landscape ition the overall visual effect at each of the identified night-time receptor sites. Assessment I visual effect of artificial exterior lighting was provided by the International Commission on ts French name, Commission internationale de l'éclairage) which is an authority that ed standards in the field of light and lighting.

istrate the predicted illuminance visible at each night-time receptor site. These simulated roject lighting design plan for security lighting and application of proposed lighting related

existing conditions for the nighttime visual environment are presented in Appendix 7.4-BA

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58	EAC Application / EIS (July 2016)	ITNO-030	9-Sep-16	KL Stamford, GLTC	If there are noise complaints what is the process for resolution. Suggest a resolution process be implemented ahead of construction to allow for ongoing communication between local community (Gambier and McNab) to resolve specific concerns as they arise.	A noise management plan will be deve received from nearby property owner
59	EAC Application / EIS (July 2016)	ITNO-031	9-Sep-16	KL Stamford, GLTC	How does the mineral composition of the proposed project compare with the former Britannia mine? Concerns about similar chemical reaction and subsequent poisoning of the water in the pit lake and any leached water that may occur.	See 04Nov2016 Technical Memo entit 089 and FLNRO-091.
60	EAC Application / EIS (July 2016)	ITNO-032	9-Sep-16	KL Stamford, GLTC	cumulate effect of noise does not include the Box Canyon Run of River project turbines further up the valley which has not come on line yet.	Cumulative effects due to noise were The cumulative contribution of noise f of run-of-river projects (e.g. Narrows I
61	EAC Application / EIS (July 2016)	FLNRO-060	15-Sep-16	Kelly Franz, FLNRO	Regarding Tsleil-Waututh's request to include all estuaries in the region in scope of assessment, the response from the proponent addresses barge traffic in Strait of Georgia and Fraser River but doesn't seem to address the question regarding all estuaries in the region in section 12.1.Is this question of inclusion of all estuaries still a concern?	The LSA for the marine resources asse the area in which potential Project-rel As the RSA includes the shipping route Thornbrough Channel and Queen Cha
62	EAC Application / EIS (July 2016)	FLNRO-061	15-Sep-16	Kelly Franz, FLNRO	Editorial: Vol 3 Parts C to F Cover Page is before Vol 2 Part B cover Page.	Comment noted.
63	EAC Application / EIS (July 2016)	FLNRO-062	15-Sep-16	Kelly Franz, FLNRO	SN 048 - Where will status of this concern about CEA be tracked? Will it become an EA condition?	BURNCO responded previously to com The proposed CEA approach and meth opportunities to work jointly with app project effects, to First Nations rights A summary of BURNCO's consultation in Section 13.1. This summary was wr representatives from Skwxwú7mesh N related effects on the exercise of Skwy effects. Table 19.1 provides BURNCO's commi EAC Application/EIS, should one be iss
64	EAC Application / EIS (July 2016)	FLNRO-063	15-Sep-16	Kelly Franz, FLNRO	SN-042 comments that fully developed CEMP and OEMPs should be conditions of EA.	Table 19.1 provides BURNCO's commi EAC, should one be issued for the Proj
65	EAC Application / EIS (July 2016)	FLNRO-064	15-Sep-16	Kelly Franz, FLNRO	Groundwater well discussed here will probably require licence under Water Sustainability Act	BURNCO understands that the ground licence under the Water Sustainability aspects of the Proposed Project (e.g., Smith 2015 pers. comm.) and will be s
66	EAC Application / EIS (July 2016)	FLNRO-065	15-Sep-16	Kelly Franz, FLNRO	Has the lack of consideration of Squamish values in VC development been adressed to the satisfaction of SN or is this an outstanding issue? The proponent response to this comment seems a little conflicting, saying that "Final VC selection will include species and communities of importance to FN that are not otherwise identified", but then also saying that "Rationale for excluding species potentially ocurring in the project area from the list fo selected VCs will be provided in the EAC Application/EIS."	A summary of BURNCO's consultation in Section 13.1. This summary was wr representatives from Skwxwú7mesh N related effects on the exercise of Skwy effects.
67	EAC Application / EIS (July 2016)	FLNRO-066	15-Sep-16	Kelly Franz, FLNRO	Why was no response provided to this email? Is the rationale addressing the concern about meaningful consultation documented elsewhere?	BURNCO received two emails from the requested coordinates and a request f response to PEN-003 was not provide aspects of consultation with the Penel BURNCO subsequently acknowledged use information based only on publich ethnographic studies and websites. C input on BURNCO's behalf and advised they will document in the EAC Applica use of publicly-available information.

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developed prior to construction, which will include a response plan to noise concerns mers.

entitled BURNCO Aggregate Project: Response to Information Requests ITNO-031, FLNRO-

ere not assessed because the significance of the noise VC was Negligible, Not Significant. ise from the Box Canyon project is expected to be minimal, based on previous assessments ws Inlet Hydro Project, 2012).

assessment includes the intertidal and subtidal areas within the Project footprint, which is t-related effects may occur. Estuaries within the LSA are included.

oute from the Proposed Project site through Howe Sound via Ramillies Channel, Charlotte Channel to south of Passage Island, estuaries outside of the LSA are not included.

comment SN-048 as follows:

nethod are consistent with provincial and federal guidance. BURNCO commits to providing applicable First Nations to identify potential residual project effects, including cumulative ths or interests.

tion with Skwxwú7mesh Nation on the development of the EAC Application/EIS is provided s written with input from Skwxwú7mesh Nation. Consultation activities have included esh Nation participating in the Crown-led EA process, and discussions on potential Project-Skwxwú7mesh Nation's Aboriginal Rights and potential mitigation measures to address such

nmitments for the Project. It is anticipated that these commitments will be included in the e issued for the Project.

nmitments for the Project. It is anticipated that these commitments will be included in the Project.

bundwater well that is to provide wash water for processing of the aggregate will require a bility Act. BURNCO is currently preparing a water licence application for all the other water a.g., pit lake, changes to WC 2, offset habitat etc.) as per communications with MFLNRO (M. be submitting a separate water licence application for the groundwater well.

tion with Skwxwú7mesh Nation on the development of the EAC Application/EIS is provided s written with input from Skwxwú7mesh Nation. Consultation activities have included sh Nation participating in the Crown-led EA process, and discussions on potential Project-Skwxwú7mesh Nation's Aboriginal Rights and potential mitigation measures to address such

n the Penelakut Tribe on December 1, 2015. BURNCO responded to PEN-002 with est for additional information or comments on the referral information provided. A *v*ided following discussion with the CEA Agency on a suitable approach given that procedural enelakut Tribe had not been delegated to BURNCO for this project.

ged the Penelakut Tribe's concerns regarding the use of background and land and resource blicly available sources, including published environmental assessment reports, s. Golder provided the documents in the previous email to Penelakut Tribe for review and vised that, should Penelakut choose not to review the documents and provide comments, plication/EIS that Penelakut Tribe has not provided information and does not support the

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68	EAC Application / EIS (July 2016)	FLNRO-067	15-Sep-16	Kelly Franz, FLNRO	The Hwlitsum First Nation is now being consulted on some referrals, will this project include consultation with this group?	BURNCO consulted with the Aborig Nation) and followed the additiona Hwlitsum was not included on the
69	EAC Application / EIS (July 2016)	FLNRO-068	15-Sep-16	Kelly Franz, FLNRO	Is there a plan in place (more detailed than "working together") for mitigation? is this somehow going to be a condition of the EA?	Tables 14.1 and 14.2 provide sumn Skwxwú7mesh Nation and Tsleil-W anticipated that the commitments for the Project.
70	EAC Application / EIS (July 2016)	SCRD-013	15-Sep-16	David Rafael, SCRD	The Fish Habitat Offset Plan needs to be implemented at the outset of the project to allow for mature vegetation cover and for adjustments to be made to ensure the plan functions as expected;	BURNCO has committed to constru- to the existing groundwater fed cha
71	EAC Application / EIS (July 2016)	SCRD-014	15-Sep-16	David Rafael, SCRD	Sufficient funds should be set aside by BURNCO to allow for long term maintenance of the new stream and related infrastructure, such as the overflow gate and a channel from the pit lake, to ensure the plan functions as expected and to include a contingency plan to be followed if the compensation plan fails.	Agreed, BURNCO expects that the habitat offsetting will be required u
72	EAC Application / EIS (July 2016)	SCRD-015	15-Sep-16	David Rafael, SCRD	The impact on salmonids of contaminants in the water column due to disturbance of sediment needs to be assessed;	Project activities with potential to r following: pile installation, vessel p increased contaminant exposure) of from the above listed activities has 5.2.5.2.3.1, Section 5.2.5.4.1.1 and potential adverse effects associated Application/EIS.
73	EAC Application / EIS (July 2016)	SCRD-016	15-Sep-16	David Rafael, SCRD	More thorough studies and surveys should be completed on glass sponge reef presence within 200m of any part of the project area, and along any loaded barge transit routes, during the life of the project;	Glass sponges are known to occur i baseline investigations, detailed un proposed marine infrastructure (as information recorded on existing h potential sponge reef habitats. The infrastructure (load-out jetty or wa these organisms (i.e., water depths which glass sponge reefs occur). In reefs occur in proximity to the prop Ramillies Channel (Volume 4, Part 6 along the proposed shipping route to propeller wash effects at the cor propeller scour impacts on the seal uppermost depths of glass sponge velocities derived from wave and ti waves were developed from wave Buoy (Environment Canada Station proposed tug-assisted barge mover and below the velocity threshold (C along the proposed shipping route scour on glass sponge assemblages forward in the assessment.
74	EAC Application / EIS (July 2016)	SCRD-017	15-Sep-16	David Rafael, SCRD	The possible presence and impact on Northern Abalone, a species at risk, needs to be assessed;	As part of marine baseline investiga and subtidal footprints of the prop- methods, with detailed information dive surveys in the marine environ abalone habitat were present in th Application. Potential adverse imp negligible – not significant (Table 5
75	EAC Application / EIS (July 2016)	SCRD-018	15-Sep-16	David Rafael, SCRD	If new federal government legislative criteria for acoustic injury or disturbance to marine mammals, or marine birds, becomes applicable during the life of the project then impacts of noise generating activity need to be reevaluated and updated mitigation measures applied;	If new federal government legislati applicable during the construction emissions will be based on the mos

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ginal Groups listed on the Section 11 Order (Skwxwú7mesh Nation and Tsleil-Waututh al information requirements identified by CEA Agency for several more Aboriginal Groups. list from CEA Agency.

maries of potential Project-related effects on the exercise of Aboriginal Rights by Vaututh Nation along with the mitigation measures proposed to address those effects. It is s (Volume 3, Part F, Section 19, Table 19-1) will be included in an EAC should one be issued

ucting the habitat offset channel extension prior to construction of the Project and effects nannel.

provision of a letter of credit covering monitoring, construction and maintenance of any under the fisheries protection provisions of the Fisheries Act.

result in re-suspension of sediments as a result of seafloor disturbance are limited to the propeller scour, and vessel wake wash. The impacts of altered water quality (including on salmonids as a result of seabed disturbance and subsequent sediment resuspension as been assessed under Vol. 2 of the EAC Application (refer to Section 5.2.5.2.1.1, Section d Section 5.2.5.4.1.3). Mitigation measures that will be implemented to avoid or minimize ad with sediment disturbance are outlined in Section 5.2.5.3.1 and Table 5.2-18 of the EAC

throughout Howe Sound, in water depths below -20 m (chart datum). As part of marine nderwater biophysical surveys were conducted in the proposed subtidal footprints of the s well as adjacent areas) using SCUBA and towed video survey methods, with detailed nabitat and species present in these areas. This included systematic surveys targeting e field surveys concluded that no glass sponge reefs were present in the proposed marine alkway/conveyor) footprint. This information agrees with known habitat preferences of is in the proposed marine infrastructure footprint are shallower than the depth range in In terms of interaction of glass sponge reef habitat with shipping activities, known sponge posed shipping route in several locations, with the closest occurring at the mouth of G - Section 22.0 - Appendix 5.2-A, Figure 3). However, water depths at these locations e are below -25 m (chart datum). As such, potential impacts from shipping would be limited rresponding depths of these glass sponge reef occurrences. To assess this potential impact, abed were assessed at a modelled depth of -20 m (chart datum) to correspond with the habitat. Jet velocities generated by the tug propeller at -20 m were compared to natural tidal activity in Howe Sound. Estimates of maximum horizontal velocity associated with wind hindcasts from available wind data for the Strait of Georgia using the Halibut Bank Ocean n 46146) and are summarized in Table 5.2-12. At -20 m depth, the jet velocities of the ements were shown to be within the same magnitude as tidal currents present at this depth 0.25 m/s) required for seabed particle mobilization (USACE 1989). Given that water depths e in the RSA are typically below -20 m (chart datum), the potential effects of tug propeller s in the proposed shipping corridors were considered negligible and were not carried

gations, detailed underwater biophysical surveys were conducted in the proposed intertidal posed marine infrastructure (as well as adjacent areas) using SCUBA and towed video survey on recorded on existing habitat and species present in these areas. This included systematic imment using DFO-certified abalone biologists. The field surveys concluded that no abalone or ne proposed marine infrastructure footprint, as indicated in Section 5.2.5.5.1.2 of the EAC pacts of the Project on abalone and abalone habitat were therefore considered to be 5.2-25).

tive criteria for acoustic injury or disturbance to marine mammals or marine birds becomes phase of the Project, then mitigation measures with respect to managing acoustic noise ost current legislation.

Application	Review	Issues	Tracking	
Application	ILC VIC VV	155465	Thucking	

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76	EAC Application / EIS (July 2016)	SCRD-019	15-Sep-16	David Rafael, SCRD	Vessel operators should receive an appropriate amount of training on how to avoid impact with marine mammals, as part of overall environmental related training, and records need to be kept of any incidents.	Mitigation measures applicable to and marine mammals are outlined ship strikes on marine mammals. V mammal strike.
77	EAC Application / EIS (July 2016)	SCRD-020	15-Sep-16	David Rafael, SCRD	Consideration to reclamation of other portions of BURNCO's property should be set out as a means of identifying potential offset areas to mitigate negative impacts, such as the loss of land to the pit lake, and provide habitat enhancements.	The Proposed Project footprint was undisturbed habitat (including mat Reclamation and Effective Closure restoration, methods of rehabilitat reclamation will occur progressivel supporting wildlife as soon as possi be developed as part of the Wildliff data that will help evaluate the effe
78	EAC Application / EIS (July 2016)	SCRD-021	15-Sep-16	David Rafael, SCRD	Air quality monitoring stations should be located within or near the McNab Strata community and in the northern part of Gambier Island, and in a location along the Sea to Sky corridor, for the life of the project and these monitoring stations should be established at the outset of the project in order to establish meaningful baseline information;	Air quality monitoring will begin pr Within Section 5.7.6 of the EAC Ap Control Management Plan. This pl locations, parameters to be monito meteorological monitoring prograr The predicted air quality concentra predicted to be well below the rele
79	EAC Application / EIS (July 2016)	SCRD-022	15-Sep-16	David Rafael, SCRD	Information from the air quality monitoring stations must be made publicly available;	Air quality monitoring results can b agencies.
80	EAC Application / EIS (July 2016)	SCRD-023	15-Sep-16	David Rafael, SCRD	The environmental certificate needs to include strong measures to address air quality problems and clearly identify the provincial or federal agency that is responsible for enforcement;	The comment is noted. In addition to conditions stipulated following receipt of an Environmen
81	EAC Application / EIS (July 2016)	SCRD-024	15-Sep-16	David Rafael, SCRD	Aggregate composition tests need to be done to ensure that harmful chemicals are not released during processing.	The project related release of meta was based on site specific testing o Section 9.1).
82	EAC Application / EIS (July 2016)	SCRD-025	15-Sep-16	David Rafael, SCRD	Noise monitoring stations need to be located within or near the McNab Strata community and in the northern area of Gambier Island for the life of the project;	Noise monitoring locations will be i levels at the McNab Strata and at E
83	EAC Application / EIS (July 2016)	SCRD-026	15-Sep-16	David Rafael, SCRD	Information from the noise monitoring stations must be made publicly available;	Details of processing the noise mor results can be made publicly availa
84	EAC Application / EIS (July 2016)	SCRD-027	15-Sep-16	David Rafael, SCRD	The environmental certificate needs to include strong measures to address noise problems and clearly identify the provincial or federal agency that is responsible for enforcement;	Measures for mitigating potential r Plan will be developed, which will i will establish a mutually agreeable or concern.
85	EAC Application / EIS (July 2016)	SCRD-028	15-Sep-16	David Rafael, SCRD	Site operations shall be consistent with Sunshine Coast Regional District Noise Control Bylaw No. 597, 2008.	Operations will be restricted to 7 A Noise.
86	EAC Application / EIS (July 2016)	SCRD-029	15-Sep-16	David Rafael, SCRD	The SCRD supports BURNCO'S commitment to local hiring and procurement;	Comment acknowledged. Informat
87	EAC Application / EIS (July 2016)	SCRD-030	15-Sep-16	David Rafael, SCRD	The SCRD supports BURNCO'S commitment to reaching a benefit agreement with the McNab Strata community;	Comment acknowledged. Informat
88	EAC Application / EIS (July 2016)	SCRD-031	15-Sep-16	David Rafael, SCRD	Marine tourism activities should be incorporated into the Access Management Plan.	The Marine Transport Managemen marine tourism vessels, and for op-
89	EAC Application / EIS (July 2016)	SCRD-032	15-Sep-16	David Rafael, SCRD	Recreational access to existing anchorages in the area need to be maintained;	Anchorage by Project and non-proj specifications of the Marine Transp and reflect Navigation Protection P

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vessel operators to avoid and/or minimize potential physical interactions between vessels d in Section 5.2.5.3.1.4 of the EAC Application/EIS. This includes methods in how to avoid Vessel operators will be required to record any potential incidents involving a marine

as sited in an area with a long history of anthropogenic disturbance to minimize impacts to ture forest) and to generally minimize adverse effects on terrestrial resources. A Plan will be developed and will outline the goals associated with wildlife habitat ting wildlife habitat, and parameters to gauge the success of reclamation. Habitat dy over the life of the Proposed Project to return habitat to a functional capability for sible. A detailed wildlife mitigation and monitoring plan has not yet been developed but will fe Management (Protection) Plan to minimize impacts on terrestrial resources and to collect fectiveness of implemented mitigations.

rior to the Project operations.

pplication/EAC the Project Proponent has committed to developing an Air Quality and Dust lan will include details on ambient air and meteorological monitoring such as monitoring oring and instruments used to monitor. In addition, establishment of an air quality and m has been identified as a specific mitigation measure within Section 5.7.

ations as a result of the Proposed Project, in combination with existing levels were evant air quality criteria at Gambier Island (Ekins Point) and along the Sea to Sky Corridor.

be made publicly available through arrangements with BURNCO and relevant government

d in the Environmental Assessment Certificate, relevant permitting will also be undertaken ntal Assessment Certificate.

als within particulate matter to the air (that was used in the human health risk assessment) of the aggregate. No significant effects to public health were predicted (Volume 2, Part B,

included as part of the Noise Management Plan. Stations will be located to monitor noise Ekins Point on Gambier Island.

nitoring results will be determined in the Noise Management Plan. Noise monitoring able through arrangements with BURNCO and relevant government agencies.

noise effects are presented in Table 18-1 of the EAC Application/EIS. A Noise Management include a response plan to noise concerns received from nearby property owners. BURNCO mechanism for engaging with the McNab Creek Strata owners regarding issues of benefit

AM to 9 PM, consistent with the SCRD Noise Control Bylaw section regarding Machine

tion is noted as being present. No further information required.

tion is noted as being present. No further information required.

nt Plan (see Sec. 16.2.2.11) will have relevant information for all marine vessels, including perators of tourism facilities that have a marine component, such as summer camps.

oject vessels within the Project's marine control zone will be subject to the direction and port Management Plan, and this document will incorporate Transport Canada requirements Program permitting (which the Proposed Project is subject to).

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90	EAC Application / EIS (July 2016)	SCRD-033	15-Sep-16	David Rafael, SCRD	Adequate safety lighting needs to be installed on marine facilities.	The Marine Transport Managemer and the Navigation Protection Prop installed and maintained.
91	EAC Application / EIS (July 2016)	SCRD-034	15-Sep-16	David Rafael, SCRD	The SCRD Lighting Guidelines must be followed for the lifetime of the project.	Volume 2, Part B, Section 7.4.5.3.2 Sunshine Coast Regional District O and avoid lighting impacts as a pro from the Guide on the Limitation c impacts.
92	EAC Application / EIS (July 2016)	TWN-116	15-Sep-16	Tsleil-Waututh Nation	We would like to note, in the interest of time management, that having a blank tracking document is quite time consuming - when an appropriately filled out tracking table is provided it makes entering comments much faster. We encourage the use of tracking tables where the sections and subjects have already been entered, leaving us space for comments.	Acknowledged. BCEAO / CEAA to
93	EAC Application / EIS (July 2016)	TWN-117	15-Sep-16	Tsleil-Waututh Nation	We would also like to comment that the overall geographic expanse of the LSA and RSA is continually insufficient in terms of providing a proper assessment area to look at Project outcomes; the sizes/areas chosen in this EA, in addition, to others, do not provide the holisitic perspective that represents Tsleil-Waututh Nation.	The scope of assessment of the ma the BCEAO, consists of the barge to where the barges meet the existin facilities in Burnaby and Langley. I only for Ramillies Channel, Thornb intersect with existing BURNCO sh
94	EAC Application / EIS (July 2016)	TWN-118	15-Sep-16	Tsleil-Waututh Nation	Human and Terrestrial Wildlife Heath require baseline reports in order to properly assess potential project effects on humans and wildlife. Assessing these components through pathways, such as water quality, do not provide a holistic view of impacts. TWN strongly believes that when data - qualitative or quantitative - is not available for a particular project location that it is up to the Proponent and BC EAO to ensure that any data required is created through studies and research. In addition, we encourage the use of both qualitative and quantitative methods for all baseline reports. An insufficient baseline report may result in cumulative effects that have not been properly mitigated.	Baseline information to support th Section 5.3 as well as the appendic We look at the pathways that coul identified receptors. Potential effects on Aboriginal Righ
95	EAC Application / EIS (July 2016)	TWN-119	15-Sep-16	Tsleil-Waututh Nation	We disagree with the evaluation that one VC can be better represented by another VC, especially in regards to species as each and every one is different and requires different ecological resources, whether minor or great in the project area, to sustainably thrive.	The selection of VCs for the Proposi includes narrowing down the selec - Is the candidate VC better repres Can the potential VC be effectively species, economic activity). In addition, identified Aboriginal ge AIR/EISg.
96	EAC Application / EIS (July 2016)	TWN-120	15-Sep-16	Tsleil-Waututh Nation	TWN disagrees with the exclusion of shipping lanes in the assessment as this decreases project effects related to water quality, marine resources, marine mammals, air quality and climate change. We would like to see the shipping lanes and all associated outcomes of marine vessels in the shipping lanesto be included in the assessment and most importantly, cumulative effects.	The scope of assessment of the ma the BCEAO, consists of the barge to where the barges meet the existin facilities in Burnaby and Langley. I only for Ramillies Channel, Thornb intersect with existing BURNCO sh
97	EAC Application / EIS (July 2016)	TWN-121	15-Sep-16	Tsleil-Waututh Nation	Tsleil-Waututh does not agree with the cumulative effects assessment method that considers only residual effects of the project that have the potential to interact with other projects and activities as scoped by the EA. Tsleil-Waututh assesses cumulative effects from a holistic perspective, inclusive of past (pre-contact baseline), present and future impacts on its members, culture, economy, and the environment from all projects across the territory. Tsleil-Waututh requests that all effects, including those generated by mitigatory and adaptive measures, be included in the cumulative effects assessment. We would like to discuss appropriate methods with the EAO and Proponent accordingly.	The cumulative effects assessment and standards: Operational Policy Environmental Assessment Act (CE Canadian Environmental Assessme Guideline for the Selection of Value If the Proposed Project is able to ir potential environmental effects th defined, for the purposes of this as indicator that is not measureable of or within the natural variability of foreseeable future projects.

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nt Plan (see Sec. 16.2.2.11) will specify aids and navigational lights as per Project planning gram permitting process. The navigational aids and lights specified in this plan will be

2 of the EAC Application/EIS indicates adherence to design goals contained within the butdoor Lighting Guidelines to maintain the quality of the night-time lighting environment oposed mitigation for potential lighting effects. Additional recommendations are identified of the Effects of Obtrusive Light from Outdoor Lighting Installations (CIE) to avoid lighting

advise.

arine shipping component of the Proposed Project, as defined by the CEA Agency and by traffic in Howe Sound to south of Passage Island. The scope does not include shipping from a shipping lanes in the Strait of Georgia and in the Fraser River to BURNCO's existing Incremental increases to marine traffic as a result of the Proposed Project are anticipated brough Channel and Queen Charlotte Channel in Howe Sound where the barges would hipping routes.

ne human health and wildlife assessment are provided in Volume 2, Part B - Section 9.1 and ces provided in Volume 4, Part G - Section 22.0: Appendix 9.1-A through 9.1-E and 5.3-A. Id lead to potential effects to understand the potential effects of the Proposed Project on

hts, including Current Use, are provided in Part C of the EAC Application/EIS.

used Project is consistent with the guidance provided by the Province (BCEAO 2013). This ction of VCs by asking a number of questions including, but not limited to, the following: sented by another VC?

considered within the assessment of another VC? (e.g., is it already duplicated by another

roups were consulted with and involved in VC selection during the development of the

arine shipping component of the Proposed Project, as defined by the CEA Agency and by traffic in Howe Sound to south of Passage Island. The scope does not include shipping from a shipping lanes in the Strait of Georgia and in the Fraser River to BURNCO's existing Incremental increases to marine traffic as a result of the Proposed Project are anticipated brough Channel and Queen Charlotte Channel in Howe Sound where the barges would hipping routes.

t methodology was based on guidance provided by the BCEAO and the following guidelines Statement: Addressing Cumulative Environmental Effects under the Canadian EA Agency 2007), Addressing Cumulative Environmental Effects, A Reference Guide for the ent Act (CEA Agency 1994), Cumulative Effects Practitioners Guide (CEA Agency 1999), and red Components and Assessment of Potential Effects (BCEAO 2013).

mplement widely used mitigation techniques that are known to be effective in minimizing then the resulting residual effect may be considered negligible. A negligible residual effect is ssessment, as a residual effect that will result in no change or an incremental change to the or within the natural variability of the system. If the effect is considered to be incremental the system then it is unlikely to act cumulatively with other current or reasonably

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98	EAC Application / EIS (July 2016)	TWN-122	15-Sep-16	Tsleil-Waututh Nation	We find this table to be lacking in listing Aboriginal interest of components, in addition to stakeholder importance. For example, as TWN looks at our environment with a holistic perspective we believe that all aspects of that system to be equally important and thus we have an interest in all aspects - we may be interested in Elk for example because it is hunted by TWN members, however, we are equally interested in the ecosystems and environment that supports the health and biology of that Elk. Another example would include Climate Change - this is not only an interest for Aboriginal groups, but all stakeholders, including the public and the provincialand federal levels of the Canadian government.	Table 4-2 as well as Table 4-3 were involved in VC selection during the effects on their habitat and food so Climate change was considered as	
99	EAC Application / EIS (July 2016)	TWN-123	15-Sep-16	Tsleil-Waututh Nation	Even though chinook salmon and rainbow trout were seen infrequently in the project area, they are relevant to be VCs. Not only are they extremely important species to Tsleil-Waututh, but are decreasing in many areas due to development and thus should be paid attention to accordingly.	BURNCO agrees that chinook salmo LSA of the Project. The project des effective in avoiding effects on the common salmonid species are gene instream cover, benthic invertebra will also be avoided.	
100	EAC Application / EIS (July 2016)	TWN-124	15-Sep-16	Tsleil-Waututh Nation	The "timeline" column needs to be updated throughout - please have this updated for the next review phase	The timelines presented in Table 4 As timelines for projects can chang current or reasonably foreseeable construction and operations phase	
101	EAC Application / EIS (July 2016)	TWN-125	15-Sep-16	Tsleil-Waututh Nation	TWN finds the pit lake to be of great concern - environmentally and ecologically - espeically in realtion to the fact that it will spill over and into adjacent watercourses. We belive this to be an adverse effect to fish and fish habitat and would like to understand how this will be mitigated?	During operation of the pit no surfa downslope watercourses will be fee operational. The water quality and guidelines for aquatic life and it wil	
102	EAC Application / EIS (July 2016)	TWN-126	15-Sep-16	Tsleil-Waututh Nation	Please advise whether the cement will be cured on or off land? Any additional information in regards to this process would be appreciated.	Concrete will be cast in place via ar depending on final engineering det	
103	EAC Application / EIS (July 2016)	TWN-127	15-Sep-16	Tsleil-Waututh Nation	With a) increased activity within Howe Sound and b) the high potential for the pit lake containment to fail, how would there not be any cumulative impacts? Please explain.	The pit lake containment berm wil considerations.	
104	EAC Application / EIS (July 2016)	TWN-128	15-Sep-16	Tsleil-Waututh Nation	Please indicate the size of the pit lake and where it will be located? It is hard to gain this inforamtion from the maps provided.	The pit lake developed progressive of the EAC Application/EIS. At clos	
105	EAC Application / EIS (July 2016)	TWN-129	15-Sep-16	Tsleil-Waututh Nation	There is mention of removing creosote piles during reclamation and closure. However, are creosote piles being installed during construction? Please provide further information.	There is no plan to install creosote walkway conveyor system and loac	
106	EAC Application / EIS (July 2016)	TWN-130	15-Sep-16	Tsleil-Waututh Nation	We would like to state that once the Cresotoe piles are removed, we do not consent to them being reused in Tsleil-Waututh traditional territory.	There is no plan to install creosote walkway conveyor system and loac	
107	EAC Application / EIS (July 2016)	TWN-131	15-Sep-16	Tsleil-Waututh Nation	There is a lot of woody debris in the subtidal area from a previous log dump. Is any of the debris to be cleaned up or will it be left In place? We believe in capturing net gain through all project outcomes and effects and encourage Proponents and the EAO to improve areas accordingly through current development projects.	There is no current plan to remove represents an active log sort area (

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e provided within AIR/EISg. The Identified Aboriginal groups were consulted with and e development of the AIR/EISg. When assessing the potential effects on VCs, the potential ources were also considered.

a stand-alone VC as is presented in Table 4-2.

non and rainbow trout are important species that may infrequently be present within the sign measures and mitigation measures incorporated into the Project are expected to be a salmonid species considered as VCs. Because the habitat requirements for the more merally similar to those of chinook salmon and rainbow trout (clean water, adequate flow, ate food supply and suitable substrate) it is expected that potential effects on these species

I-7 were based on those available at the time of writing the cumulative effects assessment. ge suddenly and often, the cumulative effects assessment conservatively assumed that for future project with unknown timelines, the Proposed Project would overlap with both es of that project.

face water connection between the pit lake and downslope watercourses will exist. The ed only by ground water. Only after the dredging activity has ceased will a spill structure be d temperature of surface water spilt from the pit lake is predicted to meet water quality ill be monitored to confirm the predictions.

n on-site batch plant or by truck delivery. Certain pre-cast elements may be used ails.

I be designed and built to appropriate design criteria, which include seismic stability

ely over the 16 year life of the Project. The location of the pit lake is presented in Figure 2-2 sure the pit lake will be 600 m by 500 m and approximately 35 m deep.

piles during construction. During construction, pile installation (to support the elevated d-out jetty) will be limited to 10 steel piles in the subtidal and 8 steel piles in the intertidal.

piles during construction. During construction, pile installation (to support the elevated d-out jetty) will be limited to 10 steel piles in the subtidal and 8 steel piles in the intertidal.

e woody debris in the subtidal area associated with a previous log dump given this area still (log handling activities will continue to occur in this area in the future).

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108	EAC Application / EIS (July 2016)	TWN-132	15-Sep-16	Tsleil-Waututh Nation	Are there any glass sponges located in the marine area of the LSA and RSA? Please provide further inforamtion.	Glass sponges are known to occur to baseline investigations, detailed un proposed marine infrastructure (as information recorded on existing ha potential sponge reef habitats. The infrastructure (load-out jetty or wa these organisms (i.e., water depths which glass sponge reefs occur). In reefs occur in proximity to the prop Ramillies Channel (Volume 4, Part C along the proposed shipping route to propeller wash effects at the cor propeller scour impacts on the seat uppermost depths of glass sponge velocities derived from wave and ti waves were developed from wave 1 Buoy (Environment Canada Station proposed tug-assisted barge mover and below the velocity threshold (O along the proposed shipping route scour on glass sponge assemblages forward in the assessment.	
109	EIS (July 2016)	I WN-133	12-26b-10	Tsieli-Waututh Nation	fish and marine mammals is hypothetical, which is a study method that we do not agree with. It's important that current qualitative and quantitive studies support all EA applications and Projects.	A qualified Environmental Monitor pressure levels in the field using a h established safety zone radius are t SPLpeak), as well as for marine mar respectively: 190/180 dB re 1 μ Pa S injury thresholds, as referenced in t science with respect to the effects of experimentation including species- generated during pile driving is sho reduce either the intensity of the so installation of bubble curtains arou hammer). For marine mammals, if the safety zone will be adjusted acc (with shut-down of piling when ma	
110	EAC Application / EIS (July 2016)	TWN-134	15-Sep-16	Tsleil-Waututh Nation	The Project will cause a loss of red-legged frog aquatic breeding sites and adult upland habitat. Can this loss be avoided and/or how will this loss be mitigated? TWN believes first and foremost, in avoiding habitat loss. Please explain.	Approximately 0.12 ha of habitat in lost during the construction phase. breeding habitat will be established information is provided in Section 5	
111	EAC Application / EIS (July 2016)	TWN-135	15-Sep-16	Tsleil-Waututh Nation	The Project will cause habitat fragmentation between breeding sites of red-legged frogs. What will be done to decrease this effect? Again, TWN believes in avoiding any effect on habitats. Please provide further information and mitigation plans on how net gain will be achieved.	See response to TWN-134.	
112	EAC Application / EIS (July 2016)	TWN-136	15-Sep-16	Tsleil-Waututh Nation	The loss of any habitat, whether terrestrial or marine, will require not only mitigation, but an increase in functional habitat. TWN believes in net gain through our holistic perspective and our Stewardship Policy (2009), and views mitigation as the only acceptable means of replacing what was destroyed. We expect that efforts will be made to ensure the Project improves the environment and ecology in the area. Please provide details as to how this will occur.	The Proposed Project footprint was undisturbed habitat (including matu Reclamation and Effective Closure I restoration, methods of rehabilitati reclamation will occur progressively supporting wildlife as soon as possi be developed as part of the Wildlife data that will help evaluate the effe	

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hroughout Howe Sound, in water depths below -20 m (chart datum). As part of marine derwater biophysical surveys were conducted in the proposed subtidal footprints of the well as adjacent areas) using SCUBA and towed video survey methods, with detailed abitat and species present in these areas. This included systematic surveys targeting field surveys concluded that no glass sponge reefs were present in the proposed marine Ikway/conveyor) footprint. This information agrees with known habitat preferences of in the proposed marine infrastructure footprint are shallower than the depth range in terms of interaction of glass sponge reef habitat with shipping activities, known sponge bosed shipping route in several locations, with the closest occurring at the mouth of G - Section 22.0 - Appendix 5.2-A, Figure 3). However, water depths at these locations are below -25 m (chart datum). As such, potential impacts from shipping would be limited responding depths of these glass sponge reef occurrences. To assess this potential impact, bed were assessed at a modelled depth of -20 m (chart datum) to correspond with the habitat. Jet velocities generated by the tug propeller at -20 m were compared to natural idal activity in Howe Sound. Estimates of maximum horizontal velocity associated with wind hindcasts from available wind data for the Strait of Georgia using the Halibut Bank Ocean 46146) and are summarized in Table 5.2-12. At -20 m depth, the jet velocities of the ments were shown to be within the same magnitude as tidal currents present at this depth 0.25 m/s) required for seabed particle mobilization (USACE 1989). Given that water depths in the RSA are typically below -20 m (chart datum), the potential effects of tug propeller in the proposed shipping corridors were considered negligible and were not carried

r (EM) will be on-site during the construction phase to monitor underwater sound and hydrophone and a real-time sound monitor to confirm that pile driving noise levels at the below the established acoustic injury thresholds for fish (30 kPa or 210 dB re 1 μ Pa immals (based on three established injury threshold criteria for pinnipeds and cetaceans SPLrms; 210/230 dB re 1 μ Pa SPLpeak; and 186/198 dB re 1 μ P2a SEL). These acoustic the EAC application, are not hypothetical – they are based on a synthesis of best available of anthropogenic sound on marine fish and mammals, as determined through controlled -specific physiological and behavioral response studies. For fish, if underwater noise own to exceed 30 kPa at a distance of 10 m from the source, measures will be taken to sound generated or the level of sound propagation through the water column (via und the wetted pile and/or the alternate use of a vibratory hammer in place of an impact sounds levels are shown to exceed the acoustic injury thresholds at the safety zone radius, cordingly, and marine mammal monitoring will resume using the revised safety distance arine mammal enter the safety zone).

n Pond 2 and 6 that may be providing breeding habitat for amphibians is predicted to be However, to compensate for this loss of wetland habitat, a total of 0.125 ha of amphibian d during the construction phase of the Project in four shallow ponds. Additional 5.3.1.5.5.1.1.1 (Volume 2, Section 5.3)

s sited in an area with a long history of anthropogenic disturbance to minimize impacts to ure forest) and to generally minimize adverse effects on terrestrial resources. A Plan will be developed and will outline the goals associated with wildlife habitat ing wildlife habitat, and parameters to gauge the success of reclamation. Habitat y over the life of the Proposed Project to return habitat to a functional capability for ible. A detailed wildlife mitigation and monitoring plan has not yet been developed but will e Management (Protection) Plan to minimize impacts on terrestrial resources and to collect ectiveness of implemented mitigations.

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113	EAC Application / EIS (July 2016)	TWN-137	15-Sep-16	Tsleil-Waututh Nation	TWN would like to know if, during reclamation and closure, the pit lake will become a permanent fixture? Please provide further information.	Confirming the Project involves the	
114	EAC Application / EIS (July 2016)	TWN-138	15-Sep-16	Tsleil-Waututh Nation	Please provide further information on if there were any traditional use vegetation seen in the LSA? And if so, please explain how these areas will be avoided, or provide rationale if they will not be avoided?	Data were collected on all plant spe plant species. Species considered to use species, such as those listed in Mitigation measures to reduce pot the EAC Application/EIS.	
115	EAC Application / EIS (July 2016)	TWN-139	15-Sep-16	Tsleil-Waututh Nation	Please list if there are any red-listed ecosystems to be avoided during construction and operation in the area?	Volume 2, Section 5.3.2.5.2.3 of the ecosystems were avoided as much estuarine meadow (GS/Ed02) locat conveyer, which will minimize soil	
116	EAC Application / EIS (July 2016)	TWN-140	15-Sep-16	Tsleil-Waututh Nation	TWN disagrees with the pit lake being considered as mitigation for the Project. The pit lake is simply a means to an end and should not qualify as mitigation, especially if the effects can not be determined until after Project closure. For example, the pit lake may provide a habitat, and thus a food source for grizzly bears, but the pit lake is strictly created for the project and not a habitat for grizzly bears; TWN does not see the pit lake as a mitigation measure, nor does it help to achieve net gain within a sensitive environmental area. Please provide further information and measures as to how the pit lake will be decommissioned.	The pit lake is not being designed a lake perimeter to establish wildlife productivity of the McNab system a following decommissioning. Mitiga	
117	EAC Application / EIS (July 2016)	TWN-141	15-Sep-16	Tsleil-Waututh Nation	We disagree that mitigation for wildlife and vegetation be considered post-operation. For example, how would its functionality be evaluated after project closure? All mitigation measures should occur prior to the effect occuring, in order to best decrease the effect overall. Please provide further information on how this will be done in realtion to wildlife and vegetation effects.	Wildlife and vegetation mitigation subsequent Project stages. Please s	
118	EAC Application / EIS (July 2016)	TWN-142	15-Sep-16	Tsleil-Waututh Nation	Given the amount of earthquakes that occur on a regular basis, and of all sizes, along the BC Coastal region, we do not find the LSA and RSA for the assessment of Geotechnical Boundaries to be sufficient. There is a high probability of an earthquake occuring outside of the LSA or RSA that would impact the Project area, causing detrimental ecological effects. We would like to see a more realistic LSA and RSA in realtion to Geotehcnical Boundaries based on BC Coastal ranges of Earthquake effects.	The assessment of potential effect: region including local events. Existi associated with the Cascadia Subdu	
119	EAC Application / EIS (July 2016)	TWN-143	15-Sep-16	Tsleil-Waututh Nation	We find a desktop review and mapping to be insufficient to properly assess terrain stability in the area. Aboriginal groups that frequent that area, including TWN community members, field crews, hunters and other groups that know the land, should be consulted as they can provide data that includes real life experiences of the environment. From our own experience, terrain stability within the RSA is extrememly unstable and landslides occur often. Please provide information on how such data gathering will occur.	Field confirmation of desktop terra	
120	EAC Application / EIS (July 2016)	TWN-144	15-Sep-16	Tsleil-Waututh Nation	Please provide further rational and explanation to the pasted text below (page 5-4-28 and 5.4-29) - it states that further studies are required, yet will not be done - if further studies have not occurred, how are you able to state that there is no evidence: "Further investigation and assessment will be required to evaluate the debris flood/debris flow potential and determine if engineering designs are required to mitigate potential risks. There is no evidence for debris flood/debris flows that could potentially impact the Project area. Therefore no further investigations or assessments for debris floods / flows are required and engineering designs are expected to mitigate the potential risk"	It is acknowledged that there is a c debris flows in McNab Creek both o Project Area can be considered low the flood protection dyke, will furth	
121	EAC Application / EIS (July 2016)	TWN-145	15-Sep-16	Tsleil-Waututh Nation	We disagree with the assessment that there are no cumulative effects in relation to Earthquakes and Terrain Stability. Within a holistic perspective, we believe that even if there will be a low occurrence or likelihood of an event occuring, it needs to be assessed as the outcome could be devastating.	Based on the ratings for residual ef effects on the geotechnical hazards (summarized from Vol 2 - Section 5 (1) Mass wasting events such as la evidence of terrain stability concer in the LSA (2) With mitigation measures, site (3) Anticipated engineering design	

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ne formation of a permanent pit lake.

becies observed during vegetation surveying in the Project area, including traditional use to be rare (provincially or federally listed species at-risk) will be avoided. Many traditional in Volume 2, Section 5.3.2.4.1 of the EAC Application/EIS, are common on the landscape. Itential effects to vegetation are provided in Section 5.3.2. and summarized in Table 18-1 of

he Application discusses effects of the Project on red-listed ecosystems. Red-listed h as possible during Project design. Impacts to the Tufted hairgrass - Douglas' aster ited along the shoreline were minimized by construction of a raised marine loading and vegetation disturbance.

as habitat compensation. However, vegetation will be planted around the freshwater pit e habitat. The fish habitat compensation channel is expected to improve the overall and may provide an increased food source for grizzly bear within the Terrestrial LSA gation measures are described further in Section 5.3.1.5.4 of Volume 2, Section 5.3.

measures have been considered since Project design and will be applied during all see response to TWN-136.

ts of earthquakes on the project consider seismic events that might occur throughout the ting earthquake data are used to assess seismic hazard, including potential earthquakes duction zone.

ain mapping will be conducted as per the requirements of the Mines Act Permit Application.

conflict in the cited text. The lack of evidence for significant, historical debris floods or upstream and downstream of the Project Area indicate that the risk of impacts to the w. Proposed geotechnical and natural hazards mitigation, which includes construction of ther reduce the potential for impacts to the Project Area.

effects, none were carried forward into a Cumulative Effects Assessment. Potential residual ds and terrain stability conditions were considered negligible (and not significant) because 5.4.5.5):

andslides and avalanches occur within the McNab Creek valley (RSA), however there is no rns within or adjacent to the LSA. Submarine landslide conditions were deemed not present

e geotechnical conditions will not diverge from baseline conditions; and ns and mitigation measures would minimize and manage for potential adverse effects.

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122	EAC Application / EIS (July 2016)	TWN-146	15-Sep-16	Tsleil-Waututh Nation	Please explain what guarantee, after the Project closure and with the pit lake remaining, there is that baseline level flows will remain in McNab Creek?	The rate of loss of flow from McNal surface between the creek and the using monitoring well data located will be blocked, resulting in an incre McNab Creek and the Site and a re- phases of the operational phase of will start to trend towards the base the groundwater gradient and the shall be used to refine the analysis to inform the progressive planning the rate of loss from McNab Creek)
123	EAC Application / EIS (July 2016)	TWN-147	15-Sep-16	Tsleil-Waututh Nation	Please provide us with a new version of this appendix as the second page of the letter is cut off and text is missing, making it difficult to assess the information in the letter.	Revised version of this Appendix ha
124	EAC Application / EIS (July 2016)	TWN-148	15-Sep-16	Tsleil-Waututh Nation	TWN would like to know if the documents submitted to BC MoE are available to view? And if not what is the rationale for not disclosing these documents?	The BC MOE approved detailed mo as Appendix 5.7-E.
125	EAC Application / EIS (July 2016)	TWN-149	15-Sep-16	Tsleil-Waututh Nation	We disagree in the calculation of Tugboat Emissions - Tugboat Emissions need to be calculated, using the entire vessel route for shipping. Calculating witin the Project area (which as stated before is not sufficient) does not caputure the entire cumulative effects of the Project. It states in the Appendix that this calculation is based on conversations with Health Canada - we would like to understand why emissions will only be calculated in such a small area.	Underway shipping emissions have Aggregate material will be shipped currently supplied by: - Polaris Material Corp.'s Orca Quar - Jack Cewe Ltd.'s Treat Creek Oper - Construction Aggregates Ltd.'s gra The development of the Project wo sources and processing facilities, th Furthermore, the BC EAO and CEA/ activities within Howe Sound.
126	EAC Application / EIS (July 2016)	TWN-150	15-Sep-16	Tsleil-Waututh Nation	We would like to see a comprehensive greenhouse gas emissions analysis (upstream and downstream) of the Project.	The federal requirement for quanti federal environmental assessments requirement does not apply to the
127	EAC Application / EIS (July 2016)	TWN-151	15-Sep-16	Tsleil-Waututh Nation	Looking at climate trends between 1971/1981 to 2010 is insufficient as it does not incorporate 2010 up to current day. Please provide rationale and/or another area where current day baseline conditions are discussed in relation to current goals mandated by the Government of Canada.	According to Environment Canada conditions of a particular location. many locations and as many climat Electronic resources. http://climate At the time of the assessment the 1981 to 2010 period. These datase
128	EAC Application / EIS (July 2016)	TWN-152	15-Sep-16	Tsleil-Waututh Nation	All resources and regulations that the Government of Canada and Government of BC use in regards to Climate Change should be utilized to assess this VC. For example, Canada participates in the United Nations Framework Convention on Climate Change and is required to "enact policies and measures" to address greenhouse gases; this framework needs to be added, in addition to the Climate Leadership Plan of August 2016 produced by the Government of BC. We also encourage Proponents to utilize easily accessible studies on such topics from the Canadian Council for Policy Alternatives and the C.D. Howe Institute.	Relevant guidelines and reference of and climate change assessment. M Assessment (The Federal-Provincia guidance on the quantification of G
129	EAC Application / EIS (July 2016)	TWN-153	15-Sep-16	Tsleil-Waututh Nation	We would like the Proponent to explain how they understand and define sustainable economic development? In addition, how does this definition fit into Provincial and Federal policies and frameworks within sustainable economic development? Please provide further information.	Section 2.5.2.3 describes the const framework for the Proposed Project The Sustainable Economy assessme five pillars. Several valued compone Proposed Project's economic effect EAO's guidance laid out in the publ Potential Effects".

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ab Creek to the groundwater system is proportional to the gradient of the groundwater e Site. The gradient of the groundwater surface under baseline conditions was monitored d on the Site. During the construction phase of the project the existing groundwater channel rease in the local groundwater levels, a flattening of the groundwater gradient between eduction in the rate of flow from McNab Creek to the groundwater system. During the later f the project as the pit lake is expanded in a northern direction the groundwater gradient eline conditions. Throughout the operational phase of the project the owner shall monitor water levels within the pit lake. These monitored groundwater and pit lake water levels of the closure groundwater gradient and pit lake water level. These analysis shall be used g of the mine. After closure, if necessary, the groundwater gradient can be altered (varying b) by adjusting the height of the weir at the outlet of the pit lake.

as been provided with these responses.

odel plan that summarizes the MOE comments and the agreed solutions has been provided

been considered, but not modelled, between the Project and Golden Ears Bridge.

from Project to existing processing facilities in Burnaby and Langley. These facilities are

arry at Port McNeil located on northern Vancouver Island, BC; erations located in Jervis Inlet, BC; and ravel mine located in Sechelt, BC.

ould result a reduction in barge tow distance of up to 280 km between current aggregate hereby improving the environmental impacts.

A (November 12, 2013) confirmed that the scope of assessment include only shipping

tification of upstream GHG emission sources is limited to oil and gas facilities undergoing ts (Government of Canada. 2016. Canada Gazette Vol. 150 No. 12), therefore this e Project.

"Climate Normals and Averages are used to summarize or describe the average climatic At the completion of each decade, Environment Canada updates its Climate Normals for as tic characteristics as possible." (Government of Canada. 2014. Canadian Climate Normals. te.weather.gc.ca/climate_normals/index_e.html)

most up-to-date climate normal datasets generated by Environment Canada are for the ets were used in the assessment.

documents available at the time of preparation of the assessment were used in the GHG Most notably these include Incorporating Climate Change Considerations in Environmental al-Territorial Committee on Climate Change and Environmental Assessment 2003) and GHG emissions provided by the BC MOE.

truction and operations practices that comprise BURNCO's sustainable development ect.

nent (Section 6.1) addresses the economic pillar of the Environmental Assessment Office's nents and measureable indicators listed in Section 6.1.3.1 form the basis for assessing the cts. These valued components and indicators were selected in conformance with the BC valued lication entitled "Guideline for the Selection of Valued Components and Assessment of Line No.

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EAC Application / EIS (July 2016)	TWN-154	15-Sep-16	Tsleil-Waututh Nation	This section states: "This contribution to economic development is valued by local governments and communities as it provides opportunities for income and wealth creation and contributes to a community's economic stability." Tsleil-Waututh also values project contributions based on its role in enhancing economic participation and integration of new market entrants and existing business. It would be interesting to understand the dynamics of the Project in respect of market participation and integration measures. Please provide further information and resources used.	Several valued components and Project's economic effects. The guidance laid out in the publica Effects". The potential effects of Economic Development, Local
EAC Application / EIS (July 2016)	TWN-155	15-Sep-16	Tsleil-Waututh Nation	Tsleil-Waututh was not consulted on the development or impelemntation of the New West Partnership Trade Agreement or Agreement on Internal Trade. These Agreements do not reflect Tsleil-Waututh's principles for economic development in our territory. We will be pursuing appropriate consultation with the Province and Government of Canada on all future trade agreements.	Comment acknowledged. Infor
EAC Application / EIS (July 2016)	TWN-156	15-Sep-16	Tsleil-Waututh Nation	Why is Tsleil-Waututh Nation excluded in mention from the Administrative Boundaries section? Please explain.	The reference in Section 6.1.2.: which the Project site is located the Project location is situated Project-related shipping activit Aboriginal Rights, including cur
EAC Application / EIS (July 2016)	TWN-157	15-Sep-16	Tsleil-Waututh Nation	In reference to Aboriginal peoples data, this section states: "The extent and quality of this information is limited to the level of participation within and by First Nations communities" To date, an MOU and capacity funding agreement has not yet been reached between Tsleil-Waututh and the Proponent, which would permit full and comprehensive engagement of our offices in this Projects review going forwards. We are committed to full engagement if the Proponent will enable it.	Comment acknowledged. Disc was submitted, BURNCO and T The study is expected to be cor to submit the study to EAO and
EAC Application / EIS (July 2016)	TWN-158	15-Sep-16	Tsleil-Waututh Nation	Please explain if the Sunshine Coast Regional District was approached for information on real estate conditions? If not, why?	Secondary source information Sunshine Coast Regional repres Primary information was also c representative of McNab Strata
EAC Application / EIS (July 2016)	TWN-159	15-Sep-16	Tsleil-Waututh Nation	Tsleil-Waututh would appreciate a list of the private sector research reports and academic research used in this section. Please provide.	All documents referenced in th
EAC Application / EIS (July 2016)	TWN-160	15-Sep-16	Tsleil-Waututh Nation	It is very likely that the statistics on the Howe Sound Pulp and Paper Mill require updating given recent changes. Please have these updated for the next review stage.	The years in which the data are in the report is current as of 20
EAC Application / EIS (July 2016)	TWN-161	15-Sep-16	Tsleil-Waututh Nation	Reference to non-trade based employment is made in section 6.1.5.2.2, but this section focuses exclusively on trades. What is the rationale for this? Please explain.	Table 2-12 lists the skills requir time. Section 6.1.4.1 provides baselin baseline, and includes informa Section 6.1.5.2.1 provides estir 6.1.5.2.2 assesses the Potentia business supply opportunities i
EAC Application / EIS (July 2016)	TWN-162	15-Sep-16	Tsleil-Waututh Nation	Is any business disruption anticipated as a result of this projects construction or operation? What elements were considered in determining this (i.e. BC ferries, Howe Sound recration / tourism, etc.)? Please provide further information.	Business disruption is not antic Labour market balance was ass capacity condition in the LSA, t

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nd measureable indicators listed in Section 6.1.3.1 form the basis for assessing the Proposed nese valued components and indicators were selected in conformance with the BC EAO's cation entitled "Guideline for the Selection of Valued Components and Assessment of Potential of the Proposed Project are presented by four valued components (Labour Market, Regional Government Revenue and Real Estate) in Section 6.1.5.

rmation is noted as being present. No further information required.

.3 (Administrative Boundaries) is to the traditional territory Skwxwú7mesh (Squamish) Nation in ed. This section also cites the local government entity (Electoral Area F of the SCRD) in which d within.

ties occur within the consultative boundary of the Tsleil-Waututh Nation. Potential effects on rrent use, are addressed in Part C of the EAC Application/EIS.

cussions between the Tsleil-Waututh and BURNCO are ongoing. Since the EAC Application/EIS Tsleil-Waututh Nation have met and agreed to complete a traditional use study for the Project. ompleted by December 2016. BURNCO and Tsleil-Waututh will discuss whether it is appropriate d CEAA as an addendum to the EAC Application/EIS.

was collected from several organizations, including Sunshine Coast Regional District. A sentative has participated in this assessment as a member of the assessment's Working Group. collected through an interview with a Gambier Island Local Trustee and communications with a

nis report are included in Section 21.0 (References).

e relevant are provided in Section 6.1. The Howe Sound Pulp and Paper Mill employment cited 014. A considerable amount of data is provided in the documents of the EAC Application/EIS.

red for the operation of the Proposed Project. No labourer requirements are anticipated at this

ne conditions for the Labour Market VC. Section 6.1.4.2 focuses on the Education and Skill Base ition on a range of industry-related training.

imated direct, indirect and induced employment effects of the Potential Project. Section al Project's anticipated affect on the Regional Economic Development VC, and focuses on new as measured by incremental business revenues.

cipated due to the Project.

sessed as part of Sustainable Economy Assessment. Based on foreseen labour supply and there is expected to be sufficient capacity within the LSA to meet BURNCO's hiring demands.

Potential effects to Outdoor Recreation and Tourism through Project associated changes in the quality of the environmental setting were considered not significant during both construction and operations stages.

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139	EAC Application / EIS (July 2016)	TWN-163	15-Sep-16	Tsleil-Waututh Nation	Why is the Woodfibre LNG project not considered here in light of cumulative shipping impacts to real estate values? Woodfibre based shipping will transit through Burnco's RSA.	As described in the Application Info Office on December 16, 2014), the Channel and extends across Thornk was not included in the cumulative RSA for real estate in the BURNCO I the BURNCO Project site along the jetty on the west side of Howe Sour Sound, i.e. through Montagu Chanr kilometres to the east of the northe largely shielded by Anvil Island. The In addition, potential effects on rea identified in neither the Application this project. Potential effects on re the Woodfibre LNG Project Assessm Environmental Assessment Office. T assessment certificate for the Woo Woodfibre LNG projects 80 LNG can an increase of 1% in larger vessel tr
140	EAC Application / EIS (July 2016)	TWN-164	15-Sep-16	Tsleil-Waututh Nation	Even though an assessment on the social indicators of health was not completed due to the conclusion that there are negligible interactions between the proposed Project and community health VCs or sub-components for the general population (which TWN does not agree with), why does the proponent also exclude an assessment on the cultural health of Aboriginal peoples? The adverse cultural health effects from yet another Project in the territory, potentially impacting the marine environment, sacred sites and waters, and disconnecting Aboriginal peoples from their culture is far more cumulative and holistic in scope than an assessment on air, noise, and contaminated foods. TWN expects an assessment on the cultural health of Aboriginal peoples at the very least.	Part C - Aboriginal Information Req Interests, including current use of la contribute to cultural health. The assessment presented in Sectio culture and history to be negligible Also found to be negligible during of connection with the sensory enviro heritage. At closure, no effects are and environmental setting.
141	EAC Application / EIS (July 2016)	TWN-165	15-Sep-16	Tsleil-Waututh Nation	The response provided from the Screening was unclear (TWN-099), as it simply referred back to Sections 9.1.2 and Section C. Please directly respond to the question: Have local Aboriginal policies/guidelines related to health been considered? For example, the BC First Nations Health Authority.	Health Canada considers Aborigina published in Health Canada 2012). for local Aboriginal populations. Th factsheets, so we did not identify g provide Golder with the reference a Health Canada. 2012. Federal Cont Risk Assessment (PQRA), Version 2.
142	EAC Application / EIS (July 2016)	TWN-166	15-Sep-16	Tsleil-Waututh Nation	The response provided from the Screening, which indicated that human health would be a suitable VC name, is not accurate as this VC does not consider the social, mental or cultural aspects of human health. "Physical human health" is a more accurate name for the VC compared to "human health" or "people", if biophysical is not acceptable to the authors. We would like to see this changed.	As stated previously, 'People' were with the methods described in the Environmental Assessments. The selection of VCs for the Propos addition, the Identified Aboriginal g AIR/EISg.

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prmation Requirements (AIR) document (issused by the BC Environmental Assessment RSA for real estate includes the LSA, the west shore of Howe Sound along Thornbrough brough Channel to the northwest portion of Gambier Island. The Woodfibre LNG Project effects assessment of real estate because the activities of this project lie outside of the Project assessment. The proposed Woodfibre LNG facility lies several kilometres north of west shore of Howe Sound. After leaving the Woodfibre processing facility and loading nd, the proposed shipping route for the Woodfibre LNG Project is on the east side of Howe nel and Queen Charlotte Channel. The Woodfibre LNG shipping route is situated several ern areas of Gambier Island, and views to the east from this part of Gambier Island are e Woodfibre LNG shipping route lies to the east of Anvil Island.

al estate value due to LNG carrier shipping associated with the Woodfibre LNG Project were Information Requirements document nor the environmental assessment application for eal estate values due to marine shipping associated with this project were not identified in ment Report (dated August 19, 2015) that was prepared and issued by the BC The BC Ministers of Environment and Natural Gas Development signed an environmental udfibre LNG Project on October 26, 2015.

rrier movements per year (approximate average of 7 per month), which would represent raffic in Howe Sound.

uirements addresses potential Project related interactions on Aboriginal Rights and ands and resources for traditional purposes and intangible cultural heritage which can

on C found Project associated changes in access to locations of transmission of Aboriginal during construction and operations stages, and positive at closure.

construction and operations were Project associated changes in quality of experience in onment and environmental setting at locations of transmission of Aboriginal culture and e anticipated in regard to quality of experience in connection with the sensory environment

al health within it's risk assessment guidance (e.g., wild game consumption rates are We are not aware of any local guidelines related to risk assessment and chemical exposure ne First Nations Health Authority provides guidance on healthy eating and food safety guidance that was applicable to health risk assessment. If such guidance is available, please and will review and provide comment.

taminated Sites Risk Assessment in Canada Part I: Guidance on Preliminary Quantitative 2.0. September 2010, Revised 2012. Health Canada, Minister of Health: Ottawa, ON.

indicated as the Valued Component (VC) for the human health risk assessment, consistent AIR. This is typical practice for human health risk assessments conducted in support of

ed Project is consistent with the guidance provided by the Province (BC EAO 2013). In groups were consulted with and involved in VC selection during the development of the

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143	EAC Application / EIS (July 2016)	TWN-167	15-Sep-16	Tsleil-Waututh Nation	The boundaries of both the LSA and RSA for the public health assessment are too limited, particularly to assess water quality, air quality, and country foods, as they relate to physical human health. Please provide a rationale for the determination of the LSA and RSA . Overall, we would like to see the areas increased to better assess impacts.	The boundaries for the LSA and RS. There are no health risks identified the LSA and RSA boundaries would boundaries are also harmonized w human health risk assessment. We provided the RSA and LSA boun and the RSA includes the incorpora Aboriginal groups were consulted and RSA for each discipline.
144	EAC Application / EIS (July 2016)	TWN-168	15-Sep-16	Tsleil-Waututh Nation	The Assessment indicates that "it was not possible to conduct a quantitative cumulative effects assessment for human health, as there is insufficient information available to conduct water and air quality modelling of other past, present and reasonably forseeable projects and activities and this modelling has therefore, not been carried out." Please clarify this statement and provide suggestions on how this could be addressed for future assessments. TWN believes that the lack of information is not a good enough reason to not provide proper data. If data for assessing Project effects is required, the Proponent and EAO should ensure it is gathered in all ways possible.	The data are available to assess the projects (they may not be fully dev available). In order to assess the cu the same level of information as th always the case. A qualitative assessment of cumula negligible) was made to support th team indicated that that a qualitati aggregate facility that relies heavily are low lying, emissions of concern effects (offsite particulate matter of Since air quality effects are limited projects in close proximity to the F
145	EAC Application / EIS (July 2016)	TWN-169	15-Sep-16	Tsleil-Waututh Nation	TWN finds issue with this table and the inclusion of the traditional information. The sections that are listed in the application do not mirror the TEK information, making the TEK information to be irrelevant for the VC Sections. One of the sentences in every box is: "TEK/CK sources available at the time of writing provided no specific information on (VC Section)." We disagree with this statement. If appropriate consultation occurs, the Proponent will be able to engage with Aboriginal groups, such as TWN, and gain the information needed in order to properly assess VC's, in addition to incorporating the information provided during each stage of the EA process. Further, we encourage the Proponent to request a TUS from Aboriginal groups, such as TWN, and consequently apply that information into the VC selection and application. Until an appropriate study and application of that information occurs, we do not agree with this table or the statements. We would like to know how the Proponent is going to attain TUS information from TWN, and apply it to the application. Indeed, we have provided a study scoping document for discussion.	Since the EAC Application/EIS was traditional use study for the Projec will discuss whether it is appropria
146	EAC Application / EIS (July 2016)	TWN-170	15-Sep-16	Tsleil-Waututh Nation	TWN disagrees that there will not be any effects, residual or otherwise, to Fisheries, during the Construction, Operations, Closing and post-closure stages. As mandated in our Stewardship Policy (2009) and TWN culture, we believe that the LSA/RSA are insufficient to holistically capture effects. Community members hunt, fish and harvest in the area near and around the Project; therefore, the Project will have an effect on TWN.	Comment acknowledged. The LSA Project-related effects are anticipa assessment. The assessment iden Rights and provides recommendati

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SA are extensive. The RSA is an 80km by 80km grid centered around the proposed Project. d with contaminants of potential concern in air or water within the LSA or RSA, so extending d not change the conclusions of the human health risk assessment. The LSA and RSA vith those from the air and water quality teams who provide predictions for use in the

indaries to Health Canada for discussion in the problem formulation stage of the assessment ation of additional receptor locations based on their comments. In addition, the Identified with and involved in development of the AIR/EISg which included a definition of the LSA

e Project effects; what is limited is the amount of available quantitative data for future veloped yet and/or quantitative information on air or water emissions may not be umulative effects case quantitatively for a the purposes of a human health risk assessment, hat available for the Project needs to be available for the future projects and this is not

lative effects associated with changes in air quality (effects from water quality were he risk assessment cumulative effects assessment by the air quality team. The air quality tive assessment of cumulative effects was appropriate in this case as the Project is an ly on electrical equipment. Emission sources of concern (stockpiles, screens, crushers, etc.) n are particulate matter and emission releases are not buoyant. As a result, air quality concentrations) will be limited to close proximity to the facility (see Figures 5.7-2 to 5.7-6). d to close proximity of the Facility, and because there are not reasonably foreseeable Facility, a qualitative cumulative effects assessment was undertaken.

s submitted, BURNCO and Tsleil-Waututh Nation have met and agreed to complete a ct. The study is expected to be completed by December 2016. BURNCO and Tsleil-Waututh ate to submit the study to EAO and CEAA as an addendum to the EAC Application/EIS.

A for the assessment on Aboriginal and/or Treaty Rights is the area in which potential ated to occur. The RSA is a broader area that is intended to provide further context for the ntified potential Project-related effects on the exercise of Tsleil-Waututh Nation's Aboriginal tions for mitigation measures to address those potential effects.

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147	EAC Application / EIS (July 2016)	TWN-171	15-Sep-16	Tsleil-Waututh Nation	We disagree that even though effects to the transmission of culture and history (access to the Project area from a holisitic perspective) will cease, that they are acceptable. TWN discourages any Project effects that will have an impact on TWN culture. Though the Proponent states that there will be benefial effects at the time of decomissioning, this is from the Perspective of the Pronponent and not from Aboriginal Groups, such as TWN that utilize the area for cultural and sacred purposes. The idea that there will be positive effects at the time of decommission clearly outlines that the Project itself will have a negative effect overall. TWN would prefer to see such positive effects occur now, with a purpose to always return our land to the way it was time out of mind, in order to support our right to desired use of our land. From page 11-91: "Changes in access to locations associated with transmission of culture and history. All Proposed Project effects identified in construction and operations are anticipated to cease. Reclamation during decommission gis anticipated to have beneficial effects on terrestrial resources, which in turn may have a positive effect on harvesting quantities. Positive effects are not carried forward."	BURNCO based the effects assessm Tsleil-Waututh Nation did not prov culture, BURNCO relied on publicly to Tsleil-Waututh Nation for review BURNCO is committed to ongoing of potential Project-related effects an proposed the following mitigation is addition to those described in Part - Barge movements would occur m during weekends depending on the would not occur on weekends whee - As part of the Marine Transportat also develop and implement strate related disruption of marine-based Proponent would consult with Tsle manage the interaction of Propose - To address the expected increment mitigation measures are recomment - Provide Tsleil-Waututh Nation wit Volume 3, Part E - Section 16.0. Ba Tsleil-Waututh Nation to provide T including movement of Proposed P harvesting locations or locations as - Consult with Tsleil-Waututh Nation
148	EAC Application / EIS (July 2016)	TWN-172	15-Sep-16	Tsleil-Waututh Nation	TWN would like to better understand mitigation plans for areas of concern in regards to fisheries and cultural heritage. It states that mitigation will result in no residual effects, however we do not agree with this statement.	BURNCO requires more informatio comment. BURNCO is committed to ongoing potential Project-related effects an BURNCO has proposed the followir Aboriginal Rights by Tsleil-Waututh To address potential changes in ac - As part of the Marine Transportat also develop and implement strate related disruption of marine-based Proponent would consult with Tsle manage the interaction of Propose To address potential effects on qua culture and history, the Proponent - Providing Tsleil-Waututh Nation v in Volume 3, Part E - Section 16.0. Tsleil-Waututh Nation to provide T including movement of Proposed F harvesting locations or locations as To address potential effects on pra - Consult with Tsleil-Waututh Natio
149	EAC Application / EIS (July 2016)	MOE-048	19-Sep-16	Graham Veale, MOE	Section 2.1 Bulldozing Emissions & Section 2.2 Fugitive Road Dust indicate that the mean silt and moisture content used in the emissions estimates were generic values derived from AP-42. Is no site specific information available for these values (as this would be more representative) ?	At the time of the assessment no si material.

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ment on information provided by Aboriginal Groups or from publicly-available sources. As vide specific information on potential Project-related effects on Tsleil-Waututh Nation y-available information. The information included in the EAC Application/EIS was provided w and comment prior to submission.

consultation with Tsleil-Waututh Nation to better understand their perspectives on nd to discuss mitigation measures to address those potential effects. BURNCO has measures to address effects on the exercise of Aboriginal Rights by Tsleil-Waututh in t B of the EAC Application/EIS:

nostly during weekdays from Monday to Friday, but there may be infrequent movements the operational requirements of the mine. However, loading of barges during operations en peak recreational activity occurs.

tion Management Plan outlined in Volume 3, Part E - Section 16.0, the Proponent would egies, best management practices and guidelines to avoid and minimize Proposed Projectd activities during construction and operations. As part of the development of this plan, the eil-Waututh Nation to discuss strategies (including but not limited to routing options) to ed Project vessel traffic with users during times of harvesting or other cultural use.

ental effects on quality of experience for Tsleil-Waututh Nation, the following additional ended:

ith opportunities to review and provide input to the Access Management Plan described in ased on provisions of the Access Management Plan, develop a communications plan with Isleil-Waututh Nation with real-time information on construction and operations activities, Project-associated vessels, that may affect quality of experience when using fishing and ssociated with transmission of culture and history.

on to identify locations within Howe Sound where members may conduct practices related ing of such practices, if relevant, and measures that would reduce effects from the Proposed

on on the specific concerns related to fisheries and cultural heritage to fully respond to this

consultation with Tsleil-Waututh Nation to provide additional information and to discuss nd potential mitigation measures .

ng mitigation measures to address potential Project-related effects on the exercise of h related to fishing and cultural heritage.

ccess to freshwater resources, the Proponent proposes:

tion Management Plan outlined in Volume 3, Part E - Section 16.0, the Proponent would egies, best management practices and guidelines to avoid and minimize Proposed Projectd activities during construction and operations. As part of the development of this plan, the eil-Waututh Nation to discuss strategies (including but not limited to routing options) to ed Project vessel traffic with users during times of harvesting or other cultural use.

ality of experience related to fishing and using locations associated with the transmission of t recommends:

with opportunities to review and provide input to the Access Management Plan described Based on provisions of the Access Management Plan, develop a communications plan with Isleil-Waututh Nation with real-time information on construction and operations activities, Project-associated vessels, that may affect quality of experience when using fishing and ssociated with transmission of culture and history.

actice of cultural heritage, the Proponent recommends:

on to identify locations within Howe Sound where members may conduct practices related ing of such practices, if relevant, and measures that would reduce effects from the Proposed

site specific information was available concerning the silt or fines content of the surface

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Application Revi	iew Issues	Tracking

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150	EAC Application / EIS (July 2016)	MOE-049	19-Sep-16	Graham Veale, MOE	Please provide all input and output files associated with the CALPUFF dispersion modelling. The files should be provided in the original formats to allow for cross-checking and re-run of the modelling project.	An external hard drive containing a mailed to the BC MOE.
151	EAC Application / EIS (July 2016)	MOE-050	19-Sep-16	Graham Veale, MOE	Section 2.1.3.1 On Site Monitoring Description: If the Dustfall sample fluid was frozen as indicated, then the sample is invalid and any analyses would be deemed suspect.	The dustfall sample was not used f collected to support the human he The human health team used the h added to the soil concentration me concentrations were predicted by None of the Project soil concentrat which was below regional backgro deposition to the measured baseli
152	EAC Application / EIS (July 2016)	MOE-051	19-Sep-16	Graham Veale, MOE	Section 2.1.3.2 Data Processing: The limited data sets (2 TSP samples and 1 Dustfall sample) are insufficient to determine, with any confidence, representative background metals concentrations and deposition rates. Also. sampling occurred in November when particulate concentrations and any associated metals are likely to be low. Note also, earlier comment re. the validity of the frozen dustfall sample.	Please refer to response to MOE-0 Background metal concentrations was investigated. The updated me concentrations (project plus backg concentrations and human health Response to Information Request I
153	EAC Application / EIS (July 2016)	MOE-052	19-Sep-16	Graham Veale, MOE	Section 3.1.2.1 PM10 & Section 3.1.3.1 PM10: Establishing the 98th percentile value as a baseline concentration is appropriate for modelling purposes but comparison to the BC air quality criteria (i.e. as stated in the text and Tables 5 & 13) is inappropriate as the BC air quality criteria is based on the maximum measured value.	The comment is noted. The ambient air quality objectives of the background concentrations.
154	EAC Application / EIS (July 2016)	MOE-053	19-Sep-16	Graham Veale, MOE	Section 5.7.3.3.3.1 Measurable Indicator Compounds: How were the predicted metals concentrations determined? E.g. from modelled metals emission rates or using model-predicted particulate concentrations and then metals apportioned according to the assumed baseline metals concentrations derived from the limited on-site monitoring?	Metal concentrations were predict overburden. Background metal co concentrations. The aggregate material was tested maximum metal content from the In other words Aluminum had a m third depth; therefore, the aluminu (aluminum/aggregate mass). The metals in soil were tested at 7 overburden material.
155	EAC Application / EIS (July 2016)	MOE-054	19-Sep-16	Graham Veale, MOE	Section 5.7.5.3.1 Construction contains a commitment to establish a continuous air quality & meteorological monitoring program prior to and during the construction phase. Section 5.7.5.3.2 Operations does not explicitly mention that the program will continue during the operational phase although Table 5.7-11 indicates that it will. Also the air quality & meteorological monitoring program discussion in Section 17.5 Air Quality focuses solely on the construction phase with no mention of the operational phase. Please confirm that the air quality and meteorlogical monitoring program will continue through the operational phase of the facility.	It is confirmed that the air quality a facility.
156	EAC Application / EIS (July 2016)	MOE-055	19-Sep-16	Graham Veale, MOE	Section 16.2.2.8 Air Quality and Dust Control Plan: There is no mention of disposal of unusable vegetation from land clearing activities. Is open burning considered as an management option for this material? If so, acknowledgement of the BC Open Burning Smoke Control Regulation should be made along with a commitment to comply with the OBSCR.	The area has been historically clea contemplated for managing vegeta Regulation.

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associated CALPUFF modelling files used to support the air quality assessment will be

for the Air Quality Assessment. Background dustfall and metal deposition data was ealth assessment.

background metals deposition rates to predict an incremental increase in soil that was then easured as part of the human health baseline sampling program. Project soil using project and background metal deposition rates provided in the air quality assessment. tions exceeded environmental quality guidelines or standards with the exception of arsenic bund levels compiled by the BC MoE. The addition of the contribution of background metal ine soil concentrations is a conservative method for estimating baseline conditions.

050 comment with regards to background dustfall.

using the limited metals data within the National Air Pollution Surveillance (NAPS) dataset etal background concentrations were added to model predictions and the application case's ground) screened through the human health assessment. The updated background metal screening are presented in 16-Nov-16 Technical Memo entitled BURNCO Aggregate Project: MOE-051.

were provided along with background concentrations to provide context to the magnitude

ted using model-predicted TSP concentrations and metal assays for aggregate material and concentrations, established using the onsite data, was added to predicted metal

d at three different depths of the pit (45 to 65 feet, 70 to 95 feet, and 100 to 110 feet); the three depths was then used to describe all aggregate material and by extension emissions. hass content of 1.58 ppm at the first depth, 1.8 ppm at the second depth and 1.59 at the tum fraction of all aggregate material and all aggregate TSP emission was assigned 1.8 ppm

locations, the 95% percentile mass content was then used to describe the metal content of

and meteorological monitoring program will continue through the operational phase of the

r cut and vegetation onsite is grassland and thick brush. Open burning is not currently ation. If this changes, BURNCO will comply with the BC Open Burning Smoke Control

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157	EAC Application / EIS (July 2016)	MOE-056	19-Sep-16	Graham Veale, MOE	Section 17.5 Air Quality: The Air Quality & Meteorological Monitoring Program discussion is vague and lacking the information required by the AIR - notably identification of: Monitoring objectives; Main program components, specific monitoring activities, and schedule (including duration); and Effectiveness assessment, including adaptive management, of measures proposed to mitigate potential environmental effects. More detailed information on, for example, the air quality and meteorological parameters to be monitored and the type of equipment to be used, as well as proposed threshold criteria for triggering additional mitigation and what that mitigation might be would be useful.	The objective of the monitoring pla measures are effective. The monitoring will include both m of interest to provide context to the meteorological station will at minir matter (TSP) will be continuously n location will be located at the perir the availability of power. Monitori operation phase. The meteorological and air quality Management Plan) which will be p Aboriginal groups will be able to ide provided an opportunity and avenu and follow up with air concerns wil BURNCO will fund the Project's me
158	EAC Application / EIS (July 2016)	MV-002	14-Sep-16	Metro Vancouver	Tug boat emissions are inaccurately depicted as large Category 3 engines. Tug boats, depending on their engine size are generally Category 1 engines and the emission factors would be different from Category 3 engines. The impact of selection of inaccurate emission factors has most likely resulted in higher NOx emissions and lower PM emissions. What are the potential impacts of this error on overall emission estimates?	Emission rates for particulate matteemission factor equation which acc (refer to Appendix 5.7-A). The BSF Vessel Emission Inventory (the Cha particulate maximum daily emission Particulate matter emissions rates Chamber of Shipping (2007) for slo particulate emissions would increat tugboats in underway (0.02%) and assessment. With regards to NOX emissions for engines results in a decrease of dai estimated in the air quality assessn
159	EAC Application / EIS (July 2016)	MV-003	14-Sep-16	Metro Vancouver	VOC (volatile organic compounds) have been excluded from the air quality analysis, with no justification provided. We asked for emissions estimates.	VOC and diesel particulate matter a Furthermore, due to the limited nu and dozers) VOC and diesel particu in the air quality and human health
160	EAC Application / EIS (July 2016)	MV-004	14-Sep-16	Metro Vancouver	Diesel particulate matter (DPM) as not been considered as a discrete pollutant in either the air quality analysis or Human Health Risk Analysis. We asked for commentary on the potential DPM exposure impacts.	Due to the limited number of comb and diesel particulate matter emiss and human health assessment.

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an is to monitor ambient particulate concentrations to confirm that planned mitigation

neteorological parameters and particulate concentrations. The meteorological parameters ne particulate concentration data are wind speed, wind direction and temperature; the mum monitor the aforementioned parameters. It is currently anticipated that particulate monitored using an E-BAM or SHARP. It is anticipated that the particulate monitoring meter of the facility, although this will be confirmed based on other considerations such as ing will commence prior to the construction phase and continue throughout the Project's

monitoring data will support the Project's Environmental Management Plan (Dust repared in consultation with MOE and others.

lentify sensitive areas that will be included in the dust management plan and will be ue to contact the Proponent should an air quality concern arise. The methods used to log Il be stipulated in the Dust Management Plan.

eteorological and air quality monitoring program.

ter (TSP, PM10 and PM2.5) for MGO fuel in underway mode was based on a revised PM counts for both the vessel's break specific fuel consumption and the fuel sulphur content FC factor for slow engines were used from Table 16 of the 2005-2006 BC Ocean-Going amber of Shipping 2007). If the BSFC factor for medium or fast engines were used then the ons rates would increase minimally by 0.02%.

For MGO fuel in maneuvering mode was based on the emission factors in Table 17 of the ow engines; if medium or fast engine emission factors are used then maximum daily ase by 2%. The minimal increase in maximum daily particulate matter emissions for a maneuvering mode (2%) is not expected to change the conclusions of the air quality

r both maneuvering and underway mode, using emission factors for medium and fast illy maximum emissions rates. Therefore, tugboat emissions for NOX are conservatively ment. Emission rates for SOX would be unchanged.

are not considered indicator compounds within the AIR/EIS Guidelines.

umber of combustion sources associated with the project (tug boats, welding emissions, ulate matter emissions were not considered parameters of interest, and were not included h assessment.

bustion sources associated with the project (tug boats, welding emissions, and dozers) VOC ssions were not considered parameters of interest, and were not included in the air quality

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161	EAC Application / EIS (July 2016)	MV-005	20-Sep-16	Metro Vancouver	It is helpful that the Proponent has described some mitigation measures and a general sense of their effectiveness in this Application/EIS. However, Proponents should be required to include all management plans in their Application/EIS to ensure a fulsome evaluation of all proposed mitigation measures and increase confidence.	The purpose of the Environmental environmental legislations and Pro- performance-based environmental potential for environmental effects several site or activity-specific Envir Project provides performance-base accordance with regulatory approv Commitment and Assurances and p CEMP cannot be written. In additio finalized which are also needed to o Contractor's EPPs/ EMP Componer several of the EPPs/EMP Compone CEMP and the OEMP will be drafter (Squamish) First Nation, and the Ts necessary throughout the lifetime o in the EAC Application/EIS is the fir.
162	EAC Application / EIS (July 2016)	MV-006	20-Sep-16	Metro Vancouver	Please provide additional justification for excluding an assessment of impacts from increased shipping to existing BURNCO facilities in Burnaby and Langley via the Strait of Georgia and the Fraser River. For example, information about the incremental increase in vessel trips will provide context. In addition, please provide commentary on potential changes to on-road traffic volumes in Burnaby and Langley due to greater product supply.	The scope of assessment of the ma the BCEAO, consists of the barge tr where the barges meet the existing facilities in Burnaby and Langley. The purpose underlying the Propos supply gravel to Lower Mainland lo
163	EAC Application / EIS (July 2016)	MV-007	20-Sep-16	Metro Vancouver	As stated on Page 7.4-19, the visibility modelling completed "does not accurately consider the effect of factors such as viewing distance or atmospheric conditions". Metro Vancouver and the Sea-to-Sky Clean Air Society have established visibility/visual air quality improvement as a priority in our air quality management plans. Hence, the lack of assessment of visual air quality impacts from the Project remains a concern.	The statement on Page 7.4-19, refe modelling does not consider the eff considered conservative as these fa Vol. 2 Part B, Section 5.7.5.2.2 of th visual degradation.
164	EAC Application / EIS (July 2016)	FLNRO-069	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Further clarification on how the proposed pit lake elevation can be used to manage hydrostatic pressure during the course of operation. The local groundwater flow will be affected during the development of the pit lake. Loss of base flow within the upper and lower reaches of McNab Creek is inevitable.	Portion of McNab Creek immediate to the groundwater system is prope to the construction of the groundw Project and this loss was increased under baseline conditions was mon the project the existing groundwater flattening of the groundwater gradi Creek to the groundwater system. in a northern direction the groundw operational phase of the project th These monitored groundwater and gradient and pit lake water level. T necessary, the groundwater gradie pit lake outlet.
165	EAC Application / EIS (July 2016)	FLNRO-070	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Further clarification is required on the potential impact of removal of the upper segment of the groundwater channel (WC2) on the receiving environment (quality and Quantity). Provide adequate assessment on the overall environmental condition of the upper and lower segments of WC2 during closure and post closure.	The description and quantification Appendix 5.1-A of the application. not exist at closure. The lower sect baseflow. During construction and amount of available wetted area is quality of the habitat offset created

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Management Program is to assist BURNCO and its contractors in adhering to applicable pposed Project Commitments and Assurances specified in the EAC Application by providing requirements, standard protocols, and mitigation measures to avoid and reduce the throughout the Proposed Project. The CEMP will consist of the Management Plan and ronmental Protection Plans (EPPs) and EMP Component Plans. The CEMP for the Proposed ed environmental requirements to be met by Contractor(s) in conducting work in vals, BMPs, Commitments and Assurances, and engineering specifications. Until a full list of permit conditions have been finalized by the BC EAO and the CEA Agency, a final detailed on, at this stage of the Proposed Project not all engineering specifications have been complete the CEMP. The CEMP also provides the basis for the development of the nt Plans to be prepared prior to the commencement of construction activities, therefore ent Plans will be developed by the contractors for the Proposed Project. In addition, the ed in consultation with relevant permitting agencies, local governments, the Skwxwú7mesh sleil-Waututh Nation and will be considered living documents that can be adapted as of the Proposed Project. The outline of the CEMP, OEMP and EPPS/EMP component plans rst step in that consultation process.

arine shipping component of the Proposed Project, as defined by the CEA Agency and by raffic in Howe Sound to south of Passage Island. The scope does not include shipping from g shipping lanes in the Strait of Georgia and in the Fraser River to BURNCO's existing

used Project is outlined in Section 2.2. Gravel from the Proposed Project will be used to ocated processing plants owned and operated by the proponent. The gravel supplying these ced from three other locations.

ers to the limitation of desktop -based visibility modelling. In acknowledging that visibility ffect of factors such as viewing distance or atmospheric conditions, the results are factors would likely reduce the visibility of the Proposed Project (e.g., fog or haze).

ne EAC Application/EIS provides the results of a qualitative assessment of the potential of

tely north and east of the Site is a losing stream. The rate of loss of flow from McNab Creek bortional to the gradient of the groundwater surface between the creek and the Site. Prior water channel there was loss from McCab Creek to the groundwater that flows though the d when the groundwater channel was constructed. The gradient of the groundwater surface nitored using monitoring well data located on the Site. During the construction phase of ter channel will be blocked, resulting in an increase in the local groundwater levels, a dient between McNab Creek and the Site and a reduction in the rate of flow from McNab During the later phases of the operational phase of the project as the pit lake is expanded water gradient will start to trend towards the baseline conditions. Throughout the he owner shall monitor the groundwater gradient and the water levels within the pit lake. d pit lake water levels shall be used to refine the analysis of the closure groundwater These analysis shall be used to inform the progressive planning of the mine. After closure, if ent can be altered (varying the rate of loss from McNab Creek) by adjusting the height of the

of the habitat present in upper and lower sections of WC2 are provided in section 3.1.3 of The upper section of the channel will be completely removed during construction and will tion of the channel will not be directly impacted but it will be affected by a reduction in d well prior to closure an extension of the existing channel will be constructed so that the substantially increased prior to closure and post closure. The quantity and predicted d by the channel extension is described in the Section 5.3 of Appendix 5.1-B.

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166	EAC Application / EIS (July 2016)	FLNRO-071	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	In Part E of the Environmental Management, it says "This will include existing wells that will not be removed as part of the aggregate extraction and additional wells installed to monitor groundwater levels during operations." Provide groundwater monitoring and management plan during the construction, operation, reclamations and closure phases of the project. Provide further clarification on decommissioning of the existing monitoring wells within the proposed pit as the pit lake development progresses. If existing wells will be removed or decommissioned during completion of the pit lake, is there any contingency plan for groundwater monitoring at closure and reclamation of the mie.	In Section 5.6.5.3 of the EAC Applic operations and closure of the projec of the open pit including existing we groundwater levels during operatio monitor water levels and water qua on the flows in creeks down gradier removed as part of the aggregate ex- retained, decommissioned following Sustainability Act brought into force
167	EAC Application / EIS (July 2016)	FLNRO-072	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The prediction that base flows in McNab Creek remain above baseline conditions is not supported by the conceptual hydrogeological model provided in Appendix 5.6 A, Figure 11. At low flow, particularly drought conditions, the upper reaches of McNab Creek loses baseflow to the groundwater aquifer. The proponent hasn't provided the potential impacts of reduced water volumes at the lower reaches of McNab Creek, the lower segment of the groundwater channel, wetlands, and riparian habitat.	Figure 11 presented in Appendix 5.6 the valley aquifer in the area of the construction of the groundwater ch was increased with the constructior Project will result in losses from Mc conditions.
168	EAC Application / EIS (July 2016)	FLNRO-073	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	In Appendix 5.6 A, the proponent will need to include methodologies used to develop wells and hydraulic testing of the granular sediments. Please specify if there have been any guidelines followed to complete well development and hydraulic testing. The slug testing results in the hydrogeological characterization report were not referenced. Further, borehole logs for monitoring wells, drill holes, and test pits were not provided in the document.	In Section 2.3 of Appendix 5.6-A of and testing were provided. Interna slug tests were summarised in Secti 5.6-A. Borehole logs are also provi
169	EAC Application / EIS (July 2016)	FLNRO-074	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	In Appendix 5.6 A, Section 2.4. Until 2014, the proponent completed groundwater and surface water monitoring using pressure transducers to record pressure and temperature. There are data gaps between 2014 and current time. Groundwater and surface monitoring should be an ongoing effort that reflect current and future conditions of water level and temperature. Please provide data gaps on pressure and temperature for surface water, groundwater, and high and low tides. The proponent should be monitoring groundwater and surface water levels, temperature and pressure during construction, operation, reclamation, and closure of the mine.	Section 2.4 in Appendix 5.6A of the for thirteen monitoring wells over the and temperature at two stations on 2010 to October 2014. These data a model for the purposes of the EAC <i>i</i> relevance to groundwater was press following: 1) Monitoring wells locat part of the aggregate extraction and monitoring wells installed at the bor west; 3) monitoring of water levels undertaken as part of the surface we either be removed completely (they detailed in the 2016 Groundwater P 2016).
170	EAC Application / EIS (July 2016)	FLNRO-075	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The proponent should develop site specific water quality objectives for the project. Baseline groundwater quality was compared to the Environmental Protection Division of British Columbia Water Quality (BCWQ) Guidelines for the protection of aquatic life (30-day average) (BC MoE 2015a, BC MoE 2015b) and Canadian Council of Ministers of the Environment (CCME 1999) in order to identify any parameters of concern in groundwater samples collected at the Project.	Baseline groundwater quality data v protection of aquatic life to characte to these surface water quality guide Concentrations of water quality par and CCME water quality guidelines assessment was conservative in tha BC. Contaminated Site Regulation g values for the protection of aquatic Given the conservative approach ta site specific water groundwater qua

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cation/EIS a monitoring plan of relevance to groundwater was presented for construction, ect and consisted of the following: 1) Monitoring wells located upstream and downstream rells not mined out as part of the aggregate extraction and additional wells to monitor ons). 2) additional monitoring wells installed at the bottom of the east facing slopes to ality inputs from the west; 3)monitoring of water levels in the pit lake; and 4) data collected ont of the pit lake undertaken as part of the surface water monitoring program. Any wells extraction will either be removed completely (they will be mined out) or if they cannot be ng procedures detailed in the 2016 Groundwater Protection Regulation (part of the Water e in February 2016).

6-A shows that the McNab Creek is currently a losing stream, with stream water recharging Project. This occurs independently of low or high flow conditions in the creek. Prior to the nannel (WC2) there was loss to the groundwater that flows through the Project. This loss n of the groundwater channel (WC2). Under seasonal variations or drought conditions the cNab Creek that would be equivalent to those occurring under pre-development

the EAC Application/EIS, the methodologies for the development of the monitoring well al procedures were followed that are consistent with industry guidelines. The results of the ion 2.3 of Appendix 5.6-A and the detailed results are present in Appendix A of Appendix ided as supplemental information to this IR.

e EAC Application/EIS provides continuous water levels and temperatures in groundwater the period of July 2010 to October 2014. It also provides continuous surface water level in McNab Creek and two stations on the groundwater channel over the period of August a are then used to calibrate the numerical hydrogeological model and the water balance c Application/EIS. In Section 5.6.5.3 of the EAC Application/EIS a monitoring plan of sented for construction, operations and closure of the project and consisted of the the dupstream and downstream of the open pit including existing wells not mined out as and additional wells to monitor groundwater levels during operations). 2) additional ottom of the east facing slopes to monitor water levels and water quality inputs from the is in the pit lake; and 4) data collected on the flows in creeks down gradient of the pit lake water monitoring program. Any wells removed as part of the aggregate extraction will ey will be mined out) or if they cannot be retained, decommissioned following procedures Protection Regulation (part of the Water Sustainability Act brought into force in February

were conservatively screened against BC and CCME water quality guidelines for the terize baseline conditions for the project. Groundwater quality predictions were compared elines and to the groundwater baseline condition.

rameters predicted in groundwaters during operations and closure were either below BC for the protection of aquatic life or the baseline condition. This groundwater quality at these provincial guidelines are generally applied to surface waters not groundwaters in groundwater standards are typically 10x the corresponding BC water quality guideline c life.

Iken in the groundwater quality assessment and the assessment findings, the derivation of ality objectives is not considered to be applicable to this environmental assessment.

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171	EAC Application / EIS (July 2016)	FLNRO-076	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	In Appendix 5.6 A , Section 2.5, there has been no explanation provided for the high turbidity measured consistently in monitoring Well MW05-1. Monitoring well MW05-1 also showed the highest Increases in groundwater elevation (up to 5m) in response to winter precipitation. This will likely have deleterious effect on water quality of the pit lake and outflows to the receiving environment.	As presented in Section 2.5 of Appe attributed to the silty sediments ad was noted that the greatest increas to the western boundary - in additi There are no proposed discharges f quality monitoring will be conducted
172	EAC Application / EIS (July 2016)	FLNRO-077	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Significant component of recharge to the pit lake mainly comes from run-off from the bedrock slope on the western portion of the site. Therefore, the water quantity and quality flowing from the western portion of the site will contribute significant amount of recharge to the pit lake. Please provide further assessment into the runoff flowing from western portion of the site. Are the quality and quantity of the runoff included in the Water Quality Model?	As discussed in Appendix 5.6 A in the component of groundwater rechars in the western portion of the site for potential mounding in well DH10-0 was further evaluated during transi- match was established between hy portion of the site and model predi- entire western slope catchment con- hydrogeological model. The quant Water Quality Model.
173	EAC Application / EIS (July 2016)	FLNRO-078	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	During the screening review, the proponent has been requested to provide assessment of structures and hydrogeology of the bed rock. The hydrogeological property of a possible fault structure that parallels McNab Creek is not known. The existence and potential connectivity of a fault structure to the salt water aquifer renders saltwater intrusion to the central and southern portion of the site. Lower reaches of McNab Creek, and the receiving environments will likely be impacted due to the potential salt water intrusion. The flat gradients along the southern portions of the valley will also likely be affected by high tides and intrusion of saltwater into the shallow aquifer. The proponent should provide salt water intrusion risk assessment and management plan.	The hydraulic conductivity of the va they exist. Therefore, the groundw position of the salt water-freshwate hydraulic heads are expected to be 3.3 in Appendix 5.6-A of the EAC Ap groundwater elevation only in rare intervals, there is an inferred landw less than the corresponding period groundwater flow direction during Moreover, monitoring data indicate elevation; analytical calculations ba relatively high groundwater flow in overburden/bedrock contact within of a fault structure in bedrock in the the valley sediments or increase the
174	EAC Application / EIS (July 2016)	FLNRO-079	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	As for any proposed sand and gravel aggregate mine, extraction/pumping of groundwater from the Burnco site during mine operation will likely lower the water table and risk the intrusion of salt water into the valley fill aquifer. Please provide risk assessment of a potential salt water intrusion to the pit lake and the receiving environment. The proponent must provide best management practices (BMP) and/or mitigation plan for a potential saltwater intrusion in the valley fill aquifer and the receiving environment. When we are making a licensing decision, a licensee is considered to be making beneficial use of the water only if the usage is compliant with the Water Sustainability Act. The WSA S. 58. According to the Act, a well should not be operated in such a way as to cause intrusion of saline groundwater, sea water or contaminated water into an aquifer, or stream that is interconnected with an aquifer, so that there is a significant adverse impact on the aquifer or interconnected stream, and existing usage of such.	As described in Section 2.5 of the E aggregate material over a 16-year p subacqueously without dewatering progresses . Therefore, no extraction intrusion to the pit lake and the rec Application/EIS, based on monitori occasions between July and Septen landward gradient in the immediat periods of southwards gradient ass the entire monitoring period is con indicate that the saltwater wedge of calculations based on methodology groundwater flow in the alluvial sec contact within 50 m to 150 m of the intrusion will not occur.

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endix 5.6-A of the EAC Application/EIS the high turbidity in monitoring well MW05-1 was djacent to the well screen. In Section 3.2 of Appendix 5.6-A of the EAC Application/EIS, it uses of up to 5 m in response to winter precipitation were observed in wells located closest ion to MW05-1, this included DH10-01, DH10-06 and DH10-07.

from the pit lake during operations; the outlet will be installed at closure. Pit lake water ed as presented in the EAC Application/EIS (Part E, Volume 3, Section 17).

the EA, run-off from the bedrock slope to the west was considered to be a significant rge to the valley aquifer based on observed changes in hydraulic heads in monitoring wells following rainfall events. This observation was supported by analytical calculations of 07s presented on page 6 of this memorandum. The magnitude of this recharge component sient calibration of the hydrogeological model (Appendix 5.6 D, page 5) where a reasonable ydraulic head changes observed during the wet season in monitoring wells in the western licted changes. It should be noted that precipitation minus evapotranspiration for the portributing to the McNab Valley sediments was applied as a groundwater flux to the tity and quality of this groundwater flow from the west slope was included as input to the

valley sediments is much higher than hydraulic conductivity of any bedrock structures, if vater flow in the valley sediments will dominate and it will provide key control on the ter interface. Furthermore, because of topographic highs that surround the valley, the e higher than in the valley sediments, inhibiting saltwater ingress. As presented in Section Application/EIS, based on monitoring data (2010-2014), tidal elevations exceeded e occasions between July and September of each monitoring year. During these high tide ward gradient in the immediate vicinity of the shoreline; however, its duration is inherently ds of southwards gradient associated with lower tidal position. Accordingly, the net g the entire monitoring period is confirmed to be southwards toward the marine foreshore. te that the saltwater wedge could be located at greater depths than approximately -30 m based on methodology presented in Domenico and Schwartz (1990) showed that, due to in the alluvial sediments, the saltwater edge could be depressed to the depth of the in 50 m to 150 m of the ocean shore. Based on these observations, the potential presence ne vicinity of the project area is not considered to influence groundwater flow direction in ne risk of saltwater intrusion.

EAC Application/EIS, the mine plan for the Project envisions gradual extraction of the period using a "wet extraction" method. That is, aggregate would be extracted g of the aggregate pit, thus allowing gradual formation of a pit lake as the mining ion/pumping will occur during mine operation that could induce potential salt water aceiving environment. As presented in Section 3.3 in Appendix 5.6-A of the EAC ring data (2010-2014), tidal elevations exceeded groundwater elevation only in rare mber of each monitoring year. During these high tide intervals, there is an inferred te vicinity of the shoreline; however, its duration is inherently less than the corresponding sociated with lower tidal position. Accordingly, the net groundwater flow direction during nfirmed to be southwards toward the marine foreshore. Moreover, monitoring data could be located at greater depths than approximately -30 m elevation; analytical ty presented in Domenico and Schwartz (1990) showed that, due to relatively high ediments, the saltwater edge could be depressed to the depth of the overburden/bedrock ne ocean shore. Therefore, due to lack of groundwater extraction from the pit, saltwater

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175	EAC Application / EIS (July 2016)	FLNRO-080	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Model Boundary Condition Assignment: Specific head boundary condition was assigned to McNab Creek in the groundwater water model. We recommend to replace the specific head boundary condition to head dependent flux to better represent the surface water groundwater interaction between McNab Creek and groundwater.	As described in Section 2.2.2 of Ap McNab Creek and the valley fill aqu During site visits the creek bottom identified. Rather, the creek botto Channel. Therefore, the use of spe connection to this creek is consider aquifer.
176	EAC Application / EIS (July 2016)	FLNRO-081	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	In Section 2.3.4 of the GW model, the ratio between horizontal and vertical conductivity was increased from 5:1 to 20:1 without any supporting data or rationale. This ratio has been used for model calibration. The use of such a high ratio between the horizontal and vertical gradient should be verified using field data and/or relevant literature. In high permeable aquifers this ratio is not expected to be high.	As described in Section 3.1 of Appe been measured at the site, it was of bedded structures associated with anisotropy ratio assigned to the va material properties and within the John Wiley & Sons, New York, 535 during sensitivity analysis and resu influence on the predicted pit lake
177	EAC Application / EIS (July 2016)	FLNRO-082	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	In Section 2.3.4 of the GW model, two high permeability features introduced in the central and northern portion of the site were merely used to match observed heads during model calibration. Introduction of these features without supporting data could compromise the model outcomes. Further, the subsurface material in the northern portion of the site is of low permeability.	The rational behind the introductic EAC Application/EIS. The existence prediction was further assessed via Application/EIS. Based on the resu influence on predicted pit lake leve
178	EAC Application / EIS (July 2016)	FLNRO-083	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Section 2.3.2 Transient Calibration- September 2010 to January 2011. What is the basis for the assumption that 50% of precipitation infiltrates to the subsurface, with the remainder being lost to evapotranspiration and runoff?	Estimated infiltration to the subsur conductivity of the surficial sedime during transient calibration when t This is similar to the "water table fl Estimating Groundwater Recharge
179	EAC Application / EIS (July 2016)	FLNRO-084	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Section 3.5 Sensitivity Analysis: Is the sensitivity analysis for the groundwater model reflective of site hydrogeological conditions? The proponent completed 18 model sensitivity simulations. We are of the opinion that the proponent should provide the entire groundwater model to EAO/FLNRO/ENV so that the TWG will be able to run, test and verify the model and sensitivity analysis.	As described in Section 3.5 of Appe the average hydrogeological condi ranges that reflected uncertainty ir at the Project. Overall, 18 model s portion of the valley fill aquifer (ab of the valley fill aquifer was increas isotropic; specific yield of the aqui second deep permeable feature was discharge from bedrock to the valle run-off from the slope west on the slope west on the site was increase increased and decreased. it should were reviewed and signed by exter

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oppendix 5.6-D of the EAC Application/EIS, surface water-groundwater exchange between uifer was assumed to be unimpeded by the creek sediments due to their coarse nature. It was inspected and the presence of lower permeability material along this bottom was not por sediments resembled in nature the coarse sediments exposed in the Groundwater ecified head boundary conditions to represent McNab Creek that do not impede hydraulic ered appropriate to conservatively represent the interaction between the creek and the

endix 5.6-A of the EAC Application/EIS, although vertical hydraulic conductivity has not considered very likely that the aquifer material is anisotropic due to interbedded and crossa the aquifer depositional environment that were observed during site investigations. The alley fill aquifer during calibration of the model is considered reasonable based on the e range of values published in literature (Todd, D.K., 1980. Groundwater Hydrology, 2nd ed., p). Moreover, the influence of this parameter on predicted model results was assessed ults showed that changes in anisotropy of the valley fill aquifer has a relatively small e level and loss from McNab Creek.

on of those features in the model was explained in Section 2.3.4 of Appendix 5.6-D of the e of each of these feature was based on conjecture; therefore their influence on model a model sensitivity analyses described in Section 3.5 of Appendix 5.6-D of the EAC a sensitivity analysis, the presence of the two structures has a relatively small el and loss from McNab Creek.

rface was based on the relatively flat topography of the project area and the high hydraulic ents. The recharge value was then refined during the model calibration process, in particular the water table rise in response to precipitation was adequately reproduced by the model. fluctuation method" commonly used to estimate groundwater recharge (Haley, R.W., 2010. e, University Press, Cambridge, UK).

endix 5.6-D of the EAC Application/EIS, in the sensitivity analysis, the model representing itions was run repeatedly while model input parameters were individually varied over in these values. These sensitivities considered all parameters controlling groundwater flow sensitivity simulations were completed as follows: hydraulic conductivity of the shallow bove 20 m depth) was increased and decreased; hydraulic conductivity of the deep portion used and decreased; hydraulic conductivity of the deep portion used and decreased; the first shallow permeable feature was removed; the vas removed; both permeable features were removed; the flux representing groundwater ley aquifer was increased and decreased; the flux representing infiltration of surface water e site was increased and decreased; the flux representing groundwater inflow from the end decreased; and the flux representing groundwater inflow from the ted and decreased; and the flux representing recharge from direct precipitation was d be noted that the conceptual and numerical models including model uncertainty analysis ernal expert Dr. Leslie Smith of UBC.

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180	EAC Application / EIS (July 2016)	FLNRO-085	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Gradual development of the pit lake was predicted to affect average annual groundwater discharge to WC 2 existing in the center of the valley fill aquifer." A total of 19% decrease in groundwater discharge from the pre-development discharge to the entire WC2 water course was predicted. This is a significant amount of groundwater that likely supports habitats in the receiving environment. Does the proponent have any mitigation plan during the gradual development of the pit lake?	As described in Section 2.4 in Part A constructed by DFO (1985-2003) to ditch banks, only short segments of middle sections currently function or ultimate outline of the aggregate pi will enable the pit lake groundwater within the propose project footprint foreshore area and connected to the lower segment of the existing WC 2 operations would initially cause a de elevation gradually rises throughout increase. At closure, a spillway will the southern margin of the pit lake. as predicted at the end of mining as 5.5 of Part B of the EAC Application, including total wetted surface area aproposed mitigation. All potential p negligible
181	EAC Application / EIS (July 2016)	FLNRO-086	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The following monitoring wells will be destroyed during the development and completion of the mine: HD10-07 in Year 3; DH10-02 in Year 10; and MW05-1 and DH10-01 in Year 15. These monitoring wells have been used to collect water level and chemistry data during baseline study. Please provide a groundwater monitoring well replacement plan at closure and post closure of the mine.	As presented in response to FLNRO- groundwater was presented for cor Monitoring wells located upstream aggregate extraction and additional installed at the bottom of the east f of water levels in the pit lake; and 4 the surface water monitoring progr. completely (they will be mined out) Groundwater Protection Regulation
182	EAC Application / EIS (July 2016)	FLNRO-087	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	There is no clear water management plan provided by the proponent. Please provide a comprehensive water management plan that will also incorporates the potential effects of extreme weather conditions such as flooding, draught, and spring freshet on the water balance of the local and regional study area.	A comprehensive Water Manageme Water Sustainability Act License. Po on the water balance are assessed i these conditions are also outlined ir proposed monitoring related to aqu Part E - Section 17.0.
183	EAC Application / EIS (July 2016)	FLNRO-088	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The assumption that "dissolved fraction rather than particulate (i.e. total) fraction dominates water quality in groundwater seepage" can not be a valid assumption. In groundwater, particle size just over 0.45 micro meter can transport colloidal metals and metalloids to receiving environments. This can have deleterious effects on aquatic habitats. Please verify the assumption above and discern between the dissolved versus the particulate bound metals and metalloids.	As presented in Section 5.6.5.2.2.2 assessment was undertaken to under aquatic environments by groundwa estimates of hydraulic gradients, it v northern boundary of the pit lake v groundwater seepage was carried the In the unlikely case that particles lar lake and are unlikely to be resuspen
184	EAC Application / EIS (July 2016)	FLNRO-089	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Inadequate geochemical characterization of samples collected from the fine storage area north of the pit. Section 3.4 indicates that the proponent was not able to collect samples from the deeper zones of the deposit of the fine storage area during sample collection campaign. As recommended by Golder (2014a), the proponent should collect samples from deeper in the deposit to confirm the characteristics of the fine fraction. The water quality of the pit lake can be affected by input from the fine storage area and the type of water flowing in to the pit lake.	See 04-Nov-16 Technical Memo ent 089 and FLNRO-091.

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A of the EAC Application/EIS, WC2 is a groundwater-fed watercourse designed and provide spawning and rearing habitat for chum and coho salmon. Due to erosion of the the upper portion appear to be functioning as spawning habitat, and the lower and only as rearing habitat. In the first year of mining, the upper portion of WC2 within the pit would be de-activated by constructing a plug immediately down-gradient of the pit. This r recharge to re-establish and maintain natural groundwater levels. The loss of WC 2 it will be offset by the construction of a new groundwater-fed watercourse extension in the ne existing watercourse below the plug. This extension would mimic the features of the that are suitable for aquatic habitat. De-activation of the upper portion of WC 2 during ecrease in groundwater discharge to WC 2 downgradient of the mine but as the pit lake t the mine life the average groundwater discharge to the watercourse would gradually be constructed above the extension where it connects to the pit lake flood control berm at . The spillway will be designed to manage the pit water level and keep it at 5.0 m elevation s well as to enable the pit to overflow during high precipitation events. As stated in Section /EIS, despite the reductions in base flow, other hydrologically significant variables and average flow depth of WC 2 are expected to increase with the implementation of project-related residual adverse effects on fish and fish habitat were determined to be

0-074, in Section 5.6.5.3 of the EAC Application/EIS a monitoring plan of relevance to instruction, operations and closure of the project and consisted of the following: 1) and downstream of the open pit including existing wells not mined out as part of the all wells to monitor groundwater levels during operations) . 2) additional monitoring wells facing slopes to monitor water levels and water quality inputs from the west; 3)monitoring 4) data collected on the flows in creeks down gradient of the pit lake undertaken as part of tram. Any wells removed as part of the aggregate extraction will either be removed .) or if they cannot be retained, decommissioned following procedures detailed in the 2016 n (part of the Water Sustainability Act brought into force in February 2016).

ent Plan will be provided within the Erosion and Sediment Control Plan (ESCP) for the otential effects of extreme weather conditions such as flooding, draught, and spring freshet in Volume 2, Part B - Section 5.5 and 5.6 of the EA. Mitigation measures associated with in these sections and will form the basis of the Water Management Plan. In addition, uatic resources (surface water, groundwater and aquatic health) are provided in Volume 3,

(Page 5.6-29) of the EAC Application/EIS and in Appendix 5.6-E, a geotechnical derstand the potential for transport of particulates from the pit lake to the downstream ater seepage gradients around the proposed gravel pit. Even under conservatively high was found that the potential for transport of particulates either through the southern or was very low. Consequently the assumption of the dissolved fraction dominating through in the water quality assessment.

rger than 0.45 μm are transported by groundwater, these particles would settle in the pit nded.

titled BURNCO Aggregate Project: Response to Information Requests ITNO-031, FLNRO-

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185	EAC Application / EIS (July 2016)	FLNRO-090	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	As most sand and gravel pit mines, water in the pit lake will likely contain significant amount of suspended particles and nutrients. The assumption that the receiving environment locations MCF-7, MCF-6 and MCF-12 receive 100% of their flow as dissolved fraction from the pit lake is unlikely. High turbidity and suspended particles render the potential for metals to be transported as particulate bound (total metals) rather than in the dissolved form. The same can be said for the groundwater inflow to the pit lake. The assumption that the groundwater inflow into the pit lake contain no particulate is not consistent with field conditions. Some metals and metalloids have the tendency to adsorb to fine fractions of the suspended particulate matter. This likely change the fate and transport of metals and metalloids and their impact on the receiving environment.	During operations, seepage from the groundwater flow pathways. At M pit. At MCF-7, only a minor compo- particulate (i.e., dust) will also cont continue to be dominated by grour However, MCF-6 will receive both a As outlined in Appendix 5.5-D, grou fraction, owing to low groundwate particulates through the southern of fraction dominates existing ground Furthermore, if particles larger that are unlikely to be resuspended. Ba- lake water quality predictions, para corresponding particulate water qu- by the model approach, which assu- Metals of potential environmental predicted concentrations of these p - Beryllium and mercury occur at c limits exceed the applicable water an issue. The results water quality analyses of Be and Hg, will be used - Total and dissolved aluminum co surface water conditions; the existit the ""dissolved"" aluminum concent
186	EAC Application / EIS (July 2016)	FLNRO-091	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Sampling location, depth, and number of samples for geochemical test on fine materials are not adequate to represent surface water runoff and groundwater seepage from the fine storage area. The proponent has used the geochemical test results as input water quality for the water quality model. Further, groundwater from north of the pit (containing separated fines) has been used as input water to the Pit lake. As design of monitoring programs, mine planning, and mitigation strategies are based on the water quality model, the proponent should revisit results of the geochemical tests on the fine storage materials.	See 04-Nov-16 Technical Memo en 089 and FLNRO-091.

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the pit lake will report to receiving environment locations MCF-7, MCF-6 and MCF-12 via MCF-6 and MCF-12, 100% of the flow is represented by groundwater seepage from the open onent (5%) of seepage will be contributed to receiving water. In addition, airborne tribute load to receiving water during operations. At closure, water quality at MCF-12 will indwater seepage from the open pit, and groundwater seepage will report to MCF-7. groundwater seepage and pit lake overflow.

andwater inflow into and out of the open pit was assumed to contain no particulate er flow rates. Per the response to Issue ID FLRNO-088, the potential for transport of or northern boundary of the pit lake is low. Therefore, the assumption that the dissolved dwater seepage and future groundwater seepage from the pit lake is reasonable. an 0.45 µm are transported by groundwater, these particles would settle in the pit lake and ased on a review of the groundwater water quality data used to develop inputs to the pit rameters that exceed the water quality criteria in the dissolved phase also exceed the uality criteria. Therefore, potential parameters of concern have been adequately captured umes that the dissolved fraction dominates in groundwater seepage.

l concern in the pit lake include aluminum, beryllium and mercury. With respect to the parameters:

concentrations less than the analytical detection limit; however the analytical detection quality criteria. As the parameters were not detected, it is unlikely that they will present monitoring conducted during the early stages of the project, which will include low level d to update the water quality predictions.

oncentrations exceed the applicable water quality criteria in existing groundwater and ting water quality was used to develop model inputs. However, it is considered likely that entrations measured in existing groundwater samples actually occurs in particulate form

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187	EAC Application / EIS (July 2016)	FLNRO-092	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Pit Lake and Receiving environment water quality: During operation, exceedances of both total and dissolved aluminum, beryllium, and mercury were reported in the water quality model. In the receiving environment (MCF-1, MCF-7, MCF-3, MCF- 6) both dissolved and total aluminum, beryllium, and cadmium exceeded the BCWQ guidelines for the Protection of Aquatic Life and CCME Guidelines for the protection of Aquatic Life. Further, total copper, mercury, and silver also exceeded the above guidelines. Provide water management plans to treat contaminated water before reaching the receiving environment ?	Dissolved and total aluminum, bery Case scenario (i.e., median concent - Predicted total and dissolved alum discussion in Section 5.5 of the App - Predicted beryllium concentration model input. All measured beryllium inputs for beryllium were assumed water quality monitoring exceed the aquatic life (which was updated after limits to better assess beryllium cor - Similarly, the water quality data u detection limits. These detection de monitoring will utilize lower detecti As Be and Hg concentrations measus detection limit, it is considered unlil monitoring conducted during the ea update the water quality prediction In the Conservative Case scenario (mercury exceed WQGs in the pit an also exceeded in the receiving envir seen at MCF-7 and are driven by hig The water quality predictions was to p
188	EAC Application / EIS (July 2016)	FLNRO-093	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Figure 2-9 in Volume 1 Part A Sections 1-3: Project Washwater Cycle: Well water is 4% of total water input where is the rest of the water coming from? There are no specific information on the size, location, volume, and pumping schedule of the proposed groundwater well that will be used as water supply during operation of the mine. Introduction of the proposed water supply well will likely affect local groundwater flows and direction in the vicinity of the well and can also cause salt water intrusion as the zone of influence may extend to the saltwater aquifer.	As described in section in Volume 1 efficient wash water recycling proce pumped at a daily rate of 160 m3/d will be installed near the wash plan and as such will have negligible effe design is not complete but will mee Sustainability Act brought into force
189	EAC Application / EIS (July 2016)	FLNRO-094	15-Sep-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	M-5.1-02 - Proponent described one of their proposed mitigation for the pit lake as "Designing the pit lake such that lake elevation can be used to manage hydrostatic pressure through the course of operations so changes to groundwater flow does not lead to a loss of flow within McNab Creek. We are of the opinion that loss of water from McNab creek during construction of the Pit lake is inevitable.	Losses from McNab Creek to the gr constructed and this loss increased during this Project but the analysis Mitigation would be undertaken if t greater than baseline.
190	EAC Application / EIS (July 2016)	FLNRO-095	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	End of P. 18 references a few documents to support the comprehensive environmental management program. Where can I find the "Fisheries Habitat Protection and Mitigation Plan"? And the Spill Prevention and Emergency Response Plan (SPERP), the CEMP, and the OEMP? [Note: ESCP and Fish Hab offset plan also referenced are incuded in the Appendices]	The Fisheries Habitat Protection and Environmental Management Plan a preparation for the permitting proc Aboriginal groups.
191	EAC Application / EIS (July 2016)	FLNRO-096	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"the proposed project will remove potential breeding habitat for amphibians" < this is aquatic habitat. Salvage prior to construction may require a wildlife permit. infilling of wetland habitat is generally not supported by FLNRO. if no other option exists, area proposed to be infilled should be mapped and similar to fish habitat, wetland habitat should be offset using like-for-like principles. Please provide a table that outlines the wetland area impacted and the wetland area proposed for offseting project impacts.	Please see response to FLNRO-097. habitat for amphibians. Amphibian nearby, suitable habitat if necessary amphibian salvages.

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yllium, and mercury exceed WQGs in the pit and receiving environment under the Base tration inputs):

ninum concentrations exceed the reference criteria in existing baseline conditions, as plication.

ns exceed the reference criteria owing to the analytical detection limits used to develop the im concentrations were at or below analytical detection limits, and water quality model to be half these detection limits. However, the beryllium detection limits used in existing ne BC 30-day average working water quality guideline for the protection of freshwater ter water quality analysis was completed). Continued monitoring will utilize lower detection ncentrations relative to this working guideline.

used to develop mercury inputs to the water quality model were at or below analytical etection limits exceed the BC 30-day average water quality guideline. Continued ion limits to better assess mercury concentrations relative to the guideline.

ured in surface and groundwater quality monitoring samples were below the analytical ikely that they will present an issue in the receiving environment. The results water quality early stages of the project, which will include low level analyses of Be and Hg, will be used to ns.

95th percentile or maximum inputs), dissolved and total aluminum, beryllium, and nd receiving environment, and total and dissolved cadmium, total copper, and total silver ronment. Receiving environment exceedances of cadmium, copper, and silver are only igh input concentrations at this location used in the Conservative Case.

porated natural occurring processes and Project Components to the extent practicable; the provide input to the aquatic risk assessment. Given that elevated concentrations of

1 – Section 2.5.6.1. of the EAC Application/EIS, the rest of the water will come from an cess. As presented in Section 5.6.5.2.1.2 of the EAC Application/EIS, the well will be day during operations. Although groundwater flow will be affected near to the well, which nt, it represents less than 0.3 % of the total groundwater flow through the valley deposits fect to overall groundwater flow and will not cause up-coning of seawater. The specific well et the requirements of the 2016 Groundwater Protection Regulation (part of the Water ce in February 2016).

oundwater in the sediments of the Project occurred before the groundwater channel was when the groundwater channel was constructed. There will be losses from McNab Creek indicates that the losses will be less than baseline conditions for much of the Project life. these losses, through monitoring of groundwater and surface water levels, are found to be

d Mitigation Plan, Spill Prevention and Emergency Response Plan, Construction and the Operational Environmental Management Plan are currently under development in cess. There will be finalized in consultation with relevant regulatory agencies and

. The Project design mitigations minimize wetland infilling and the removal of breeding salvage will be conducted to relocate individuals to habitat compensation areas or other γ. A General Wildlife Permit will be obtained from FrontCounterBC prior to conducting

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192	EAC Application / EIS (July 2016)	FLNRO-097	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	loss of 0.88 ha of wetland ecosystem. As above, please provide the map & table to confirm area lost is adequately compensated? what is the current extent and use of existing wetland area? if surveyed, what time of year? egg mass surveys? Re: proposed amphibian ponds in offset plan: What monitoring is proposed to determine viability & use of amphibian ponds over duration of the project. The "New Riparian Area" around the lake 150 years down the road, is a completely different type of habitat. the proposed lake perimiter appears to have steep banks which may not be amenable to amphibian use as this proposal seems to indicate. Please provide further clarificaiton on conceptual lake habitat after closure if it is intended to be part of the compensation of amphibian habiat loss. How are temporal losses of amphibian habitat being considered / compensated?	Amphibian pond breeding surveys surveys were conducted on June 2 Information Standards Committee 2.2.1 of the Wildlife Baseline Repor legged frog breeding habitat was of Baseline Report). Please see response to FLNRO-136 by the Project. The loss of 0.8 ha of compensated for in the Fish Habita equivalent riparian forest surround was confirmed were overlaid with removed. The loss of Ponds 2 and 6 Western redcedar – Sitka spruce-S Offset Plan (Volume 4, Part G – Ap and 6 are shown in Figure 9 of the is expected to be very brief, as wet operations. Monitoring of offset habitat will b experience monitoring habitat com 2, 3 as well as years 5 and 16. Mon monitoring are provided in the Fish Please see response to FNLRO-101
193	EAC Application / EIS (July 2016)	FLNRO-098	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	spill prevention - will equipment being used near water be equipped with biofuel? This will be a requirement of water licence.	The proposed floating dredge wou would be biodegradable such as M Response Plan detailed in Volume
194	EAC Application / EIS (July 2016)	FLNRO-099	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	wildlife monitoring proposed should have a timeframe committed to either in the main text of the EAO report, but will also be a requirement of any OEMP (provided this is an operational environmental management plan) which will be required as part of the water licence.	A detailed wildlife mitigation and n developed as part of the Wildlife M data that will help evaluate the eff construction and continue through
195	EAC Application / EIS (July 2016)	FLNRO-100	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Fish and Fish Habitat monitoring - similar to above, clear commitments need to be made in the associated documents specifying how long monitoring will occur for, what is to be submitted to regulatory agencies (and how), etc.	It is anticipated that a fish and fish under the fisheries protection prov refined during the authorization pr
196	EAC Application / EIS (July 2016)	FLNRO-101	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Please clarify the project benefits statement that "new amphibian breeding habitat will be created within the lentic zone of the pit lake at closure." As mentioned above, I do not fully understand how this habitat would be created if pit lake edges are currently proposed to be very steep. Also lentic zone been demonstrated to provide good quality habitat for the same target species which would otherwise be occupying the wetland.	The pit-lake will be constructed with and then landscaped and contoure Northern red-legged frog breedin with standing water (Lannoo 2005) rushes (Juncus spp.) or sedges (Car of the shallow water zone can vary the waterbody. Water depths for I shoreline (Briggs 1987). Using thes approximately 2 ha of the pit-lake l the pit-lake was designed to ensure was not included in the 0.125ha of habitat relative to the four comper

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were conducted to determine presence on March 26, 2012 and March 25, 2014 and adult (6, 2012. Inventory Methods for Pondbreeding Amphibians and Painted Turtle (Resources (RIC] 1998) were followed. Amphibian survey methodology is described further in Section ort. Data recorded included life phase (i.e., egg masses, larvae or adults). Northern redconfirmed in Ponds 1 to 3 in 2012 and in Ponds 1 to 6 in 2014 (Section 3.3 of the Wildlife

5 for a description of wetlands in the Terrestrial LSA and a description of wetlands impacted of Western redcedar – Sitka spruce- Skunk cabbage swamp forest (CWHvm1/14 [Ws54]) is at Offset Plan (Volume 4, Part G – Appendix 5.1-B) by the creation of 1.9 ha of functionally ding the WC2 channel extension. Wetlands and ponds where amphibian breeding activity the Project footprint to predict the area of amphibian breeding habitat that may be 6, totaling 0.12 ha of amphibian breeding habitat (area included in the total 0.8 ha of Skunk cabbage swamp forest (CWHvm1/14 [Ws54]) is compensated for in the Fish Habitat opendix 5.1-B) by the creation of four amphibian ponds, totaling 0.12 ha in area. Ponds 2 Wildlife Baseline Report. The temporal loss of amphibian breeding habitat in Ponds 2 and 6 tland compensation habitat will be constructed during the construction phase, and before

be conducted on a regular basis by a Qualified Environmental Professional (QEP) with npensation projects. The offset habitat will be monitored for amphibian use during years 1, nitoring reports will be provided to DFO and FLNRO. Additional details on habitat offset h Habitat Compensation Plan (Volume 4, Part G – Section 5.5 Appendix 5.1-B).

regarding pit-lake habitat for amphibians.

Id electrically powered and operates as an electric/hydraulic system. The hydraulic fluid Nobil EAL[™] Hydraulic Oil 32 and 46 or equivalent. See also the Spill Prevention Emergency 3, Part E - Section 16.0 of the Environmental Assessment.

monitoring plan and its associated timeframe has not yet been developed but will be Management (Protection) Plan to minimize impacts on terrestrial resources and to collect fectiveness of implemented mitigations. Wildlife monitoring will begin during Project In to Project closure, and reporting is anticipated on an annual basis.

habitat monitoring plan will be required in support of an application for an authorization visions of the Fisheries Act. The details of the plan are under development and will be rocess.

ith a 2:1 ratio (Figure 5.4-10, Volume 2, Section 5.4) for geotechnical stability of pit slopes ed to establish wildlife habitat and facilitate safe egress for wildlife from the pit-lake. ng occurs in cool ponds or lake margins, slow moving streams, marshes, bogs, or swamps b). Breeding habitat contains soft substrate and thin stemmed, emergent plants, such as rex spp.), onto which the frogs attach their egg masses (Corkran and Thoms 1996). The size y dramatically within and between lakes and ponds depending on the physical structure of Northern red-legged frog range from 30 to 500 cm deep and are at least 60 cm from the se conditions and pit-lake design (described further in Figure 5.4-10, Volume 2, Section 5.4), lentic zone is considered suitable for pond-breeding amphibians. The depth and slope of re geotechnical stability of pit slopes. Potential amphibian breeding habitat at the pit-lake f compensated amphibian habitat because of the 16 year time lag in establishing this nsation ponds established during construction.

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197	EAC Application / EIS (July 2016)	FLNRO-102	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Figure 8 - shows proposed amphibian habitat ponds to be 1200m2. above, it was suggested that 0.88hectares of wetland habitat were being infilled / removed as part of project development. This is almost 1/8th of the habitat lost. There will also be obsticales between the 'new' proposed ponds and the historic ponds - will amphibians try to migrate back to old ponds? how will mortalities be avoided?	Please see response to FLNRO-097 Figure 8 of the Executive Summary legged frogs have high site fidelity km (Hayes 2007). Historic ponds w Mortality of amphibians attemptin around amphibian breeding ponds considered when designing amphil forested habitat will be maintained	
198	EAC Application / EIS (July 2016)	FLNRO-103	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Figure 2-9 in Volume 1 Part A Sections 1-3: Project Washwater Cycle: Well water is 4% of total water input Reminder the Well will require separate Groundwater Licence. The remainder of the project requires surface water licence.	Our understanding is consistent wi	
199	EAC Application / EIS (July 2016)	FLNRO-104	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Project activities: construction of berms, dyke - FLNRO dam safety officer has indicated that MEM is likely responsible for the Dam as per the FLNRO-MEM memorendum of understanding	Our understanding is consistent wi	
200	EAC Application / EIS (July 2016)	FLNRO-105	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Water use is still a bit unclear during construction phase. the Proponents response to initial round of questions suggested "There will be no water use during construction activities. Text has been revised to include rate of daily water use." However, I presume the following facilities require water during the construction phase of the project: portable concrete batch plant, site office, communications building, workers lunch room, first aid facility, washrooms and caretaker's cabin - where is their water coming from? (the text indicates that the wash plant is using groundwater source). Are the above-mentioned facilities using the same well/stream pump room? when will decision on groundwater vs. surfacewater source be made? How long will these facilities remain in place - i.e., how long will water be required for these buildings? what is rate of use? These questions will need to be ressolved for permitting phase	During the construction phase of the (likely bottled water); porta-potties finalized, but it is proposed that if of temporary batch plant is used and existing water license on Harlequir	
201	EAC Application / EIS (July 2016)	FLNRO-106	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"use of electric powered floating clamshell dredge" < will this equipment have biodegradeable fuel? If not, how will WQ be maintained / restored such that it is within safe range to connect to watercourses.	The dredge is electric over hydraul	
202	EAC Application / EIS (July 2016)	FLNRO-107	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Do assessment methods include an operational verification /monitoring of the effects (e.g. to changes in flows in McNab Creek as pit lake is being developed)? This information request should be resolved during the EA review.	The primary methodology for the or levels in the pit lake and surroundii presented in the environmental as methodology is an indirect measur McNab Creek. Under the baseline or measurable as surface flow. Con The rate of loss of flow from McNa surface between the creek and the using monitoring well data located phase of the project to the baseline direct measurement of flows.	
203	EAC Application / EIS (July 2016)	FLNRO-108	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Will culvert crossing at outlet of Harlequin Creek be replaced as part of project construction? Is new access to "proposed offices and welfare facilities" required? Will this involve any additional stream crossings? Any upgrades or changes to culverts / bridges or other stream crossings (e.g., constructed log bridge over WC5) need to be included in the Water Licence Application along with GPS points and description of each crossing.	No new access is required. No cha proposed as part of the Project. Do the constructed Compensation Cha level in Water License application.	
204	EAC Application / EIS (July 2016)	FLNRO-109	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	how will hydrology of WC 10-14 change - if water east of the access road is no longer able to continue in natural flow path, how will it be re-directed? Will it be redirected to WC 15/16? Are these watercourses designed for / able to convey the additional flow? particularly during heavy rain events which are common in this area? Will these excess flows ultimately end up in WC 5? Please clarify how hydrology in these watercourses are anticipated to change.	It is proposed that the watercourse existing assess road and conveyed access road however several of the watercourses located on the east s The quantity and quality of habitat application.	

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7 for a description of wetland compensation.

y outlines the area of the proposed amphibian ponds to cover a total area of 1,250m2. Redr and commonly travel 1.5 km to breeding sites, and have been recorded travelling up to 5 vill be salvaged and infilled to mitigate amphibians migrating back to old breeding areas. Ing to migrate back to salvaged ponds will be mitigated using isolation fencing installed s to deter migrating or dispersing amphibians. The connectivity of populations will be ibian isolation fencing (see response to FNLRO-127) and vegetation buffers and upland d for habitat connectivity of migrating amphibians (see response to FLNRO-129).

vith this comment

ith this comment

the project domestic water needs will be accommodated by transporting water to the site is will be used to manage domestic sewage. Details of concrete supply have not been concrete arrives by truck, the water would be sourced from the point of origin. If a l if this occurs in advance of licencing the groundwater well, water may be drawn under the n Creek. Further details will be provided to support the water license application.

lic. The fluid would be Mobil EAL[™] Hydraulic Oil 32 and 46 or equivalent biodegradable.

operational monitoring of project effects on McNab Creek flows is the monitoring of water ing groundwater levels. These monitoring data shall be compared to the analysis results ssessment and predictions of loss from McNab Creek to the groundwater system. While this rement of impacts on surface flows it will be more accurate than directly measuring flows in conditions, flows in McNabb Creek periodically become low enough that no flow is visible omparing an operational no flow condition to a baseline no flow condition is of limited value. ab Creek to the groundwater system is proportional to the gradient of the groundwater e Site. The gradient of the groundwater surface under baseline conditions was monitored d on the Site. Comparing the gradient of the groundwater surface during the operational ne conditions will provide a better indication of project effects on McNab Creek flow than

anges to the existing culverts over Harlequin Creek or the two culverts over WC 5 are ouble pipe arch culverts are proposed to be constructed under the existing road to connect annel Extension to the pit lake at closure. These details will be included at a conceptual

es along the western slope will be captured by a ditch along the western edge of the south to WC5. There is currently a ditch along the majority of the western edge of the ese channels have culverts allowing flow under the road. The portions of the western slope side of the access road would be lost as part of the project.

provided by the channels east of the road will be provided in the Water License

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205	EAC Application / EIS (July 2016)	FLNRO-110	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	wetted areas of WC 10-14 (and 7,8, 17, 18) need to be quantified. Ephemeral streams are still a stream under WSA. Are aquatic species other than fish using this habitat? Have baseline surveys been conducted? Egg mass surveys for amphibians?	Habitat information for these ephe observed in any of these streams. I in 2011 as part of a reconnaissance (on the eastern side of the road) di that many of these ephemeral stre watercourses were checked a seco spring to coincide with the amphib Licence application.
206	EAC Application / EIS (July 2016)	FLNRO-111	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	p. 18 - chum salmon spawning velocity preference ~ 50cm/s - preference not mentioned for coho or cutthroat trout, which are more abundant in RSA watercourses. What is the estimated water velocity in the compensation channel? Will this accommodate spawning habitat for both cutthroat and coho? Current plan does not include spawning habitat - this will need to be considered during EA review phase	The entire length of the constructe will vary with the incoming and out and rearing habitat for juvenile and potential spawning but the plan do
207	EAC Application / EIS (July 2016)	FLNRO-112	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"construct pump room for well / stream intake water distribution and fire fighting." Clarification will be required at the time of water licence application submission. Make this more general statement < this is likely described in Introduction and Background section? But, is also linked in many other "potential effects" chapters	This statement in the EA is confusin and two separate licenses. "Constr associated license. "Stream intake diversion works are already in plac
208	EAC Application / EIS (July 2016)	FLNRO-113	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Results of surface water and groundwater assessments should be ground-truthed during the project to verify project impacts were correctly modelled / assessed. I understand that the project has been designed to avoid loss of groundwater discharge to McNab but, again, this should be verified throughout different phases of the project. If baseflows in watersheds such as McNab Creek and WC 5 (for example) don't increase and instead decrease, the associated impacts should be characterized and remedial actions should be considered.	This comment is consistent with th
209	EAC Application / EIS (July 2016)	FLNRO-114	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Further explaination on how habitat loss values were calculated is required - including assumptions made (width of riparian area, length of stream segment, etc)	The methodology for describing ha Fish and Fish Habitat Baseline Repo
210	EAC Application / EIS (July 2016)	FLNRO-115	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	4th bullet - note that "compliance monitoring and reporting requirements" are also relevant under WSA	Comment acknowledged BURNCO licence under the Water Sustainabi
211	EAC Application / EIS (July 2016)	FLNRO-116	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Changes in the elevation of groundwater in the area associated with the flooded pit will lead to a substantial increase in wetted area (Volume 2, Part B – Section 5.5: Surface Water Resources, Table 5.5-12) and fish habitat within the extension as well as the lower segment of WC 2. < perhaps i read through this too quickly, but i would appreciate further explaination on table 5.1-8 which states there will be "loss of wetted area in the lower segment of WC2 due to reduction in baseflow." If the "flooded pit will increase available ground water in down gradient areas but it will not spill any surface water during operations" then where does the abovementioned loss come in? please explain.	The loss can be attributed to the re currently collecting groundwater a a reduction in the average wetted reduction, the proposed extension wetted area. The creation of the p available but it will not all go direct
212	EAC Application / EIS (July 2016)	FLNRO-117	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Once the project ceases to operate, the pit lake will be connected to WC2 extension onlyduring Oct-April. How will this be regulated / controlled? If someone needs to physically open / close gate to allow flows to pass, this needs to be written as a project committment - definitely in Water Llcence, possibly as EAO condition? including duration - how long will this practice be sustained? how long will the dam (berm) remain viable? what kind of maintenance will this whole system require after the project is closed?	After operation of the pit an overf water levels in the lake are high en between October and April. The s adjusted based on monitoring resu
213	EAC Application / EIS (July 2016)	FLNRO-118	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	offset habitat monitoring should be conducted in 2 phases - in years immediately following construction and 2nd, in years following following facility closure if/when flows are diverted from Pit Lake to WC2	Agreed, the offset monitoring prog
214	EAC Application / EIS (July 2016)	FLNRO-119	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"in the event of a non-compliant incident the monitor will contact DFO" and FLNRO Water Manager at 604-586-4400.	BURNCO will comply with the spec out in required authorizations and
215	EAC Application / EIS (July 2016)	FLNRO-120	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	where is "The Fisheries Habitat Protection and Mitigation Plan"? To be submitted later? Included in appendix?	An outline of the Fisheries Habitat Application/EIS. The Fisheries Hab agencies and First Nations and incl

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emeral watercourses in presented in Table A-1 of Appendix 5.1-A. No fish presence was In addition, these ephemeral watercourses were surveyed for potential amphibian habitat survey. Based on these surveys, the ephemeral watercourses WC 10-14 and 7,8, 17, 18 lid not appear to provide appropriate amphibian breeding habitat. This was due to the fact eams were dry during surveys and/or had no cover or any emergent vegetation. These ond time in 2014 with the same result. The 2011 visit was conducted in late winter/early pian breeding season (late February-April). This material will be summarized in the Water

ed groundwater fed channel below the culvert will be tidally influenced and thus velocity tgoing tide. The channel extension has been designed as juvenile rearing habitat for coho d adult cutthroat trout. It is likely that groundwater upwelling zones may support some oes not attempt the quantify this or take credit for it.

ing when reviewed in the context of water licensing as it refers to two separate locations truct pump room for well" would be related to the proposed groundwater well and the e water distribution and fire fighting" refers to the existing water license on Harlequin where ce. Further details will be provided within the water license application.

he commitments proposed in the Environmental Assessment.

abitat and calculating habitat area is provided in the methodology section of the Freshwater ort (Appendix 5.1-A Sections 2.1 and 2.2)

) understands that compliance monitoring and reporting will be a condition of a water oility Act.

emoval of the upper portion of the constructed groundwater channel (WC 2) that is now and conveying it only to the lower section of the channel. The reduction in flow will lead to area within the existing WC 2 channel below the culvert. To address this predicted n of the groundwater fed channel to the west will collect groundwater and create additional pit lake will raise the water table downslope of the lake and make groundwater more tly to WC 2.

flow spill structure will operate. Water will only move through the spill structure when hough. Surface water modelling predicts that elevated water levels in the lake may occur system will be monitored but the intention is that it would operate passively once it is ults.

gram will include post construction and post closure monitoring phases.

ific reporting requirements in the event of a potential non-compliance with conditions set licenses.

t Protection and Mitigation Plan is presented in Part E, Volume 3, Section 16 of the EAC pitat Protection and Mitigation Plan will be developed in consultation with regulatory luded in the applications for a Fisheries Act Authorization.

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216	EAC Application / EIS (July 2016)	FLNRO-121	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	What are some examples of how the following studies will be conducted: Fish community assessments within the fish-bearing watercourses of the LSA to determine if there are any measurable changes to fish abundance and distribution. What is the proposed duration of the monitoring period? specify who technical reports will be submitted to and date(s) for submission	It is anticipated that a range of mei effectiveness monitoring of the fish to use less invasive measures such intense measures such isolation an An outline of the Fisheries Habitat Application/EIS. The Fisheries Hab agencies and First Nations and incl
217	EAC Application / EIS (July 2016)	FLNRO-122	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"Changes to Surface Water Quality" 4th mitigation bullet re: water misting during dry weather events to reduce dust release. where will water be sourced from? When licencing water from that source, will likely be best to provide a full list of activities that water will be used for. May also require volumes and time of use for the different activities.	An onsite well will be developed to water use and volumes will be prov
218	EAC Application / EIS (July 2016)	FLNRO-123	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	once facility is closed, how will pit lake elevations be "used to manage baseflows" in McNab and Groundwater fed channels below the pit lake?	The elevation of the lake surface w
219	EAC Application / EIS (July 2016)	FLNRO-124	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	the proposed instream habitat does not provide any spawning areas - the existing upstream habitat in WC2 does provide such habitat. ** further consideration of the offset habitat should look into creation of spawning habitat which is likely limiting for the species.	It is agreed that approximately 100 conditions for salmonid spawning. spawning. There is also no evidenc There has been little evidence of c juvenile coho. This suggests that t habitat. The provision of additiona system. Additionally, the creation maintenance to keep gravels free of higher potential for long term succ
220	EAC Application / EIS (July 2016)	FLNRO-125	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	will all hydraulic machinery being operated near waterbodies use environmentally sensitive hydraulic fluids which are non- toxic to aquatic life and which are readily or inherently bio-degradable? This is generally a standard requirement for works in and about a stream.	Agreed, the dredge is electric over biodegradable.
221	EAC Application / EIS (July 2016)	FLNRO-126	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Table 5.3-1 Regulatory and Policy setting. Water Sustainability Act applies to this section as this section considers wetland habitat	The EA acknowledges the Water Si Volume 1, Part A. BURNCO unders component.
222	EAC Application / EIS (July 2016)	FLNRO-127	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	amphibians and roadway mortality - estimates provided? Mitigation measures provided?	The Proposed Project does not incl minimal. Amphibian crossing struc Special amphibian road-crossing st that are determined to be appropr 5.3.1.5.4.3.3). Fencing will be used be critical to the effectiveness of an 2012). Amphibian mortality has been sho 2012). Isolation fencing reduced ro Isolation fencing will be installed al dispersing amphibians from crossir and best management practices w
223	EAC Application / EIS (July 2016)	FLNRO-128	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Wetland / amphibian habitat loss estimated at 0.12HA. Is this "breeding habitat only"? Or does it include all wetland features? Look at "pond 1" = majority of amphibian hab, Pond 2 & 6 = direct loss, etc. Please provide a table that descirbes habitat losses vs gains	Direct habitat loss of amphibian br ponds cover 0.12 ha of amphibian breeding. A total of 0.125 ha of ar in four shallow ponds. Details on w

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ethods for determining fish abundance and distribution will be used in both the h habitat offset and environmental effects monitoring programs. The intention would be a seplicated catch per unit effort minnow trapping at replicated sites first with more and multi-pass electrofishing being deployed if results are inconclusive.

t Protection and Mitigation Plan is presented in Part E, Volume 3, Section 16 of the EAC bitat Protection and Mitigation Plan will be developed in consultation with regulatory luded in the applications for a Fisheries Act Authorization.

o supply process and dust control water requirements. Detailed information regarding wided in the Water License application.

vill be controlled by setting the elevation of the outlet spill structure.

Om of the upper section of the constructed groundwater fed channel is providing suitable . The majoring of the channel does not contain substrate appropriate for salmonid ince that a lack of spawning habitat is limiting salmonid populations in the McNab system. coho spawning in W2 over the last 5 years while the most abundant fish in the channel are these juveniles are likely displaced from McNab Creek where there is abundant spawning al rearing habitat is expected to support increased productivity from the McNab Creek n of spawning habitat within the lower portion of W2 would likely require ongoing of sediment. The creation of rearing habitat is expected to be self maintaining and have a cess.

r hydraulic. The fluid would be Mobil EAL[™] Hydraulic Oil 32 and 46 or equivalent

ustainability Act (WSA) as one of the required permits and approvals in Table 2-25 of stands a water license will be required under this Act and may include a wetland

Iude constructing new roadways and traffic on the existing roadway is expected to be ctures and fencing have been proposed to mitigate potential amphibian roadway mortality. tructures (1 m diameter with <50 m intervals; BC MoE 2014) in locations (crossing hotspots) riate based on knowledge of target species will be considered during operations (Section d to channel amphibians to the amphibian road-crossing structures, as this is considered to imphibian road structures as mitigation for reducing mortality (Beasley 2011 and Malt

whown to decrease substantially when fencing is utilized (Environment Canada 2016, Malt boadkill rates by at least 50% when of sufficient length and installed properly (Malt 2012). Ilong active roadways adjacent to known amphibian breeding ponds to deter migrating or ng roadways during construction (Section 5.3.1.5.4.3.2). The connectivity of populations *v*ill be considered when designing amphibian road-crossing structures and isolation fencing.

reeding habitat is expected during construction due to impacts to Pond 2 and 6. These two breeding habitat. The remaining wetland habitat (0.76 ha) does not contain amphibian mphibian breeding habitat will be established during the construction phase of the Project vetland compensation are described in response to FLNRO-136.

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224	EAC Application / EIS (July 2016)	FLNRO-129	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Habitat fragmentation - most of the amphibian breeding ponds appear to be either within the project area or west of the project area. Many adult occurances are east of the project area. Habitat fragmentation will likely lead to many mortalities - see Josh Malt Sea to Sky Hwy report on wetland fragmentation * particularly as this is separating breeding habitat from upland habitat. How are effects to be mitigated? creation of breeding ponds (as per hab offset program?) will this be sufficient? how does it address fragmentation of ponds 1, 3, 4 & 7 from new breeding ponds?	The Malt 2012 report from the Sea The proposed Project does not incl the existing roadway. A conveyor so Project. This system will be buried, FLNRO-127 for mitigation measure As additional mitigation, habitat lin barriers to amphibian movement b Project Area will be converted to a vegetated, and will provide upland be maintained as movement corrid vegetation buffers to facilitate habi buffer areas will likely provide impo species. Endemic species of vegeta Vegetation species and planting loo maximize the benefits to aquatic habitat describe the vegetation species and
225	EAC Application / EIS (July 2016)	FLNRO-130	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Reclaimation and closure: "approx 28 ha of proposed project area converted to lake may provide amphibian breeding habitat in lentic zone" - where will this breeding habitat be created around the lake perimeter?	See response to FLNRO-101.
226	EAC Application / EIS (July 2016)	FLNRO-131	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Wildlife Management Plan - amphibian & wetland components should be submitted with water licence application	See response to FLNRO-099 and 12
227	EAC Application / EIS (July 2016)	FLNRO-132	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"Where feasible, buffers of undisturbed native vegetation, a minimum of 30 m in width (BC MoE 2014a; BC MWLAP 2002), will be maintained around Ponds 1, 3, 4, 6, and 7, as well as ephemeral streams." Please clarify - I thought Pond 6 was going to be 'removed'	The text in Section 5.3.1.5.4.2.1 (Vovegetation, a minimum of 30 m in vovell as ephemeral streams.
228	EAC Application / EIS (July 2016)	FLNRO-133	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Barriers to Movement: "Amphibian breeding ponds will have 30 m vegetation buffers maintained to facilitate habitat connectivity (as well as noise reduction and migratory movements)." < please clarify which amphibian breeding ponds this statement referrs to. Based on my understanding Ponds 1,3,4&7 are all be adjacent to a roadway or project development area such that maintaining a 30m vegetation buffer would be challenging? If the reference is to proposed compensation ponds, language needs to be updated and specific reference should be made to offset plan but, i believe this section is talking about construction and operational impact mitigation?	A 30m vegetation buffer will be ma infrastructure. The four habitat cor FLNRO-129.
229	EAC Application / EIS (July 2016)	FLNRO-134	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"Special amphibian road-crossing structures will be established in appropriate locations to facilitate amphibian movement to and from breeding ponds, based on knowledge of target species" what is an example of where these structures would be created? please provide supporting evidence that amphibian road-crossing structures are used by amphibians (there have been mixed successes reported in the past - success may also depend on species, location, etc).	See response to FLNRO-127. Locati the Wildlife Management (Protecti
230	EAC Application / EIS (July 2016)	FLNRO-135	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Further explaination of amphibian habitat losses and gains are required. More than just pond habitat proposed to be lost as a result of project development.	See response to FLNRO-129.

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a to Sky Highway describes habitat fragmentation as a result of new highway construction. clude construction of new roadways and minimal increase in traffic volume is predicted for system is the only new linear feature that will be constructed as part of the Proposed , reducing potential physical barriers to amphibian movement. Please see response to es relating to roads, amphibian road-crossing structures, and isolation fencing.

nkages and vegetation buffers will be maintained or provided where feasible to minimize between breeding ponds and adult upland habitat. Approximately 28 ha of the Proposed a pit-lake. The remaining 31 ha of the Proposed Project Area will be reclaimed and d habitat. Forested habitat in the marine foreshore and riparian habitat of McNab Creek will dors. Amphibian breeding ponds (existing and compensation ponds) will have 30 m bitat connectivity and noise reduction where feasible (see response to FLNRO-133). These portant terrestrial habitat for adult amphibians, including provincially and federally listed ation consistent with the original riparian vegetation at the site will be established. Accations for buffer areas shall be selected with guidance from qualified professionals to mabitat and the survivability of the vegetation. The Vegetation Management Plan will and buffers that will be maintained around the existing ponds and compensation ponds.

26.

olume 2, Section 5.3) should read: Where feasible, buffers of undisturbed native width (BC MoE 2014a; BC MWLAP 2002), will be maintained around Ponds 1, 3, 4, and 7, as

aintained around Ponds 1, 3, 4 and 7 where feasible based on proximity to existing mpensation ponds will be constructed with a 30m vegetation buffer. See response to

tions of amphibian road-crossing structures and isolation fencing will be refined as part of tion) Plan.

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231	EAC Application / EIS (July 2016)	FLNRO-136	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	5.3.2.5.2.1 Loss of Extent: previous sections of this report indicated that the LSA has 2.5ha of wetland habitat. Is there a table somewhere that summarizes the breakdown of where those 2.5 ha of wetland are and how this relates to the statement "site clearing associated with the construction and operation phases of the Proposed Project will result in a direct loss in the areal extent of wetlands, riparian ecosystems, ecosystems at risk and potential habitat for plant species at risk"	The 2.5 ha of wetland types presen Report (Appendix 5.3-B) as follows: - 0.9 ha of Western red cedar – Sitk - 1.3 ha of Tufted hairgrass – Dougl - 0.3 ha of Sedge - Skunk cabbage r Pond 1 is included in the area of the the Western red cedar – Sitka sprue area. Ponds 3 and 4 are roadside ditches 7 is a small backwater of Harlequin estimate of wetland area. Loss of extent of wetlands is descril -loss of 0.8 ha of Western red ceda 2 and 6; and -disturbance/shading of 0.08 ha of	
232	EAC Application / EIS (July 2016)	FLNRO-137	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	similar to comment above - table 5.3-36 describes loss of extent of sensitive ecosystems, a figure would be helpful to outline where the wetland habitat is in relation to wetland area in the LSA that will remain in tact, the ponds, amphibian signtings etc. This kind of information should be submitted with the Water LIcence application package	A figure outlining the location and application.	
233	EAC Application / EIS (July 2016)	FLNRO-138	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Again, looking to clarify this area via a map: Temporary loss 0.8 ha of wetland area, consisting of Western red cedar – Sitka spruce- Skunk cabbage swamp forest (RC/ Ws54) and two associated vernal pools (Ponds 2 and 6) also to clarify this vs. 2.5ha total wetland habtiat. Are ponds included in total estimate?	Please see response to FLNRO-136.	
234	EAC Application / EIS (July 2016)	FLNRO-139	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	"Predicted water concentrations were modelled for the pit lake (MCF-5); however, it is not considered to be part of the receiving environment. The pit lake will not provide suitable habitat for fish due to its steep banks, lack of cover, and limited food supply. Consequently, the pit lake was not formally evaluated in the aquatic health assessment" < this statement is in potential contradiction to my understanding of what the lake would look like post-project based on descriptions in fish and aquatic habitat chapters. I understood the lake would have habitat suitable for amphibians around the perimeter, including shallow banks and aquatic vegetation which is required for amphibian breeding. cover was also to be restored via riparian planting. Please clarify.	It is correct that the pit lake is not p fish into the pit lake. The shoreline the pit lake will not be providing a s The margins of the lake may provid are no plans to contour the shorelin credit associated with the amount inappropriate the lake margins can	
235	EAC Application / EIS (July 2016)	FLNRO-140	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	are estimates based on averages of model predictions? I assume these details are included in appendix? But, what is the variability around these estimates? Although the estimates appear to be positive (in favor of increased flow to McNab Creek) this should be ground-truthed during operations to confirm. If it is found to go the opposite directions, need to have options for remedial actions layed out ahead of time. Note that Page 5.5-46 does commit to "Hydrologic and hydrogeologic monitoring will be carried out throughout the operational phase of the Proposed Project and the analysis presented here will be periodically calibrated and refined. The extent of the proposed pit will be re-evaluated if the calibrated and refined results suggest that a negative impact to aquatic habitat in McNab Creek is anticipated." This committment should be in both the EAC and FLNRO authorizations	The Proposed Project's potential ef in the hydrogeological assessment. years. The details of the hydrogeol Appendix 5.6-A and Volume 2, Part Estimates of the surface water and estimates of the model parameters results did not alter the results of th of the project the monitored water corresponding analysis predictions. predictions refined accordingly.	
236	EAC Application / EIS (July 2016)	FLNRO-141	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	if baseflow is predicted to decrease, why / how is surface flow / wetted area expected to increase? Again, this might be described elsewhere - just looking for clarification. Page 92 actually seems to indicate that the increase in wetted area comes from the extension (offset) channel not from actually increasing the wetted width of a particular crossection of the watercourse. But, if baseflow is predicted to decrease in WC2, would it not follow that the proposed offset channel would also be faced with reduced baseflow?	The predicted increase in wetted an relatively flat (0.1%) and the flow d conditions at the downstream end designed to maintain the required	

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nt in the Terrestrial LSA (Volume 2, Section 5.3.2.4) are described in the Vegetation Baseline s:

ka spruce- Skunk cabbage swamp forest (CWHvm1/14 [Ws54]); glas' aster Estuarine Meadow (CWHvm1/Ed02); and marsh (CWHvm1/00).

ne Sedge - Skunk cabbage marsh, and Ponds 2 and 6 are vernal pools included in the area of Jce- Skunk cabbage swamp forest. Therefore, they are included in the 2.5 ha total wetland

and Pond 5 is a scour pool at the outlet of a culvert laid underneath the access road. Pond Creek created by road upgrades. Therefore, these ponds were not included in the total

ibed in Volume 2, Section 5.3.2.5.2.2.1 of the EA Application as follows: ar – Sitka spruce- Skunk cabbage swamp forest (CWHvm1/14 [Ws54]), which includes Ponds

Tufted hairgrass – Douglas' aster Estuarine Meadow (CWHvm1/Ed02).

extent of wetlands in relation to the Project footprint will be included in the Water Licence

predicted to provide highly suitable habitat for fish nor is there any intention of introducing will not be contoured to provide shallow banks nor will the shoreline be complexed. Thus, substantial amount of habitat for fish.

de a narrow strip of habitat for amphibians with aquatic and riparian vegetation but there ine in order to provide amphibian habitat. As such BURNCO has not claimed any habitat of habitat that will be created along the margins of the pit lake. If FLNRO feels this is n be quantified as additional habitat area created for amphibians.

A straight of the McNab Creek groundwater loss for Years 0, 5, 10, 15, and 16, were modelled
A Linear interpolation was used to estimate the potential effects between the modelled
A logical model used to derive these results are discussed in Volume 4, Part G – Section 22.0:
A t B – Section 5.6: Hydrogeological assessment.

d groundwater conditions presented in the EAC Application/EIS were based on Golder's best is calibrated using site collected data. A model sensitivity analysis was also completed and the assessment. In order to validate the results of the analysis during the operational phase r levels in the pit lake and surrounding groundwater levels will be compared to

Variations between the observed conditions and predictions shall be evaluated and the

area is related to the construction of the proposed offset channel. The offset channel will be depth and wetted area within the offset channel would be largely dictated by the hydraulic d of the channel where it joins WC2. The offset channel and its confluence with WC2 was flow depth and wetted area.

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237	EAC Application / EIS (July 2016)	FLNRO-142	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	The upper section of watercourse proposed to be removed as part of the project proposal, contains roughly 100m of potential spawning habitat. The proposed offset plan does not offer the replacement of potential spawning habitat, it instead provides only low-gradient juvenile rearing habitat. Recommendation: open up discussion on alternative site which could provide spawning habitat. This may be required in addition to the compensation habitat already proposed as per bullet #2 below – quantification of impacts to aquatic habitat may be underestimated.	Please see response to FLRNO-124 DFO has indicated that the upper se for chum salmon. Spawning habita salmonid populations in the McNab for spawning coho in WC2 suggests number of displaced coho juvenile
238	EAC Application / EIS (July 2016)	FLNRO-142.1	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Rationale for FLNRO-142 (see above): - Cutthroat trout in particular, but also all other salmonid species found in this system, depend on these small streams for spawning. The McNab watershed has already been heavily impacted by neighbouring development (mainly forestry activities but also others). The options for re-constructing this kind of habitat within the project RSA appear to be limited due to the topography of the area. Alternative options for offsetting were investigated (albeit only very limited information on these alternatives is provided in the Offset plan) – including a side channel development on McNab Creek. Further information on where the McNab side channel was proposed could provide insight into further conversations / options to offset the proposed loss of spawning habitat in upper WC2. Regardless, alternative locations to replace spawning habitat should be considered and proposed to FLNRO.	Please see response to FLRNO-124 Construction of side channel habita movement within the system. BUR long term.
239	EAC Application / EIS (July 2016)	FLNRO-142.2	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Rationale for FLNRO-142 (see above): - baseline data collected in WC2 is 4 years out of date. This watercourse is a relatively young, but maturing stream and I do have concerns that there may have been gains in the quality of habitat in the past 4 years that are not being adequately considered.	The majority of baseline data collec continue to be conducted prior to h
240	EAC Application / EIS (July 2016)	FLNRO-142.3	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Rationale for FLNRO-142 (see above): - There was also mention of a beaver dam providing some temporary blockages to fish passage – however juveniles were found in relatively high numbers in the upper WC2 which again, demonstrates that this is valuable habitat.	The beaver dam was not identified up stream of a culvert may lead to on the value of fish habitat upstrea
241	EAC Application / EIS (July 2016)	FLNRO-142.4	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Rationale for FLNRO-142 (see above): - Adult surveys did not seem to capture cutthroat trout adult migration timing which can occur in spring for some life history forms – I did not see any explanation for this. But it was clear that adult surveys targeted late summer – early fall (typical salmonid migration window).	Spawning surveys were conducted trout in the spring was not attempt be very successful due to the smalle during April and May and cutthroat adult presence in the spring.
242	EAC Application / EIS (July 2016)	FLNRO-143	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	A number of watercourses (perennial streams to ephemeral streams and wetlands) are proposed to be impacted by the BURNCO development. Under the Water Sustainability Act connectivity of streams and groundwater must be assessed and environmental flow needs must be adequately considered for each impacted watercourse. Connectivity of surface water and groundwater has been established for the McNab watershed. Hydrologic modelling has identified that base flows in all lower watercourse (below the proposed pit lake) may be reduced as a result of the project. This has the potential to impact all species utilizing this habitat. Recommendation: - For water licencing purposes (which includes the authorization of instream works) – the baseline condition of all watercourses needs to be clearly identified (e.g., total length of stream, length of impacted area, discharge) such that any impacts to baseline conditions can be appropriately compensated for. - Clarification of the timing and duration of proposed flow reductions in southern watercourses – how would this impact spawning and rearing habitat? - Fish & aquatic wildlife utilization [and possibly abundance] and hydrologic monitoring should be conducted for all impacted watercourses for the life of the project or until information has been provided to adequately demonstrate the project is having no adverse impacts to aquatic habitat and aquatic species. - Additional compensation habitat may be required to offset the impacts to this area?	The first assertion of this comment all of the watercourses below the p associated reduction in wetted area The Water License application will i be affected by the Project. BURNCO will comply with all monit

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above.

section of the constructed groundwater fed channel was originally built as spawning habitat that did not naturally occur in this area nor is it clear that a lack of spawning habitat is limiting to Creek system. The presence of juvenile coho in WC2 along with the absence of evidence ts that rearing habitat may be limiting in the McNab Creek system. This is based on the es that appear to move into WC2.

and FLNRO-142 above.

at along McNab Creek was considered unlikely to be stable due to the amount of bedload RNCO's intention is to construct offset habitat that is likely to be stable and functional in the

ction was completed between 2009 and 2013. In is expected that baseline monitoring will habitat impacts in order to support habitat offset and environmental effects monitoring.

a as a significant blockage to fish passage but rather an indication that a beaver dam directly maintenance issues. BURNCO agrees that the presence of a beaver dam has little bearing am of it.

I during the fall to document salmon spawning activity. Observation for spawning cutthroat ted. Spring observational spawner surveys for cutthroat trout are generally not expected to ler size of the fish and higher levels of flow. The fyke netting program was conducted to trout across a range of sizes were documented giving information regarding juvenile and

t is incorrect. Hydrologic modelling has predicted that baseflows will be slightly increase in pit lake except for the lower section of WC2. The reduction in baseflow in WC2 and the ea will be addressed by the construction of a channel extension as offset habitat.

include clear descriptions of the baseline conditions present in each water course that may

toring conditions associated with regulatory authorizations and licenses.
BURNCO Aggregate Project Application Review Issues Tracking

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243	EAC Application / EIS (July 2016)	FLNRO-144	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Utilization of aquatic habitat by amphibians may not be fully offset by the proposed 4 amphibian ponds. The project may interrupt amphibian migration from breeding ponds west of the project boundary to terrestrial habitat east of the project footprint. The movement of amphibians in this area is not clear but, the map of amphibian occurrences (figure 9 from Terrestrial Baseline Report) shows ponds to the west being used for breeding and adults found throughout the project area and further east to WC2. While impacts to amphibians have been discussed in Section 5.3 of the EA EIS, I am not confident that the proponent is offsetting the lost ephemeral stream habitat likely utilized as amphibians migrate in the area. Recommendation: As mentioned above in bullet #2, additional quantification of ephemeral aquatic habitat losses is required to ensure compensation is adequate to address impacts to amphibians.	Ephemeral stream habitat was amphibian migration or moven The existing ephemeral stream direction (required to move fro site were within the regenerati more abundant in mature and (Chan-McLeod 2003; COSEWIC Creek will be maintained and n areas of mature forest that will movement over the roadway a site. Please see responses to F		
244	EAC Application / EIS (July 2016)	FLNRO-145	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Hydrologic modelling suggest there will be no impacts to McNab Creek as part of the proposed pit lake development. However, model assumptions should be updated with real data input throughout the life of the project to verify that the project is having no adverse impacts on McNab Creek. An Environmental Flow Needs assessment may actually be required for this project? Particularly if there is potential or signs of flow reductions (although again, I do acknowledge that current model predictions say the project will not negatively impact flow to McNab Creek). Recommendation: as above, model should be updated and assumptions re-tested at various stages of project development. EFN analysis conducted? Long term monitoring of discharge in McNab Creek.	During the operational phase of monitored. These monitoring groundwater system. It is antio Creek will be more accurate the Creek periodically become low flow condition to a baseline no of an environmental flow need proportional to the gradient of surface under baseline condition the groundwater surface durin, of project effects on McNab Cr		
245	EAC Application / EIS (July 2016)	FLNRO-146	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	We did not specifically look at this but concerns have been voiced by Mike Bristol, Dam Safety Officer. Cognizance should be taken of the fact that this proposal is on an alluvial fan on a mountain creek drainage. In addition to the main channel, there are steep tributaries feeding into it upstream. There's a reason there's an alluvial fan there. The potential for debris floods/flows and associated events resulting in avulsions of the main channel should be evaluated. This is an area that can receive very heavy rain.	Based on terrain mapping and would indicate a potential for o p. 5.4 - 24). An avulsion study and could be further mitigated design.		
246	EAC Application / EIS (July 2016)	FLNRO-147	14-Sep-16	Malissa Smith, FLNRO, Surface Water Authorizations	Although I did not look at the geomorphology report associated with this report, conversations with DFO indicated that there were previously concerns about spills of the pit lake into McNab creek. I am not sure if this was addressed.	A containment berm has been any of the surrounding waterb analysis of a 1 in 200 year floor		
247	EAC Application / EIS (July 2016)	FLNRO-148	29-Sep-16	Bill Harrower, FLNRO	Upon reviewing the proponent's Wildlife Baseline Report, I note that in considering amphibians, the discussion indicates that most amphibians are outside the immediate project area. However there appears to be a large concentration of amphibian observations within the proposed gravel stockpile area to the south of the proposed pit. This includes several observations of northern red-legged frog and Pacific chorus frogs. Furthermore, if one examines the area immediately to the west of this storage area, there are several other observations of amphibians, including coastal tailed frogs. It is unclear as to how the proposed pit, gravel stockpiling site and compensation channel might affect groundwater movement and whether it will behave as modeled. It is entirely possible that the effects will be different and/or more far-reaching than predicted, affecting other adjacent wetland areas which are currently assumed to be unaffected by the proposed operation. Monitoring in the area of wetlands to the south of the gravel pit to McNab Creek and to the west and east of the proposed stockpiling site should be an integral part of any Operational Environmental Monitoring Plan, and should significant effects be observed, compensation for the effects should be carried out appropriately.	Groundwater modeling was us proposed pit-lake that will be f Creek and the natural groundw result in increased baseflows ir during operations and after clo (Volume 2, Section 5.5.5.2.1). F and implications to the pit-lake Please see response to FLNRO- known to contain amphibian b		
248	EAC Application / EIS (July 2016)	FLNRO-148.1	29-Sep-16	Bill Harrower, FLNRO	Regardless of FLNRO-148 above, compensation must be carried out for any predicted loss of amphibian habitat in the project area, and such compensation should be monitored to verify its success. Should initial compensation prove unsuccessful, the proponent should work with FLNRO to develop a new compensation plan, to be carried out by the proponent.	See response to FLNRO-097. If met during monitoring, DFO ar		

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abundant in the Project area and Terrestrial LSA and is not considered a limiting factor for ment.

ns run in a north-south orientation and do not facilitate amphibian movement in a west-east om existing to compensated ponds). In addition, most of the ephemeral streams observed on ing vegetation where the pit-lake will be established. Northern red-legged frog populations are old-growth forests and are negatively correlated with clear-cut and early-successional stands C 2015; Maxcy 2004). Forested habitat in the marine foreshore and riparian habitat of McNab may function as movement corridors. Adult observations were predominantly observed in these l be predominately maintained. Amphibian crossing structures will be built to facilitate and the conveyor system will be buried to facilitate movement over the other linear feature on LNRO-127, 129 and 133.

of the project the water levels in the pit lake and surrounding groundwater levels shall be data shall be compared to the analysis and predictions of loss from McNab Creek to the cipated that this methodology to monitor the potential effects of the Project on flows in McNab an directly measuring flows in McNab Creek. Under the baseline conditions, flows in McNabb enough that no flow is visible or measurable as surface flow. Comparing an operational no o flow condition would be of limited value. These existing conditions also limit the applicability ds assessment. The rate of loss of flow from McNab Creek to the groundwater system is f the groundwater surface between the creek and the Site. The gradient of the groundwater ons was monitored using monitoring well data located on the Site. Comparing the gradient of g the operational phase of the project to the baseline conditions will provide a better indication reek flow than direct measurement of surface flows.

field review of potential unstable areas in the watershed, no evidence has been identified that debris floods/debris flows to impact the Project area (Vol 2 - Section 5.4.4.4.2.1 - Debris Flood of McNab Creek indicated the potential for stream avulsion to affect the Project Area was low by construction of a flood protection dyke, which has been incorporated into the project

proposed around the southern perimeter of the pit lake to prevent spills from the pit lake to odies (including McNab Creek). The height and extent of the propose berm was based on d event.

sed to inform the design of the proposed aggregate pit and to adjust the elevation of the formed, such that groundwater losses for the majority of the watercourses, including McNab vater-fed watercourses, would not occur. Elevated groundwater levels during operations will n McNab Creek of up to 0.08 m3/s, and increased baseflows in the foreshore minor streams osure. At closure, baseflows in McNab Creek are expected to return to baseline conditions Please refer to Volume 2, Part B - Section 5.4 and 5.6 for details on groundwater movements e, gravel stockpiling site, and compensation channel.

-099. The Wildlife Management (Protection) Plan will include monitoring of the existing ponds reeding habitat as well as the four compensation ponds.

the long-term performance objectives of the habitat authorization are determined to not be nd FLNRO will be consulted to identify appropriate measures.

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249	EAC Application / EIS (July 2016)	FLNRO-149	29-Sep-16	Bill Harrower, FLNRO	There should be serious concern with the proposed "stream channel" to be constructed to the south of the gravel pit. It fails meet the BC Environmental Mitigation Policy Mitigation Goals and Hierarchy in providing an "assessment of the ecological equivalency of any remaining impacts and consideration and selection of measures to offset impacts on environmental values and associated components," meaning that "like for like" compensation is not adhered to.	The upper section of the constructe upper section of this channel mainl offset habitat will provide a similar that the federal Fisheries Productivi offsetting may lead to greater prod		
250	EAC Application / EIS (July 2016)	FLNRO-150	29-Sep-16	Bill Harrower, FLNRO	The low gradient (and very low velocity) channel that is proposed may not offer suitable rearing habitat for salmonids in general, and in particular for coastal cutthroat. Depending on water source, it might be tannin-stained and largely tidally influenced, leaving it unsuited to trout rearing. If this proves to be the case, what is the proponent prepared to do to provide more suitable compensation?	The upper and lower sections of the cutthroat trout when compared to channel is highly suitable habitat fo measures taken to increase the abu		
251	EAC Application / EIS (July 2016)	FLNRO-151	29-Sep-16	Bill Harrower, FLNRO	The proposed gravel pit is also potentially removing a source of feed for cutthroat, both adults and juveniles (depending on time of year), should they reside in the proposed channel rather than the one that already exists, that being salmonid fry (and eggs) that have been produced through spawning in the previously existing channel running though the pit location.	Agreed cutthroat trout are voraciou recent salmon spawning occurring i of suitable spawning substrate curr likely the result of spawning occurri		
252	EAC Application / EIS (July 2016)	MEM-040	6-Oct-16	Sonia Meili, MEM	Proposed water quality monitoring includes quarterly samples collected at 5 sample locations, up stream, on site and downstream of site prior to and during construction with additional suspended sediment sampling conducted in accordance with the EMP. What will be the frequency of sampling for suspended sediment? Event based monitoring is necessary to determine the effectiveness of erosion and sediment control measures and to identify the need for additional measures as needed. This is especially important on McNab Creek downstream of the deflection berm and for any road related discharges to the receiving environment. For the first two years of operations, the Application indicates that monitoring would occur monthly in the pit and downstream of the pit lake at WC2 and quarterly in McNab Creek and downstream of the pit lake at MCF-12, with sampling frequency to be re-evaluated after 2 years in consultation with MOE and other regulatory agencies. MEM notes that regular water quality sampling is required for life of mine. MEM also notes that parameters identified do not include parameters that would be an indicator of hydrocarbon contamination. Water quality monitoring should include these parameters.	Additional suspended sediment sam Project. A site-specific erosion and s Part G – Section 22.0: Appendix 3). when ground disturbance activities implementation of erosion and sed observations. Additional event-base undertaken to inspect erosion cont Monitoring will be conducted imm sediment inputs against background control measures and the potential The operational water quality moni consultation with MoE and other re according to permit requirements. Potential impacts on surface water specific Materials Storage, Handling Emergency Response Plan(s) (SPERI monitor the implementation and per Operational water quality monitorio		
253	EAC Application / EIS (July 2016)	MEM-041	6-Oct-16	Sonia Meili, MEM	The Application indicates that the discharge from the pit lake is not considered a deleterious substance and is unlikely to cause pollution of the downstream receiving environment. The parameters discussed include major ions, nutrients and trace metals but do not include TSS. Given the dredging that will occur within the pit and the pit will also be used for recycling of wash water, it would be expected that TSS would be elevated. Was this considered in the assessment of water quality? MEM notes that there is the potential for inadvertent/accidental release of water from the pit during construction and operations.	The pit lake containment berm was pit area. It was considered reasona Lake and the receiving environment levels is expected. The Environment TSS on the mine site during the Pro- implementation of proposed Project Control Plan, Project related activiti		
254	EAC Application / EIS (July 2016)	MEM-042	6-Oct-16	Sonia Meili, MEM	Limited information is provided to characterize the soils at the project site. Earlier sections of the Application indicate that soil salvage would occur in two lifts, where possible. What criteria will be used to segregate soil? During soil salvage, a monitoring program will be required to further characterize the materials and to inform reclamation and re-vegetation prescriptions.	The criteria used to segregate soil in monitor, and communication betwe provide direction on the depth of st including identification of soil layer operations will be monitored and d in soil identification and characteris monitoring during surface preparat of the Erosion and Sediment Contro		

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ted groundwater fed channel is the area of habitat that will be impacted by the Project. The ally provides rearing habitat for juvenile coho salmon and cutthroat trout. The proposed of function and thus it should mainly be considered in-kind offsetting. It is important to note vity Investment Policy allows for both in-kind and out-of-kind offsetting if the out-of kind ductivity gains.

ne constructed groundwater fed channel currently support substantially lower densities of WC5 and Harlequin Creek (Figure 9 App 5.1-A), suggesting that neither section of the or cutthroat trout. Coastal cutthroat trout are voracious predators of juvenile coho. Any undance of juvenile coho should increase the food supply for cutthroat trout in the area.

bus predators of both salmon eggs and juvenile salmon. However, there is little evidence of in the upper section of WC2 during that last 4 years. This is reflected in the limited amount rently present in the upper section of WC2. The juvenile coho that are present in WC2 are ring in McNab Creek.

mpling will be conducted in accordance with the Environmental Management Plan for the sediment control plan has been developed for each Project phase (please see Volume 4, . Weekly inspections by a qualified environmental monitor will be conducted during periods s are being undertaken. Inspections will include a description of pre-site activity conditions, diment control measures, monitoring of control measures, and records of visual sed inspections, in response to expected storm events or heavy rain events, will also be trol measurements according to the Sediment and Erosion Control Plan (see Section 7.0). nediately upstream and downstream of disturbed areas in order to compare potential nd levels. These inspections will help determine the effectiveness of erosion and sediment al need to implement additional measures.

nitoring frequency proposed in the Application will be reviewed after two years in regulatory agencies; however, monitoring would still continue throughout operations

quality from possible fuel spills will be mitigated through the implementation of taskg and Waste Management Plan(s) (MSHWMP) and a site-specific Spill Prevention and P; details provided in Volume 3, Part E – Section 16.0). An environmental monitor will erformance of the material handling, spill prevention and emergency response plans. ing will be undertaken according to permit requirements.

s designed to contain extreme flood events up to a 1 in 200 year return period within the able to assess the conditions as having no direct surface water connection between the Pit at during operations and consequently no release of pit lake water with elevated TSS at Management Plan will implement sediment and erosion control measures to manage bject as described in Volume 4, Part G – Section 22.0: Appendix 3. With the effective ct design and mitigation measures described in the site-specific Erosion and Sediment ties are not expected to result in adverse effects to surface water quality.

includes a pre-salvage evaluation of topsoil and subsoil by a qualified soil management ween the monitor and soil movement operators. Qualified soil management monitors will stripping in the field. Soil removal equipment operators will receive training on soil salvage r characteristics, salvage depths, and review of the soil management plan. Soil salvage directed by qualified personnel familiar with the soil management plan and knowledgeable istics (refer to Reclamation and Effective Closure Plan, Section 7.2 and 7.3). Soil salvage titon, construction, operation, and closure phases will be conducted as outlined in Section 7 rol Plan, with weekly and event based inspections.

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255	EAC Application / EIS (July 2016)	MEM-043	6-Oct-16	Sonia Meili, MEM	Mitigation measures identified for wildlife during reclamation and Closure do not appear to be reflected in the Reclamation and Closure Plan. Mitigation measures identified include creation of habitat features and planting of browse for wildlife species. The reviewer was unable to locate these prescriptions in the Reclamation and Closure Plan.	A detailed Wildlife Management (P reclamation and closure; an outline Reclamation and Effective Closure mitigation measures outlines for th Plan will be provided in the MAPA.
256	EAC Application / EIS (July 2016)	MEM-044	6-Oct-16	Sonia Meili, MEM	This section indicates that the Invasive Plant Species Management Plan is to include information on the washing of equipment before arrival to grassland areas to minimize potential introduction and proliferation of invasive plants. Are there grasslands in the project area? The Terrestrial Ecosystems section suggests this is not the case.	There are no grassland ecosystems procedures for Proposed Project ve involve washing before arrival to th plants".
257	EAC Application / EIS (July 2016)	MEM-045	6-Oct-16	Sonia Meili, MEM	The Erosion and Sediment Control Plan prescribes silt fencing along project perimeters, at the base of slopes, and along road edges. Long runs of fencing should be avoided to ensure water is not funnelled along the fence to one location, where overtopping or toppling may occur. MEM believes that the use of silt fencing is a short-term best management practice used to ensure slope materials are not transported to areas where they could be introduced to flowing water. Run-off controls should be implemented to minimize the amount of water flowing over the slope and surface preparation techniques should be used to add roughness to the slope surface and promote infiltration as opposed to run-off. Longer-term mitigation should be to establish adequate cover of appropriate species. If run-off on the slope is expected to mobilize sediment, sediment control at the toe of the slopes may be required.	It is recognized that surface run off anticipate a high volume of surface No point source discharges of surfa and water course armouring will b progressive matter. Silt fencing is in the MAPA to clarify the use of prim
258	EAC Application / EIS (July 2016)	MEM-046	6-Oct-16	Sonia Meili, MEM	Table 3 in the Erosion and Sediment Control Plan prescribes landscaping and re-vegetation as erosion control measures during reclamation. MEM notes that surface preparation techniques which roughen the surface (such as mounding or rough and loose) would be beneficial in reducing erosion, compared to long, smooth continuous slopes.	Acknowledged. Surface preparatio Reclamation and Effective Closure
259	EAC Application / EIS (July 2016)	MEM-047	6-Oct-16	Sonia Meili, MEM	MEM is encouraged to see that the Erosion and Sediment Control Plan includes monitoring on a weekly basis in addition to immediately prior to large storm events, and within 24 hours of storm events. In order to better evaluate effectiveness of erosion and sediment control prescriptions and to address issues as they arise during heavy precipitation events, MEM requires event based effectiveness monitoring (i.e during storm events). As noted in comment MEM02, more frequent monitoring of water quality, specifically TSS, may be required. An Erosion and Sediment Control Plan which includes event based monitoring and trigger action response is required for permitting.	Acknowledged. We agree and unde important components for evaluati arise during heavy precipitation eve Reclamation and Quality Assurance Elevated TSS levels are not expecte receiving environment during oper deemed required through monitor The ESCP will be revised as necess requirements of the MAPA and oth
260	EAC Application / EIS (July 2016)	MEM-048	6-Oct-16	Sonia Meili, MEM	Soils at the project site have not been characterized and assumptions regarding soil suitability for reclamation are based on existing regional soil mapping, forestry capability mapping and an exploration test pitting program. As noted in MEM03, a monitoring program will be required during soil salvage to further characterize the materials and to inform reclamation and re vegetation prescriptions.	To further characterize soils with re monitoring program will be implen assessments (e.g. texture and coar metals). This information will be us Also see response to MEM-042.
261	EAC Application / EIS (July 2016)	MEM-049	6-Oct-16	Sonia Meili, MEM	The Reclamation Plan proposed the end land use as "functional terrestrial ecosystems in the Proposed Project Area outside of the pit." While MEM agrees that this is an important goal, this is not a land use. Section 10.7.4 of the Health, Safety and Reclamation Code for Mines in British Columbia requires that sites be reclaimed to an end land use that considers previous and potential uses. Section 7.6 of the Reclamation Plan states that "the primary objective of the re-vegetation activities is to establish a successional native plant community that will meet end land use objectives for wildlife habitat and ecological succession" Is wildlife habitat the proposed end land use? If so, what species of wildlife must be considered? Please clarify what the end land use objectives.	Wildlife habitat and ecological succ amphibians and Roosevelt elk. Project features will be progressive habitat. As part of this commitmen Annual progress reports will be pro report after reclamation is complet
262	EAC Application / EIS (July 2016)	MEM-050	6-Oct-16	Sonia Meili, MEM	The Reclamation Plan states that "due to the uncertainty regarding the nature of the reclaimed soil profiles, additional field studies will be conducted to assess reclaimed soil characteristics and inform vegetation prescriptions." When would this work be conducted? Is the intent to re-contour and replace soils and then conduct these studies? As noted in MEM03, additional soil characterization will be required during soil salvage.	Additional field studies will be conc guide vegetation prescriptions. Fie with the intent to collect enough d to further guide construction and c Also see response to MEM-042.

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Protection) Plan will be developed and will include mitigation measures related to e of the Plan is presented in Volume 3, Part E, Section 16 of the EAC Application/EIS. The Plan is being further developed to include a re-vegetation plan that is consistent with the he Wildlife Management (Protection) Plan. An updated Reclamation and Effective Closure

s in the Project area. Section 16.2.2.4.1, Bullet #1 should read: "Cleaning/washing ehicles and equipment taken off-site to areas where weeds may be present. This may he Project area to minimize the potential for introduction and proliferation of invasive

f control is a key aspect to the ESCP. As the surficial soils are highly permeable; we do not e runoff. The primary approach to storm water management is collection and infiltration. face water are proposed. Revegetation, vegetation covers, geotextile matting, resurfacing be primary control measure. In addition, reclamation (revegetation) will occur in a intended to be only a temporary sediment control measure. The ESCP will be updated for mary vs. temporary control measures.

on techniques (resurfacing/re-contouring/surface roughening) is prescribed in Table 3 of the Plan under the removal of land-based infrastructure associated reclamation.

lerstand that event based effectiveness monitoring and trigger action responses are an ting the effectiveness of erosion and sediment control prescriptions, specifically if issues vents. Effectiveness monitoring and trigger action response strategies will be provided in the Sections of the MAPA.

ed given there will be no direct surface water connection between the Pit Lake and the rations and consequently no release of pit lake water (See Oct 7 IR Responses MEM-041). If ring programs and prescribed inspections, additional samples for TSS will be collected.

sary in consultation with MEM, other regulatory agencies and First Nations to satisfy the her permits.

espect to soil suitability for reclamation (i.e. suitable top soil for stripping and storage), a nented prior to and during soil salvage operations. This will include on site visual rse fragment differentiation) and select soil sampling analysis (e.g. for nutrient and base sed to guide reclamation and re-vegetation prescriptions.

cession are the planned end land uses. Wildlife habitat reclamation will focus on

ely reclaimed prior to closure to reclaim wildlife habitat, including Roosevelt elk winter nt, monitoring will occur to confirm the objectives of the revegetation plan are achieved. ovided that will describe the effectiveness of reclamation activities, in addition to a closure te. Additional details will be provided in the MAPA.

ducted to further characterize soils in order to assess reclaimed soil characteristics and eld studies will be conducted prior to and during soil salvage operations (e.g., construction), data to inform initial surface preparation activities. Soil sample analysis results will be used ongoing salvage operations and reclamation activities.

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263	EAC Application / EIS (July 2016)	MEM-051	6-Oct-16	Sonia Meili, MEM	Section 6.2.1 of the Reclamation Plan indicates that ecological units will be created during the reclamation phase similar to those present prior to construction and that approved native vegetation and trees will be used to reclaim disturbed areas. No reclamation prescriptions are provided in the the Reclamation Plan. How will reclamation prescriptions be tailored to create ecosystems that existed prior to construction?	Information from baseline studies i reclamation prescriptions tailored f provided in the Vegetation Manage
264	EAC Application / EIS (July 2016)	MEM-052	6-Oct-16	Sonia Meili, MEM	Section 7.7 of the Reclamation and Closure Plan indicates that seed mixes and plants to be used in reclamation are to be recommended by a vegetation specialist. When would reclamation prescriptions be developed for the site? It is MEM's expectation that the Reclamation and Closure Plan include vegetation prescriptions. A detailed Reclamation and Closure Plan which includes prescriptions and maps identifying areas that will be addressed by different prescriptions to meet site-specific end land use objectives and/or diverse environmental conditions will be required for the permitting phase. These initial prescriptions would be tested over the life of mine and modified/improved based on results of this research.	Seed mixes and plants to be used in initial prescriptions would be moni
265	EAC Application / EIS (July 2016)	MEM-053	6-Oct-16	Sonia Meili, MEM	References are made throughout the Reclamation and Closure Plan to the use of native species as part of reclamation. Would a native seed collection program be considered for the site? What species would be used for reclamation?	Detailed vegetation prescriptions, i and consideration for a native seed
266	EAC Application / EIS (July 2016)	MEM-054	6-Oct-16	Sonia Meili, MEM	The Reclamation Plan does not include information regarding the removal of site infrastructure and how foundations will be reclaimed, the closure of wells, the assessment and clean up of contaminated sites, or a reclamation cost estimate. A detailed Reclamation and Closure Plan which includes this information, as well as a detailed cost estimate to implement the Reclamation and Closure Plan will be required for permitting.	The MAPA will provide information infrastructure removal and foundar appropriate Emergency Manageme Management Plan, Emergency Res within the Project Area. Additional A standalone Reclamation Costing
267	EAC Application / EIS (July 2016)	MET-002	3-Oct-16	Chris Gall, Métis Nation BC	All Aboriginal people hold inherent, constitutionally protected rights. Further, there is no hierarchy of Aboriginal rights within Section 35. Métis are a distinct Aboriginal peoples with equal but unique Aboriginal rights as other Section 35 Aboriginal peoples. This was highlighted recently in Ministerial Special Representative Thomas Isaac's Report on Métis` Rights.	A summary of the regulatory conte does not present a hierarchy of Ab
268	EAC Application / EIS (July 2016)	MET-003	3-Oct-16	Chris Gall, Métis Nation BC	Like other Aboriginal peoples, the Métis existed prior to Canada's inception as a nation. As noted in the EIS, however, the Métis emerged out of relationships between First Nations women and European men. Thus the Métis are a mixed-race people, (but not any mixed-race people) with their own unique government, culture, language, communities and history. The ethnogenesis or birth of the Métis as a distinct people is connected to the fur-trade. As recognized by the Métis National Council, their kinship networks, past and present, span from Ontario in the east to British Columbia in the west.	The EAC Application/EIS presents t area: - Background information in Sectic - Regulatory overview of Métis Ab - Existing conditions in Section 11.
269	EAC Application / EIS (July 2016)	MET-004	3-Oct-16	Chris Gall, Métis Nation BC	In terms of fish and wildlife issues with respect to the EIS beyond those identified in the original application. We see the proposed channel offsetting as likely to increase fish habitat in a very positive way.	Comment acknowledged.
270	EAC Application / EIS (July 2016)	MIB-001	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	Our review of the Application/EIS concludes that the proposed Project would result in a significant increase in the barge traffic throughout Musqueam's territorial waters, including Howe Sound, the Salish Sea and the Fraser River.	In response to Musqueam Indian B Project-related barge traffic, BURN Rationale for the Proposed BURNC result in an incremental change in 1 - 92% increase along Ramillies Char - 9.6% increase along Thornbrough - 12.3% increase along Queen Char - 0% net change from south of Pass and - 0% net change along the Fraser R Consequently, shipping lanes in the assessment. As Project-related shi assessment.

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including recommendations for native vegetation and trees, will be used to provide to create ecosystems, and to reclaim disturbed areas. Additional information will be gement Plan in the MAPA.

in reclamation will be provided in the Vegetation Management Plan for the MAPA. These itored over the life of mine and modified/improved based on results.

ncluding types of vegetation species being considered for the site, use of native species collection program will be outlined in the Vegetation Management Plan in the MAPA.

n regarding the Reclamation of Specific Mine Features including details on site ation reclamation, and well closure (in accordance with the Water Sustainability Act). With tent Plans (e.g. Material Storage, Handling and Waste Management Plan, Access sponse Plan, and Spill Prevention Response Plan), we do not anticipate site contamination I details will be provided in the MAPA.

Spreadsheet will also be provided with the MAPA submission.

ext for Métis Aboriginal rights is provided in Section 11.1 Regulatory Overview. This section poriginal rights within Section 35.

the following information on Métis Nation BC as it relates to the Project and the Project

ion 10.1.10 poriginal rights in Section 11.1 .4.2.9

Bands comments related to potential effects on their current use due to an increase in NCO notes that on October 2, 2013, BURNCO submitted a Marine Shipping Scoping CO Aggregate Project to CEA Agency. The shipping analysis indicated that the Project would tug/barge traffic of:

annel;

h Channel;

rlotte Channel to south of Passage Island;

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

e Strait of Georgia and the Fraser River were not included in the spatial boundary for the ipping or barging would not occur in Burrard Inlet, it was also not included in the

Application Review Issues Tracking

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271	EAC Application / EIS (July 2016)	MIB-002	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	The Musqueam people exercise their Aboriginal rights, including fishing and other marine activity related rights, in the aforementioned waters.	In response to Musqueam Indian B Project-related barge traffic, BURN Rationale for the Proposed BURNC result in an incremental change in - 92% increase along Ramillies Cha - 9.6% increase along Queen Char - 0% net change from south of Pass and - 0% net change along the Fraser R Consequently, shipping lanes in the assessment. As Project-related shi assessment. In response to Musqueam's comm terrestrial footprint of the Project a occur during the construction, ope encompassing an area broader tha appropriate scale that provides reli- neither over-emphasizes nor unde shipping from where the barges m Inlet.
272	EAC Application / EIS (July 2016)	MIB-003	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	The proposed route for barge traffic passes directly through Musqueam's traditional fishing extents in Howe Sound, the Salish Sea and the Fraser River. Given the significant constraints already imposed upon fishing with Musqueam's marine use territories, including existing shipping activities, legacy impacts (i.e., long-lasting effects from past projects and activities), and current fishery conservation restrictions, the increased barge traffic posed by this Project will cumulatively pose an adverse impact on Musqueam's ability to meaningfully exercise constitutionaly protected fishing activities recognized in the Sparrow decision.	Please refer to the Proponent's res
273	EAC Application / EIS (July 2016)	MIB-004	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	The Application/EIS does not accurately characterize Musqueam's rights-based traditional use activities and how these activities will be affected by the increased barge trafic associated with the Project.	Please refer to the Proponent's res Several of Musqueam's comments effects from the Project on Musqu activities based on that information assessment, including Musqueam I Musqueam Land Use and Occupan Development Plan, as well as regul Musqueam Indian Band with a pre be included in the EAC Application, Indian Band with the draft effects a 2016 prior to finalizing the EAC App
274	EAC Application / EIS (July 2016)	MIB-005	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	The proposed transport of processed aggregate material by barges to BURNCO's existing facilities in Burnaby or Langley, will pass directly through Musqueam territorial waters at the eastern entrance to Howe Sound, the Salish Sea and the Fraser River, and as such, potentially poses a hazard to Musqueam's recognized and constitutionally protected priority fishing activities that take place in these areas.	Please refer to the Proponent's res
275	EAC Application / EIS (July 2016)	MIB-006	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	This is a sizable increase in vessel movements through Musqueam's fishing areas; such an increase will pose new daily hazards and potential adverse effects to the spaces in Musqueam practices their constitutionally protected rights. Any potential adverse effect on Musqueam's affirmed rights requires the Crown to consult with, and accommodate Musqueam.	Please refer to the Proponent's res

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Bands comments related to potential effects on their current use due to an increase in NCO notes that on October 2, 2013, BURNCO submitted a Marine Shipping Scoping CO Aggregate Project to CEA Agency. The shipping analysis indicated that the Project would tug/barge traffic of:

annel;

Channel;

rlotte Channel to south of Passage Island;

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

ne Strait of Georgia and the Fraser River were not included in the spatial boundary for the hipping or barging would not occur in Burrard Inlet, it was also not included in the

nents related to current use, the LSA was selected to include the immediate freshwater and and adjacent areas. These areas are where potential Project-related disturbances could eration, reclamation and closure phases. The RSA was selected to be larger in scope, an the immediate footprint of the Project. RSA boundaries were selected to represent an levant context for consideration of the Project effects, offer useful and meaningful data, and er-emphasizes the scale of the Project effects. The scope of the assessment does not include neet the existing shipping lanes in the Strait of Georgia and in the Fraser River or Burrard

nents related to the information presented regarding Musqueam's current use of aquatic und, the sources relied on for this assessment did not specify the fish and marine values at

sponse for MIB-002.

sponse for MIB-002.

s noted concern regarding the information relied upon for the assessment of potential ueam current use and the characterization of Musqueam's rights-based traditional use on. As directed by CEA Agency, BURNCO relied on publicly-available sources for the effects Indian Band's own Musqueam Comprehensive Land Claim: Preliminary Report on ncy and We Are of One Heart and One Mind: A Comprehensive Sustainable Community ulatory documents for other projects in proximity to the Project Area. BURNCO provided eliminary draft of the background information prepared from publicly-available sources to n/EIS for review and comment on November 9, 2015. BURNCO also provided Musqueam assessment and First Nations Consultation Report for review and comment on January 8, oplication/EIS. BURNCO did not receive responses to either request.

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276	EAC Application / EIS (July 2016)	MIB-007a	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	In order for Musqueam to understand the full extent of potential impacts on Musqueam rights and interests, the following critical information gaps on key Project components and activities must be substantiated by the Proponent: a. The quantity and type of waste and fuel that will be transported by barge, including the kind of hazardous waste, if applicable;	a. The quantity of waste expected f resulting from the Proposed Projec materials expected to be on-site in waste expected for the Project is cu has implemented and maintained a following in-house best manageme - BMP – 01: Hazardous Materials M - BMP – 02: Waste Management ar - BMP – 03: Spill Prevention and Re - BMP – 04: Site Management and The BMPs are provided in Volume 4
277	EAC Application / EIS (July 2016)	MIB-007b	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	b. Details on how these materials will be handled;	b. A Material Storage, Handling and transportation and/or disposal of w regulations. Expected waste resulti effluent. Other hazardous materials chemicals. Wastes will be reduced, provided in Section 16.2.2.3.
278	EAC Application / EIS (July 2016)	MIB-007c	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	c. The frequency of barge trips during construction and the routes that these materials will travel, including as it relates to the Salish Sea and the Fraser River;	c. Information on the numbers of P Section 7.2.5.2.1.1.2 Interference v
279	EAC Application / EIS (July 2016)	MIB-007d	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	d. What measures will be in place to avoid spills, and emergency measures (including securities) to address spills if they were to occur; and	d. A Spill Prevention and Emergenc set measures and controls in place an accidental event and (ii) contain More information on the SERP is pr A Marine Transport Management P procedures for vessels calling and le will be shipped via Seaspan tugs an navigational routes in Howe Sound required to adhere to regulations for Environmental Management Syster Management Plan.
280	EAC Application / EIS (July 2016)	MIB-007e	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	e. The degree of increase in barge traffic on the Fraser River that is presented by the Project.	 e. In excluding marine shipping from Fraser River to BURNCO's existing from the second seco
281	EAC Application / EIS (July 2016)	MIB-008	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	The effects of the barging component on Musqueam's rights based activities and Current Use of Lands and Resources for Traditional Purposes (CULRTP) have not been adequately characterized or assed due to the following gaps: a. Inadequately scoped project that excludes existing barge routes in the Strait of Georgia and Fraser River; and b. Missing information on Musqueam use in the currently defined Local Study Area (LSA) and Regional Study Area (RSA). Once these gaps are filled, effects from barge shipping, and subsequent increase in marine traffic on Musqueam rights and interests will need to be assessed.	Please refer to the Proponent's res
282	EAC Application / EIS (July 2016)	MIB-009	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	Where there are admitted potential effects to Musqueam's rights-based practices, the Proponent inaccurately claims that these practices are limited to the Fraser River (e.g., see Section 11.4.2.3 of the Application/EIS), and subsequently excludes this area from the scope of the assessment. Additional traffic on the Fraser River during fishing seasons is an adverse impact on Musqueam fishing rights.	Please refer to the Proponent's res

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for the Project that will be transported by barge is currently unknown. Expected waste at includes industrial waste, domestic waste and sewage effluent. Other hazardous cludes fuels and lubricants, paints and solvents, and other chemicals. The quantity of urrently unknown. Tugs and barges for the Project will be operated by Seaspan. Seaspan an Environmental Management System that conforms to ISO 14001:2004 and includes the ent practices (BMPs) relevant to the removal of waste from site:

lanagement

nd Recycling

esponse

Housekeeping

4, Part G – Section 22.0: Appendix 16-A of the EAC Application/EIS.

d Waste Management Plan will be developed to ensure appropriate collection, storage, vaste and hazardous materials to minimize environmental effects and meet appropriate ng from the Proposed Project includes industrial waste, domestic waste and sewage s expected to be on-site includes fuels and lubricants, paints and solvents, and other re-used and recycled as much as feasibly possible. Additional information on the Plan is

roject-related vessels and routes that they would travel during construction is provided in vith Navigation Use and Navigability due to Project-related Vessel Traffic.

cy Response Plan (SERP) will be developed and implemented for the Project. The SERP will e to (i) prevent release of toxic or deleterious substances into the environment as a result of n and clean up spills and leaks in cases where a release (accidental event) has occurred. provided in Section 16.6.

Plan will also be prepared (see Section 16.2.2.11), which will provide details on safety loading at the terminal. The Proposed Project's mined aggregate, materials and wastes nd barges that are operated by highly experienced mariners who are familiar with the d and regularly service the forestry industry. Project-related tugs and barges will be for preventing collisions at sea. Seaspan has implemented and maintained an em that conforms to ISO 14001:2004, which includes a Spill Prevention and Response Best

m where the barges meet the existing shipping lanes in the Strait of Georgia and in the facilities in Burnaby and Langley, CEAA considered the following analysis of the incremental ciated with the Proposed Project:

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley. ponse for MIB-004.

ponse for MIB-004.

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283	EAC Application / EIS (July 2016)	MIB-010	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	Where the spatial boundaries of the EA overlap with Musqueam's traditional territory, such as within Howe Sound, Burrard Inlet, and the Salish Sea, the Proponent fails to provide any information regarding our members' use of these areas.	Please refer to the Proponent's res In response to Musqueam's comm terrestrial footprint of the Project a occur during the construction, ope encompassing an area broader tha appropriate scale that provides rel neither over-emphasizes nor unde shipping from where the barges m Inlet.		
284	EAC Application / EIS (July 2016)	MIB-011	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	The absence of potential interactions between the Project and Musqueam's rights-based practices (in either Part C or under the CULRTP VC) is a notable gap in the assessment that the Agency and EAO must require the Proponent to address. Any sizable increase in barge traffic through Musqueam's territorial waters has the potential to adversely impact Musqueam's rights-based activities. To this effect, Musqueam requests: a. The Proponent be required to provide an assessment of Musqueam current and future rights-based harvesting activities in and around the eastern entrance to Howe Sound and the Salish Sea, subject to direct engagement with Musqueam on information provided herein, and a thorough assessment of effects; b. The EAO's section 11 Order and CEA Agency's scope of review be revised to include the barge traffic in the Strait of Georgia and the Fraser River; and c. The Local and Regional Assessment Areas for CULRTP be expanded accordingly.	Please refer to the Proponent's res		
285	EAC Application / EIS (July 2016)	MIB-012	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	Documented fish and marine values for these location include, but are not limited to: • Herring in Burrard Inlet, part of RSA and adjacent LSA; • Halibut and cod fishing from the eastern shores of Howe Sound in RSA; • Sturgeon fishing upstream from Burrard Inlet likely in LSA; • Capelin/smelt caught at low water along beaches of Howe Sound in RSA; • Clam digging in RSA; and • Sea mammal harvesting in RSA.	In response to Musqueam's comm and marine resources in Howe Sou the locations indicated: - Halibut and cod fishing from the - Capelin/smelt caught at low wate - Clam digging in RSA; and - Sea mammal harvesting in RSA. The Proponent did note in Section Musqueam in Howe Sound; howen no sensitive fish habitats overlap w herring or capelin. The potential effects of the Project predicted for this VC. The Proponent that are relevant to Musqueam's c		
286	EAC Application / EIS (July 2016)	MIB-013	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	 Documented terrestrial values for the eastern shore of Howe Sound and islands within the Sound include: Mountain goat; Camping; Hunting deer; and Gathering medicines - root gathering, berry picking, cedar bark and other trees. 	The Proponent did note in Section Passage islands; however, the sour Howe Sound for these terrestrial v the Project and terrestrial values w were not included in the spatial bo the potential effects of the Project predicted for this VC. The Propone that are relevant to Musqueam's c		
287	EAC Application / EIS (July 2016)	MIB-014	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	 Musqueam requests that the Proponent be required to provide the following additional information: Traditional use information on current use in Howe Sound and Burrard Inlet is added to the Application/EIS, subject to direct engagement with Musqueam on information provided herein, and a thorough re-assessment of effects is completed; and Assessment of potential effects of accidents and malfunctions on terrestrial use and values on Bowen Island and Passage Island in relation to Musqueam rights, including current use. 	Please refer to the Proponent's res		

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sponse for MIB-004.

nents related to current use, the LSA was selected to include the immediate freshwater and and adjacent areas. These areas are where potential Project-related disturbances could eration, reclamation and closure phases. The RSA was selected to be larger in scope, an the immediate footprint of the Project. RSA boundaries were selected to represent an levant context for consideration of the Project effects, offer useful and meaningful data, and er-emphasizes the scale of the Project effects. The scope of the assessment does not include neet the existing shipping lanes in the Strait of Georgia and in the Fraser River or Burrard

sponse for MIB-010.

nents related to the information presented regarding Musqueam's current use of aquatic und, the sources relied on for this assessment did not specify the fish and marine values at

eastern shores of Howe Sound in RSA; er along beaches of Howe Sound in RSA;

11.4.2.3.1 of the EAC Application/EIS that sources indicated that herring was harvested by ver, no specific locations within Howe Sound were identified. As noted in Section 5.2.4.6, with the Project Area, including no known spawning sites for key forage fish species, such as

It were assessed for marine resources in Section 5.2 and no significant residual effects are ent is of the view that the Project does not have the potential to affect marine resources current use.

11.4.2.3.2 of the EAC Application/EIS that Musqueam harvested birds on Bowen and irces relied on for this assessment did not provide specific information for Musqueam use of values, such as species harvested or specific locations. No potential interactions between were identified on the eastern shore of Bowen and Passage islands; therefore, these areas oundaries for the effects assessment for the Terrestrial Wildlife and Vegetation VC. Further, t were assessed for terrestrial resources in Section 5.3 and no significant residual effects are ent is of the view that the Project does not have the potential to affect terrestrial resources current use.

sponse for MIB-004.

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Line No.	Rev (Date)	REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)	
288	EAC Application / EIS (July 2016)	MIB-015	3-Oct-16	Dianne Sparrow, Musqueam Indian Band	Prior to this EA process proceeding further, we request that CEAA and the EAO provide Musqueam with a plan for consulting with Musqueam regarding the potential adverse effects posed by additional barge traffic on Musqueam's Aboriginal rights throughout Musqueam territory in a manner that includes a meaningful assessment of effects and potential accommodation mechanisms.	Please refer to the Proponent's res BURNCO provided Musqueam India available sources to be included in provided Musqueam Indian Band v comment on January 8, 2016 prior It is also our understanding that on Musqueam Indian Band to outline
289	EAC Application / EIS (July 2016)	CT-005	3-Oct-16	Larry George, Cowichan Tribes	While the majority of project activities will be taking place in Howe Sound, the marine shipping activities will bring increased traffic to the South Arm of the Fraser River, which is within Cowichan Tribes traditional territory and Statement of Intent. This will affect, whether directly or through cumulative impacts, Cowichan Tribes traditional, current and future use in the area.	On October 2, 2013, BURNCO subn CEAA Agency. The shipping analysi traffic of: 92% increase along Ramillies Cha 9.6% increase along Thornbrougl 12.3% increase along Queen Cha 0% net change from south of Pas and 0% net change along the Fraser F CEA Agency responded to BURNCO marine shipping for the purposes o Channel, Thornbrough Channel and meet the existing shipping lanes in Langley were no longer included fo
290	EAC Application / EIS (July 2016)	CT-006	3-Oct-16	Larry George, Cowichan Tribes	It is of great concern that the cumulative effects of increased industrial activity and of marine shipping in particular are not addressed in any meaningful way.	An assessment of cumulative effec In excluding marine shipping from River to BURNCO's existing facilitie change in tug/barge traffic of assoc • 0% net change from south of Pas and • 0% net change along the Fraser F
291	EAC Application / EIS (July 2016)	CT-007	3-Oct-16	Larry George, Cowichan Tribes	While we understand the impacts of the Project are being confined within the parameters of the EIS, to the McNab estuary, the nature of environmental assessment should be more holistic.	Comment acknowledged. The scop the potential effects of Project-rela Charlotte Channel (south of Passag lanes in the Strait of Georgia and in the following analysis of the increm • 0% net change from south of Pas and • 0% net change along the Fraser F

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sponse for MIB-002.

lian Band with a preliminary draft of the background information prepared from publiclythe EAC Application/EIS for review and comment on November 9, 2015. BURNCO also with the draft effects assessment and First Nations Consultation Report for review and r to finalizing the EAC Application/EIS. BURNCO did not receive responses to either request. n December 19, 2011, the CEA Agency shared a proposed consultation plan with the e opportunities for consultation for the assessment.

mitted a Marine Shipping Scoping Rationale for the Proposed BURNCO Aggregate Project to sis indicated that the proposed Project would result in an incremental change in tug/barge

annel;

gh Channel;

arlotte Channel to south of Passage Island;

ssage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

O's submission on November 12, 2013. CEA Agency updated the scope of the assessment of the comprehensive study to continue to include barge traffic in Howe Sound, Ramillies and Queen Charlotte Channel (south of Passage Island). Shipping from where the barges in the Strait of Georgia and in the Fraser River to BURNCO's existing facilities in Burnaby and for the assessment of marine shipping.

cts has been undertaken for all VCs where residual effects were identified.

where the barges meet the existing shipping lanes in the Strait of Georgia and in the Fraser es in Burnaby and Langley, CEAA considered the following analysis of the incremental ociated with the Proposed Project:

ssage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

ppe of the assessment goes beyond McNab Creek and the McNab estuary, and does include lated barge traffic in Howe Sound, Ramillies Channel, Thornbrough Channel and Queen ge Island). In excluding marine shipping from where the barges meet the existing shipping in the Fraser River to BURNCO's existing facilities in Burnaby and Langley, CEAA considered mental change in tug/barge traffic of associated with the Proposed Project: assage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

	Document	For Working Group Use					
Line No.	Rev (Date)	REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)		
292	EAC Application / EIS (July 2016)	CT-008	3-Oct-16	Larry George, Cowichan Tribes	Additionally, we also realize that the issue of marine shipping is delegated to Transport Canada, but there should still be a more in-depth assessment of marine shipping and the cumulative impacts therein, especially as they pertain to Cowichan Tribes territory and rights.	Section 7.2 of the EAC Application/ Proposed Project-related vessel tra navigability due to Proposed Project barges meet the existing shipping la Burnaby and Langley, CEAA conside the Proposed Project: • 0% net change from south of Pas and • 0% net change along the Fraser R There is no potential interaction be interaction was determined to be n associated with Project-related infr mitigation. Potential effects of the Proposed Pro construction and operations was de speed to move out of the paths of I Proposed Project-related barging m route. However, potential interaction expected to be not significant follow management planning involving Ca other key maritime stakeholders – i	
293	EAC Application / EIS (July 2016)	CT-009	3-Oct-16	Larry George, Cowichan Tribes	Please note that in past correspondence between Cowichan Tribes and the BC Environmental Assessment Office (EAO), Cowichan Tribes was determined through a preliminary assessment to be unlikely to notice any significant adverse effects on our indigenous rights from the Project. We responded to this assessment with confusion, as Cowichan Tribes, along with our partners in the Cowichan Nation Alliance (Halalt, Penelakut, and Stz'uminus) had made very clear our strength of claim to aboriginal rights and title on the lower South Arm of the Fraser River.	Comment acknowledged. Section : of the Fraser River, based on public In excluding marine shipping from v River to BURNCO's existing facilities change in tug/barge traffic of assoc • 0% net change from south of Pas and • 0% net change along the Fraser R	
294	EAC Application / EIS (July 2016)	CT-010	3-Oct-16	Larry George, Cowichan Tribes	In an e-mail dated February 9, 2012, we stated our concerns, including "route alternatives, spill contamination, spillage risk and prevention, marine traffic, fisheries and fish habitat, wildlife and wildlife habitat, and air/noise impacts".	BURNCO has no record of the descr concerns are addressed in the follo - Route Alternatives - Section 2.8.2. - Spill Contamination/Spillage Risk a - Marine Traffic - Section 7.2 Marin - Fisheries and Fish Habitat - Sectio - Wildlife and Wildlife Habitat - Sect - Air Quality - Section 5.7 - Air Qual - Noise - Section 9.2 Noise	
295	EAC Application / EIS (July 2016)	CT-011	3-Oct-16	Larry George, Cowichan Tribes	There was an established, year-round village in use by the Cowichan Nation within the South Arm of the Fraser River. This should be reflected in the profile of all Cowichan Nation Alliance members in Volume 3, Part C of the EIS.	The Proponent has included inform Nation Alliance member First Natio In excluding marine shipping from v River to BURNCO's existing facilities change in tug/barge traffic of assoc • 0% net change from south of Pas and • 0% net change along the Fraser R	

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/EIS presents a marine transportation assessment, including potential wake effects from the affic on shoreline infrastructure, and potential interference with navigation use and ct-related infrastructure and vessel traffic. In excluding marine shipping from where the lanes in the Strait of Georgia and in the Fraser River to BURNCO's existing facilities in lered the following analysis of the incremental change in tug/barge traffic of associated with

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

tween potential wake effects and shoreline infrastructure, therefore the nature of this negligible. The potential effects of the Proposed Project on navigation use and navigability rastructure was determined to be negligible following the implementation of proposed

roject on navigation use and navigability due to Project associated vessel traffic during etermined to be not significant as the frequency of small vessels changing direction and larger vessels is expected to increase only slightly.

nay interact with Woodfibre LNG carriers along a small section of the Project's barging ons between vessels would occur infrequently and potential cumulative residual effects are wing implementation of mitigation measures which include marine transportation mada Coast Guard, Pacific Pilotage Authority, the selected tug operator, BURNCO and including Woodfibre LNG – to identify mutually agreeable operating practices.

nt of the Project. Please see response to comment CT-001.

11.4.2 Existing Conditions summarizes Cowichan Nation Alliance member First Nations' use cly available sources.

where the barges meet the existing shipping lanes in the Strait of Georgia and in the Fraser s in Burnaby and Langley, CEAA considered the following analysis of the incremental ciated with the Proposed Project:

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

ribed correspondence dated February 9, 2012. Notwithstanding, each of the stated wing sections of the EAC Application/EIS:

2.2 Alternative Transportation Options

and Prevention - Section 5.2.5.2.5.4 Marine Resources Accidents and Malfunctions ne Transportation

on 5.1 Fisheries and Freshwater Habitat

tion 5.3 Terrestrial Wildlife and Vegetation

lity

nation on the village site of Tl'uqtinus in the summaries presented for each Cowichan ons under Section 11.4.2 Existing Conditions.

where the barges meet the existing shipping lanes in the Strait of Georgia and in the Fraser s in Burnaby and Langley, CEAA considered the following analysis of the incremental ciated with the Proposed Project:

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

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296	EAC Application / EIS (July 2016)	MEM-055	3-Nov-16	Ministry of Energy and Mines, Mines and Mineral Resources Division	A risk assessment for the potential failure of the McNab Creek flood protection dike must be completed and included in the application. MEM recommends that assessment methodology used be informed by the following documents: - APEGBC "Professional Practice Guidelines-Legislated Flood Assessments in a Changing Climate in BC" 2012: https://www.apeg.bc.ca/getmedia/18e44281-fb4b-410a-96e9-cb3ea74683c3/APEGBC-Legislated-Flood- Assessments.pdf.aspx - FLNRO Consequence of Failure guidance document: http://www2.gov.bc.ca/assets/gov/environment/air-land- water/water/dam-safety/con_class_guidelines_for_dsos-2016.pdf - Canadian Dam Association 2014 "Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams" The risk assessment must consider the potential impact of dike breach or overtopping, and subsequent failure/erosion of the fines stored behind the dike, to the following: - proposed fisheries compensation area, - proposed pit lake, - proposed end land use objectives for the property. Environmental consequences should assess the expected magnitude and duration of disturbance, if restoration is feasible, and at what cost.	No further response required. To b
297	EAC Application / EIS (July 2016)	MEM-056	3-Nov-16	Ministry of Energy and Mines, Mines and Mineral Resources Division	This risk assessment (see MEM-055) should be coupled with an analysis of closure options for the McNab Creek flood protection dike. The potential options should be clearly identified with the closure requirements of each, including estimated costs for design and implementation of the closure construction works and for the associated long-term monitoring and maintenance requirements. The proponent is encouraged to identify the preferred closure scenario, but it must be based on the assessment of risk and consequence.	No further response required. To b
298	EAC Application / EIS (July 2016)	MEM-057	3-Nov-16	Ministry of Energy and Mines, Mines and Mineral Resources Division	The fisheries habitat compensation proposal should be included in the [Mines Act permit] application. In the application section discussing the purpose and details of these works, it should be clearly indicated how the McNab Creek flood protection dike relates to the maintenance of the compensation area. The analysis in MEM-055 above should reiterate and reflect this information.	The Fish Habitat Offset Plan (refer McNab Creek Flood Protection Dike MAPA.
464	Round 1 Responses (20Oct2016)	MEM-040.1	24-Nov-16	Sonia Meili, MEM	Discussions with MEM and FLNRO will be needed regarding permit requirements for water quality. MEM expects that the proponent will implement a due diligence water quality monitoring plan to confirm their assertions about risk of the specified activities on surface and groundwater quality. [Permitting Level Discussion]	Acknowledged. A water quality mo discussions with MEM and FLNRO t
465	Round 1 Responses (20Oct2016)	MEM-041.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed	No response required.
466	Round 1 Responses (20Oct2016)	MEM-042.1	24-Nov-16	Sonia Meili, MEM	MEM will require additional information pertaining to soil salvage and segregation criteria in the permit application. [Permitting Information requirement] MEM notes that information pertaining to monitoring of soil salvage may be more appropriate to include as part of the soil management plan included in the Reclamation and Closure Plan, rather than in the Erosion and Sediment Control Plan (ESCP). MEM acknowledges that monitoring is an important component of the ESCP; however, what MEM was referring to in the original comment was the further characterization of soil to help inform reclamation prescriptions. Further characterization of soil committed to in the proponent's response to MEM048 may form a permit condition. [Permit Condition]	We acknowledge and understand t specifically in developing salvage ar collection to further delineate top s characteristics, organic matter). As MAPA.

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be addressed in Mines Act Permit Application.

be addressed in Mines Act Permit Application.

to EA Vol 4 - Appendix 5.1-B) will be referenced and appended to the MAPA. Reference to ke connection to the fish habitat offset area will be presented in appropriate sections of the

onitoring program is proposed and will be implemented. Details to be confirmed in through permitting.

that further soil characterization will be required to inform reclamation prescriptions, and segregation criteria. This will include appropriate, additional soil surveys and sample soil vs sub surface soil characteristics (e.g. depth, mineral content, pH, nutrient s authorized, detailed characterization of soil will be carried out as a permit condition of the

	Document For Working Group Use					
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467	Round 1 Responses (20Oct2016)	MEM-043.1	24-Nov-16	Sonia Meili, MEM	Where reclamation is identified as mitigation during EA, it is MEM's expectation that sufficient information be included in the Reclamation and Closure Plan provided in the Application in order to adequately assess the effectiveness of the proposed mitigation. In this case, no information was provided in the Reclamation Plan. [Comment] A detailed Reclamation and Closure Plan which includes prescriptions and maps identifying areas that will be addressed by different prescriptions to meet site-specific end land use objectives and/or diverse environmental conditions will be required for the permitting phase. [Permitting Information Requirement]	The Wildlife Protection Plan, the V vegetation and wildlife prescriptio Maps outlining reclamation plans a
468	Round 1 Responses (200ct2016)	MEM-044.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed	No further response required.
469	Round 1 Responses (20Oct2016)	MEM-045.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed	No further response required.
470	Round 1 Responses (20Oct2016)	MEM-046.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed As a general comment, MEM acknowledges that there is often overlap between management plans, however it is important to ensure that all of the relevant information is included in each respective plan. If surface preparation techniques are being considered as an option to control erosion, this information should be identified in the Erosion and Sediment Control Plan. Please review the Application information requirements for Mines Act Permit Application to ensure that all required information is included in the Permit Application. Guidance is available at: http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration- mining/documents/permitting/minesact-ema_application_information_requirements_feb2016.pdf [Permitting Information Requirement]	Where information in various man information is provided in all appli and Vegetation and Wildlife Protec
471	Round 1 Responses (20Oct2016)	MEM-047.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed. As noted in MEM's response to MEM-046 (above), please ensure that all relevant information is provided in appropriate Management Plans in the MAPA. In this case, the event-based effectiveness monitoring and trigger action response must be included in the Erosion and Sediment Control Plan. [Permitting Information Requirement]	We will provide relevant informati monitoring and trigger action resp
472	Round 1 Responses (20Oct2016)	MEM-048.1	24-Nov-16	Sonia Meili, MEM	The proponent's commitment to further characterize soil may form a permit condition. [Permit Condition]	We will provide plans for further so
473	Round 1 Responses (20Oct2016)	MEM-049.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed	No further response required.
474	Round 1 Responses (20Oct2016)	MEM-050.1	24-Nov-16	Sonia Meili, MEM	Further characterization of soil committed to in the proponent's response to MEM048 may form a permit condition. [Permit Condition]	We will provide plans for further so

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/egetation Management Plan and the Reclamation and Closure Plan will include specific ons for habitat establishment (noted here and in the Permit Information Requirements). and mitigation measures will also be provided.

nagement plans overlap (e.g. revegetation strategies), we will ensure that the relevant icable documents (i.e. Reclamation and Closure Plan, Erosion and Sediment Control Plan, iction Plans). The plans will include reference to Permit Information Requiremetns.

ion in appropriate MAPA Management Plans. This will include event-based effectiveness ponse plans within the Erosion and Sediment Control Plan.

soil characterization as a Permit Condition in the MAPA.

soil characterization as a Permit Condition.

Line

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475	Round 1 Responses (20Oct2016)	MEM-051.1	24-Nov-16	Sonia Meili, MEM	MEM notes that detailed reclamation prescriptions which clearly demonstrate how reclamation objectives/targets and the end land use will be achieved must be included in the Reclamation and Closure Plan (not the Vegetation Management Plan) submitted as part of the Mines Act Permit Application. For additional guidance on information requirements please review the application information requirements available at: http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration- mining/documents/permitting/minesact-ema_application_information_requirements_feb2016.pdf [Permitting Information Requirement]	Reclamation prescriptions dem presented in the Reclamation a		
476	Round 1 Responses (20Oct2016)	MEM-052.1	24-Nov-16	Sonia Meili, MEM	MEM notes that detailed reclamation prescriptions which clearly demonstrate how reclamation objectives/targets and the end land use will be achieved must be included in the Reclamation and Closure Plan (not the Vegetation Management Plan) submitted as part of the Mines Act Permit Application. For additional guidance on information requirements please review the application information requirements available at: http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration- mining/documents/permitting/minesact-ema_application_information_requirements_feb2016.pdf [Permitting Information Requirement]	Reclamation prescriptions dem presented in the Reclamation a		
477	Round 1 Responses (20Oct2016)	MEM-053.1	24-Nov-16	Sonia Meili, MEM	MEM looks forward to reviewing information pertaining to the use of native species and or/ the native seed collection program as part of the Mines Act Permit Application. As per MEM's responses to MEM051 and MEM052, please note that this information is required as part of the Reclamation and Closure Plan. [Permitting Information Requirement]	Information pertaining to the u and Closure Plan of the MAPA.		
478	Round 1 Responses (20Oct2016)	MEM-054.1	24-Nov-16	Sonia Meili, MEM	Adequately addressed.	No further response required.		
479	EAC Application / EIS (July 2016)	MEM-030.1	5-Nov-16	Michael Cullen MEM	Based on clarifications provided, MEM now considers that the level of investigation and analysis of the pit slope stability is adequate for the MAPA. MEM will not permit conceptual designs. The pit designs provided in the MAPA must at the advanced feasibility or preliminary design level	Preliminary design level pit des		
480	EAC Application / EIS (July 2016)	MEM-031.1	5-Nov-16	Michael Cullen MEM	Agreed	No further response required.		
481	EAC Application / EIS (July 2016)	MEM-032.1	5-Nov-16	Michael Cullen MEM	Agreed	No further response required.		
482	EAC Application / EIS (July 2016)	MEM-033.1	5-Nov-16	Michael Cullen MEM	MEM notes that Section 5.4.4.4 of the EA application states "Further investigations and assessment will be required to evaluate the debris floods/debris flow potential and determine if engineering designs are required to mitigate potential risks". Also, MEM notes that the following is recommended in Section 5.4.7.3 Recommendations "Supplemental debris flow and debris flood investigations to analyse potential for events to occur and if engineered mitigation plans and designs are warranted" Please Clarify.	A terrain stability field assessm the data in our existing hydrolc Valley Aggregate Project Howe (located in EA Vol. 4 Appendix floods. Therefore, further inve		
483	EAC Application / EIS (July 2016)	MEM-034.1	5-Nov-16	Michael Cullen MEM	 MEM will be regulating both the McNab Creek Flood Protection Dike and the Pit Lake Containment Berm. Referrals and input will still be sought from other agencies. The MAPA will require that investigations, analysis, and designs are consistent with the Mine Code and accepted engineering practice be completed. Designs submitted must be at the advanced feasibility level or better; MEM will not permit conceptual designs. 	To be addressed in MAPA.		
484	EAC Application / EIS (July 2016)	MEM-035.1	5-Nov-16	Michael Cullen MEM	MEM notes that the following is recommended in Section 5.4.7.3 Recommendations "Supplementary geotechnical investigations and analyses to delineate the extent and depths of potentially liquefiable fills or soils both onshore and offshore within the Proposed Project Area.	Based on a conservative assess out, the risk of significant and e be associated with a large eart analyses are not considered to		
485	EAC Application / EIS (July 2016)	MEM-036.1	5-Nov-16	Michael Cullen MEM	Agreed	No further response required.		

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nonstrating how reclamation objectives/targets and the end land use will be achieved will be and Closure Plan. This will include reference to Permit Information Requirements.

nonstrating how reclamation objectives/targets and the end land use will be achieved will be and Closure Plan. This will include reference to Permit Information Requirements.

use of native species and a native seed collection program will be presented in the Reclamation

signs will be presented in the MAPA.

nent was completed on November 2-3, 2016. The results of the field assessment, together with ogic and geotechnical assessment reports (Hydrological and Hydraulic Characterization McNab e Sound BC, Concrete Aggregate Summary, Assessment of Avulsion Risk of McNab Creek s 5.4 – C, F, A respectively) indicate that there is no evidence for historic debris flows or debris estigations are not considered to be required.

sment using the existing geotechnical data from subsurface investigations previously carried extensive liquefaction in the Project area is considered to be low to very low, and likely only to hquake (i.e. 1 in 2,475 year event). Therefore, supplementary geotechnical investigations and be required.

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486	EAC Application / EIS (July 2016)	MEM-037.1	5-Nov-16	Michael Cullen MEM	Based on clarifications provided MEM now considers that the level of investigation and analysis of the stockpiles is adequate for the MAPA. The OMS manual for the stockpiles should provide clear operational procedures for construction and monitoring, and include a trigger action response plan in the event performance is not as expected. The OMS manual does not need to be overly	Operational procedures for the Pro will provide clear operational proce response plan.
					complicated or long.	
487	EAC Application / EIS (July 2016)	MEM-038.1	5-Nov-16	Michael Cullen MEM	Based on clarifications provided MEM is satisfied that load out dock does not present any significant stability challenges. Additional details of dock stability may be deferred until the time of construction.	Updated dock and pile stability info
488	EAC Application / EIS (July 2016)	MEM-039.1	5-Nov-16	Michael Cullen MEM	Agreed.	No further response required.
489	EAC Application / EIS (July 2016)	FLNRO-069.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Please clarify the statement "During the construction phase of the project the existing groundwater channel will be blocked, resulting in an increase in the local groundwater levels, a flattening of the groundwater gradient between McNab Creek and the Site and a reduction in the rate of flow from McNab Creek to the groundwater system." Does blocking the channel really reduce the loss of flow from McNab creek? Blocking the channel may likely increase the local groundwater level but not reduce the loss from McNab Creek. Throughout mine operation, the proponent planned to monitor groundwater levels and gradients. Please provide estimates of the groundwater inflow into the Pit Lake so that we would be able get better understanding of the interaction McNab Creek and the pit lake.	In the first year of mining, the uppor constructing a plug immediately do and maintain natural groundwater between McNab Creek and the val decrease, as presented in Table 1 of formation of a pit lake (i.e. water w through the pit lake, entering the la discharge from the upper portion of
490	EAC Application / EIS (July 2016)	FLNRO-070.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Clarification is needed on the amount of available wetted area	Please refer to Table 6 of Technical Watercourse Two (WC2), Fish and channel is predicted to occur as a r be offset by the extension of the lo
491	Round 1 Responses (20Oct2016)	FLNRO-071.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	acknowledged	No response required.
492	EAC Application / EIS (July 2016)	FLNRO-072.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	During construction and prior to closure the loss of baseflow from McNab Creek and other surface water bodies will likely be different from the baseline conditions (7-8% decrease from baseline has been reported, Golder, 2016). As the development of the pit progresses, the local gradient will change and groundwater will flow into the pit creating the pit lake. Particularly, under dry and extreme dry conditions, loss of baseflow from McNab Creek and other surface water bodies will likely be significant. This will continue during operation of the mine until the hydrostatic pressure in the pit lake is higher than the local groundwater (ca year 16). The result is reduction of base flow and dry creek bed in McNab Creek mainly in areas where interaction between groundwater and McNab Creek is predominant. This will have direct impact on the Environmental Flow Needs and aquatic habitats particularly in the lower reaches of McNab Creek.	Our analyses do not support your s from McNab Creek are predicted to the later years of the Project. Furt dry weather the current baseline c McNab creek than if mining were t compared "like for like", the existin
493	Round 1 Responses (20Oct2016)	FLNRO-073.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Indicate the section/s where the borhole logs were provided.	The borehole logs were provided to to MW05-4 (Note: MW05-5 not av the well installed in the test pit (DF
494	Round 1 Responses (20Oct2016)	FLNRO-074.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	acknowledged	No response required.
495	Round 1 Responses (20Oct2016)	FLNRO-075.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Thank you for the clarification.	No response required.

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ocessing Area stockpiles and conveyance system will be presented in the MAPA. The OMS cedures for construction, maintenance and monitoring and will include a trigger action

formation will be provided, as appropriate, at the time of construction.

per portion of WC2 within the ultimate outline of the aggregate pit would be de-activated by lown-gradient of the pit. This will enable the pit lake groundwater recharge to re-establish r levels (these levels were much higher prior to WC2 construction). Hydraulic gradients illey aquifer will be reduced, and consequently losses from the creek to the aquifer will of Appendix 5.6-D of the EAC Application/EIS. Since there will be no dewatering but the will not be actively pumped from the lake or allowed to discharge), groundwater will flow lake from the north-northeast and exiting from the south. Therefore, it is assumed that all of the McNab Creek will flow through the pit lake.

al Memo entitled BURNCO Aggregate Project: Additional Information Regarding I Fish Habitat. The table identifies that a 116 m2 reduction of wetted area in the lower result of the loss of surface flow from the upper channel. This reduction in wetted area will ower channel to the west.

statements. As presented in Appendix 5.6-D of the EAC Application/EIS, seepage losses to reduce, not increase, during mining and gradually become close to baseline conditions in rthermore, additional modelling has shown that, for example, through extended periods of conditions, with the groundwater channel present, would still result in more losses from to occur during the same period of dry weather. That means that when scenarios are ing condition will likely result in greater losses from McNab than the Project.

to BCEAO on 20Oct2016 in attachments entitled FLNRO_073a_EBA Borehole logs MW05-1 vailable) and FLNRO_073b_Golder Borehole Logs DH10-07 to DH10-07. The borehole for H10-13) is attached.

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496	Round 1 Responses (20Oct2016)	FLNRO-076.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Does that have to do with well construction and development? If yes, please mention this as well.	The high turbidity in well MW05-01 the amount of fines in the well. Th fines; therefore, presence of turbid
497	Round 1 Responses (20Oct2016)	FLNRO-077.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Thank you	No response required.
498	Round 1 Responses (20Oct2016)	FLNRO-078.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Thank you for the clarification.	No response required.
499	Round 1 Responses (20Oct2016)	FLNRO-079.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	acknowledged	No response required.
500	EAC Application / EIS (July 2016)	FLNRO-080.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	it is not unreasonable to assign head dependent flux to surfacewater bodies flowing on permeable river bed sediments. What would be outcome of the model given that McNab Creek were represented by head dependent flux boundary? Please provide further analysis on this.	An additional model scenario was p previously in the McNab Creek wer to McNab Creek water level elevati the same hydraulic conductivity as impact on model results was obser
501	EAC Application / EIS (July 2016)	FLNRO-081.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	There are two separate issues in this response. 1) Understanding anisotropy and vertical hydraulic gradient at the site and its role on groundwater flow and 2) Identifying influence of the vertical gradient on predicted model results. Proponent indicated that model sensitivity due to changes in anisotropy of the valley fill a quifer has a relatively small influence on the predicted pit lake level and loss from McNab Creek.	The observed vertical hydraulic gra upper and lower piezometers at a g for an individual relatively uniform interlayerings of lower hydraulic co unit. Such interlayering appears co
502	EAC Application / EIS (July 2016)	FLNRO-082.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The second feature introduced to the model (Section 2.3.4 of Appendix 5.6-D of the EAC Application/EIS) has very high hydraulic conductivity than materials described in the geological description. Further clarification on assumption of this feature is recommended.	The introduction of the second feat 1x10-3 m/s isotropic) was required the northern and central portion of bedrock and/or pathway for addition is considered reasonable and within Appendix 5.6A of the EAC Applicati aquifer hydraulic conductivity is rel
503	Round 1 Responses (20Oct2016)	FLNRO-083.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Reasonable	No response required.
504	Round 1 Responses (20Oct2016)	FLNRO-084.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	acknowledged	No response required.
505	EAC Application / EIS (July 2016)	FLNRO-085.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	"De-activation of the upper portion of WC2 during operations would initially cause a decrease in groundwater discharge to WC2 downgradient of the mine but as the pit lake elevation gradually rises throughout the mine life the average groundwater discharge to the watercourse would gradually increase. (Section 2.4 in Part A of the EAC Application/EIS, WC2)." What is the contingency plan during operation to mitigate the decrease in groundwater discharge to WC2 downgradient of the mine? The reduction in groundwater seepage into the lower segment of WC2 will likely be significant.	If the groundwater flow to the lowe portion is expected to increase after changes in groundwater discharge downgradient of the pit lake during a reduction to the entire WC2 durin extension is designed to mitigate for

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I may be due to well construction. A finer filter sand (20/40) probably would have reduced he well was developed over a considerable length of time, but this could not remove the dity is unlikely due to insufficient development.

prepared in response to this comment. Specified head boundary conditions assigned are converted into head dependent flux boundary conditions. Reference water levels equal tions were assigned along the creek; it was assumed that the creek bottom sediments have as the valley fill aquifer and the boundary conductance was calculated accordingly. No rved after the change in boudary condition type for McNab Creek.

adients are primarily influenced by the hydraulic conductivity of the layering between the given location. Although we agree that anisotropy values of 20:1 may be considered high n and homogeneous layer, the bulk anisotropy could be this and higher if there are onductivity and higher hydraulic conductivity zones within particular hydrostratigraphic onsistent with the depositional environment of the McNab Creek sediments.

ature near the aquifer base in the northern portion of the aquifer (hydraulic conductivity of d during model calibration to improve the match of observed upward hydraulic gradients in of the aquifer. Infact, this feature was introduced to promote additional discharge from ional recharge from McNab Creek. The hydraulic conductivity value assigned to this feature in the range of measured hydraulic conductivity at the site. As presented section 3.1 of tion/EIS, single-well response testing conducted in the valley fill aquifer indocate that th elatively high and ranging between 1x10-4 m/s and 2x10-3 m/s.

ver portion of WC2 is considered on its own, the groundwater discharge to this lower er blockage of the upper portion of the channel. Table FLNRO-85.1 (attached) presents the e for the WC2 lower portion, the WC2 extension and the other minor streams located ag mining and at closure. If the groundwater inflow to the entire WC2 is considered there is ing mining and closure (more inflow to lower portion but nil to upper portion). The WC2 for loss of flow for the upper portion of WC2. Line N

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Round 1 Responses (20Oct2016)	FLNRO-086.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	acknowledged	No response required.
Round 1 Responses (20Oct2016)	FLNRO-087.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	Ok	No response required.
EAC Application / EIS (July 2016)	FLNRO-090.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	During construction and prior to closure of the pit lake, groundwater seepage into MCF-6 and MCF-12 will likely be reduced. As the development of the pit progresses, the local groundwater flows into the pit lake which affects the volume of groundwater seeping into the receiving environment. This will likely reduce the volume of water needed in the compensation channel and the receiving environment.	Please refer to Table 4 of Technical Me Watercourse Two (WC2), Fish and Fish 6) will be increased by at least 45% dur increase by at least 35% during operati
EAC Application / EIS (July 2016)	FLNRO-093.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	As the well siting is not known yet, it would be early to exclude the potential of upconing from pumping at a daily rate of 160 m3/day. You also need to incorporate pumping schedules for dry and extreme dry conditions where recharge to local groundwater will be reduced. Potential impacts on neighbouring surface water bodies should be taken into consideration.	Based on the Ghyben-Herzberg relation depth below sea level equivalent to ap lowering of the head results in a rise in above the interface, the interface can r upconed heights that do not exceed or Thus, the pumping rate that can be sus equation developed by Dagan and Bea In this equation is the distance from th and the densities of freshwater and sal will be >1 m elevation; therefore, the in Assuming a density of 1 kg/L for freshw causing upwelling in the proposed well of 160 m3/day. (Ref. Dagan G, and Bear, J., 1968. Solvi perturbations: J. Hydr. Research, v. 6, p 1st ed. John Wiley & Sons, New York.)

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nnical Memo entitled BURNCO Aggregate Project: Additional Information Regarding and Fish Habitat. The table shows that groundwater influx into the lower section of WC2 (MCF-: 45% during operation and 110% at closure. Similarly WC5 (MCF-12) groundwater influx will g operations and 50% at closure.

g relation (Ghyben, 1889; Herzberg, 1901), the saltwater interface in coastal areas occurs at ent to approximately 40 times the height of fresh water above sea level. This indicates that any n a rise in the interface. When lowering takes place by pumping wells that withdraw water from face can rise (upconing). Dagan and Bear (1968) suggested that the interface will be stable for exceed one-third of the distance from the base of the well to the original prepumping interface. an be sustained without causing upwelling into a pumping well can be estimated by using the and Bear (1968) that is presented as Equation 6.39 in Domenico and Schwartz (1990).

e from the interface to the bottom of the well, the hydraulic conductivity of the valley sediments er and saltwater. The water level at the location of the pumping well (north of the process area) pre, the interface is at about 40m. The well is planned to be 20 m deep and K is 7 x 10-4 m/s. For freshwater and 1.025 kg/L for saltwater, the pumping rate that can be sustained without posed well is approximately 1140 m3/day, which is much greater than the planned pumping rate

168. Solving the problem of local interface upconing in a coastal aquifer by method of small ch, v. 6, p15-44)(Domenico, P. A., and W. Schwartz. 1990. Physical and Chemical Hydrogeology. w York.)

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510	EAC Application / EIS (July 2016)	FLNRO-094.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	How can the loss from McNab Creek during operation be less than the baseline condition? Development of various phases of the pit lake creates local depression where groundwater inflows to it. Provide mitigation plans for the potential losses of flow from McNab to the project.	The elevation of the base of the gro aggregate pit, is at about 2.5 m in it depressed to this level as the chann in the first year of operations, the v level rises, the gradient between M Creek. In the early stages of operat to baseline conditions. As the pit b Monitoring of water levels in the M long-term water management strat potential effects to water resources The plan is designed to meeting the Application/EIS and those required (groundwater flow rates, hydraulic the receiving environment, then ad implemented as required may inclu- Continue to evaluate the extent o - During the wet season, if water le Berm then the valves in the culvert on the western slope. - The height of the pit lake at the ou or lowering stop logs) at closure in following closure.
511	Round 1 Responses (20Oct2016)	FLNRO-088.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	It is worth monitoring the likelyhood of transport of suspended particulate matter during pit lake over flow which will be contorlled via outlet feature.	As outlined in Section 17.6 (Volume the pit lake and within WC 2 (MCF- quality samples will be collected mo MCF-12. Samples will be analyzed dissolved solids), anions and nitrog orthophosphate), organic carbon, a operations will be used to confirm t evaluated in consultation with MoE Overflow will not take place until cl closure monitoring plan.
512	Round 1 Responses (20Oct2016)	FLNRO-089.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The sequential Shake Flask Extraction Leach Test described in the Memo and Appendix 5.6-C of the EAC Application/EIS didn't describe the details in the methodoogy used. Further, sequential extraction techniques should mimic geochemical conditions characteristics of the Burnco site, e.g low DO, slightly low pH, and reducing conditions. it is likely that the site renders for slightly lower pH, reduced groundwater and lower DO due to abundant vegetation. Metals and metalloids release under these conditions differ from what the proponent described in their Shake Flask Extraction. The Tesseir Sequential extraction is a viable technique to characterize forms of heavy metal mobility and bioavailability.	The objective of the repetitive (i.e., parameters from the aggregate sam weathering in field conditions. As t commonly used humidity cell test m analogous information to a humidit that occurred at elevated concentra zinc. These metals are not sensitive change the outcome of the water q water, which has a pH of ~ 5 to 6. T results. The objective of the sequential extr parameters of interest with "operat method is useful in developing a co water quality predictions.

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oundwater channel, a large structure that crosses most of the footprint of the proposed its upper portion and decreases towards the shoreline. During baseline, the water table is nel removes any water above this elevation as surface water. When the channel is blocked water backs up behind this blockage and the water level in the channel rises. As the water *A*cNab Creek and the groundwater channel becomes less and there is less loss from McNab ation the open pit is relatively small and there are less losses from McNab Creek compared becomes large it approaches the losses from McNab Creek that is occuring in baseline. *A*cNab creek will be conducted. A Water Management Plan is being developed to provide a ategy that includes the management of water resources, a mitigation plan to reduce es and an effects monitoring plan to monitor water resources in the receiving environment. the preliminary mitigation measures and commitments and assurances outlined in the EAC d by the Water Sustainability Act. Based on the water quantity monitoring programs c heads), if observed water levels start to show a trend towards potential negative effects to daptive management will be undertaken. Adaptive management techniques to be ude:

f the pit during operations;

evels in the pit lake become higher than has been designed for the Pit Lake Containment as will be closed to reduce the amount of water reporting to the pit from the surface water

utlet structure can be adjusted to increase or decrease the level of the pit lake (e.g., adding order to maintain the hydraulic gradient between McNab Creek and the Project Area

e 3, Part E), water quality monitoring will take place in the pit lake (MCF-5), downstream of -6) and downstream of the pit lake within the permanent watercourse (MCF-12). Water nonthly at MCF-5 and MCF-6 during the first two years of operations, and quarterly from I for physical tests (pH, hardness, conductivity (μ S/cm), alkalinity, and total suspended and gen forms (nitrate, nitrite, ammonia, sulphate), phosphorus (total, dissolved and and total metals and dissolved metals. The water quality monitoring data collected using the water quality predictions. After two years sampling, sample frequency will be re-E and other regulatory agencies.

osure. The results of operational water quality monitoring will be used to inform the

, sequential) leach testing method was to replicate the dissolution and mobilization of mples owing to dissolution of soluble mineral phases. The results are used to simulate this material does not contain a large amount of reactive minerals (e.g., sulphide), the more method was not applied. However, the results of the sequential leach test provide ity cell test, and were used to derive source term inputs to the water quality model. Metals rations in several long-term leachates included aluminum, cadmium, cobalt, copper and *v*e to redox conditions, therefore consideration of reducing conditions would not materially quality model predictions. Furthermore, the leach tests were completed with deionized Therefore, the occurrence of weakly acidic conditions were considered in the leach test

raction methodology proposed by Tessier et al (1979) is to identify the association of tionally defined" solid phase fractions. While sequential extraction according to the Tessier proceptual model for metal mobilization, the results cannot be used to develop inputs to

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513	Round 1 Responses (20Oct2016)	FLNRO-091.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	It is reasonable to conclude based on geology and mineralogy that materials in the valley have low metal leaching potental. However, the shake flask extraction conducted may not provide leachability of metals under varying geochemical conditions (such as weak pH, low redox, and low DO). As the area has lots of vegetaation cover it is not unreasonable to expect reduced conditions and low pH in groundwater. As presented in Table 2 (Technical Memorandum to suplement FLNRO-089 and FLNRO- 091), fine fractions in MN-TP-01 (Comp S1-S3), MN-TP-01 (Comp S4-S9), and MN-TP-06 (Comp S1-S6) exceeded the crustal abundance for Cu, Ag, As, Bi, and Se. Selenium and Bi also exceeded the crustal abundances in DH 10-05 (22.9-30.5m), DH 10- 07 (13.7-19.8m), DH 10-07 (21.3-29.0m), and DH 10-07 (30.5-33.5m). The proponent should provide water management (treatment ponds, sediment ponds, etc)options particularly for the fine storage areas. As arsenic and selenium are redox sensitive elements they can likely be mobilized and released into the receiving environments.	Although solid phase concentration average crustal abundance, the res metals will mobilize from the samp leaching from the aggregate sampl selenium and arsenic were detecte overall potential for metal leaching The results of groundwater quality reducing groundwater conditions. development of the BURNCO proje than or near the analytical detection Concentrations of other metals of were detected in the upper quartil data confirm that mobilization of the As outlined in Section 4.1 of Apper open pit. At closure, the piles will in the forthcoming Water Manager operations will be used to inform a	
514	Round 1 Responses (20Oct2016)	FLNRO-092.1	24-Nov-16	Haile Tolera, FLNRO, Groundwater Water Authorizations	The last paragraph seems to be incomplete? "Dissolved and total aluminum, beryllium, and mercury exceed WQGs in the pit and receiving environment under the Base Case scenario." Model predictions also indicated exceedances of beryllium and mercury in surface water and groundwater owing to the analytical detection limit used. That doesn't mean that these chemicals will not have deleterious effect on aquatic and terrestrial species. It is our opinion that the proponent provides ecological risk assessment and mitigation plans until lower detection limits will be achieved.	The water quality model conservat • Mercury was not detected in the equivalent to the CCME and BC WG mg/L; concentrations that don't ex • Berylium was also not detected i were above and below the BC WQ Predicted mercury and beryllium c determine if these concentrations provincial or federal guidelines. As and beryllium are within 10% of th chronic exposure to aquatic life. Th predicted during operations and cl project is not expected to result in mitigation plans are not needed at these parameters will be monitore health. Further details will be prov	
515	Round 1 Responses (20Oct2016)	FLNRO-095.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Ok - FLNRO has discussed this further with the proponent and confirmed these documents will be submitted with water permit applications. No further comment.	No further response required. To l	
516	Round 1 Responses (20Oct2016)	FLNRO-096.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Site visit helped clarify amphibian habitat and further discussions on this subject to be had at permitting phase. No further comment	No further response required. To l	

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ns of some parameters in aggregate samples from the project are elevated relative to sults of short-term and long-term laboratory leach testing indicate that not all of these ples. The results of repetitive leach tests indicate that the following metals are capable of eles: aluminum, cadmium, cobalt, copper and zinc. Although silver, mercury, bismuth, ed in some leachates, the concentration trends of these parameters do not indicate an g.

y monitoring confirm that arsenic and selenium are unlikely to mobilize from aggregate in The existing groundwater flows through aggregate that will be encountered during the ect. Concentrations of redox sensitive elements, including arsenic and selenium, are less on limit in groundwater samples collected from the Project (Table 4.2 of Appendix 5.6B).

concern identified by laboratory leach testing, such as aluminum, cobalt, copper and zinc, le of groundwater quality monitoring data. Therefore, the groundwater quality monitoring these parameters could occur in site specific conditions.

ndix 5.5D, during operations, contact water from the fines stockpiles will be conveyed to the be covered and water will be directed away from the piles. Further details will be provided ement Plan. The results of water quality monitoring that will be conducted during adaptive management of the water management plan, if required.

tively used the analytical detection limits for beryllium and mercury as input concentrations.

e surface waters sampled under baseline conditions at detection limits less than or QGs. Mercury was detected in two surface water samples at 0.000011 mg/L and at 0.00002 xceed either of these guidelines.

in the surface waters sampled under baseline conditions at variable detection limits that (G (Surface Water Quality Baseline Report; Appendix 5.5-C).

concentrations generated by this model were assessed in the aquatic health assessment to a could be distinguished from the baseline condition or whether concentrations were above a discussed in Section 5.5.5.4.2.1 of the Application, predicted concentrations of mercury ne baseline condition or are below applicable BC and CCME WQGs that are reflective of herefore the magnitude of residual project related effects associated with concentrations dosure for base and conservative cases was concluded to be negligible. Given that the n adverse effects on aquatic receptors in the receiving environment, further assessment or t this time. As indicated in the conceptual monitoring plan outlined in Volume 3 Part E, both ed in the receiving environment to verify the prediction of no significant effects on aquatic *v*ided in the forthcoming Water Management Plan.

be addressed at permitting.

be addressed at permitting.

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517	Round 1 Responses (20Oct2016)	FLNRO-097.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you for clarifying this information. As discussed with the proponent - this information is to be presented in the project OEMP, preferably summarized in table format with headings specifying pond number, location (inside/outside of project footprint - or alternatively, will the pond be removed as a result of the proejct), eggmasses detected / confirmed breeding activity, area being lost/ impacted, and proposed size of compensation area. It is advised that the proponent consider offsetting losses to amphibian habitat at a 2:1 ratio. Further converstaions on this topic are welcome and FLNRO is open to meeting with the QEPs to discuss further during the permitting process.	No further response required. To be
518	Round 1 Responses (20Oct2016)	FLNRO-098.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you, this clarifies my question.	No response required.
519	Round 1 Responses (20Oct2016)	FLNRO-099.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you, FLNRO will continue these discussions with the proponent's & their QEPs during the permitting phase.	No further response required. To be
520	Round 1 Responses (20Oct2016)	FLNRO-100.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you, we look forward to further discussions during the permitting phase.	No further response required. To be
521	Round 1 Responses (20Oct2016)	FLNRO-101.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you for the clarification. I agree with the QEP's recommendation to not include the lake habitat as part of the project compensation. At the time of Mine closure, there is a possibility to amend the water licence purpose use from "storage" to "Conservation" < however, reclaimation of the pit lake would need to be complete before the purpose use is changed. Nonetheless, it is something to consider during our Water permitting discussions.	No further response required. To be
522	Round 1 Responses (20Oct2016)	FLNRO-102.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you, I look forward to seeing a more detailed plan of how and where amphibian isolation fencing and vegetation buffers will be installed. Again, further discussion to be had at the permitting phase.	No further response required. To be
523	Round 1 Responses (20Oct2016)	FLNRO-103.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	no further comment	No response required.
524	Round 1 Responses (20Oct2016)	FLNRO-104.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	no further comment	No response required.
525	Round 1 Responses (20Oct2016)	FLNRO-105.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you, I look forward to seeing this information included in the Water Licence application.	No further response required. To be
526	Round 1 Responses (20Oct2016)	FLNRO-106.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you. Please include this detail in the Water Licence application for consistency.	No further response required. To be
527	Round 1 Responses (20Oct2016)	FLNRO-107.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you for the clarification, again I look forward to seeing more details on the specific monitoring proposed as part of the water licence application. We are also interested in changes to the duration of low flow periods. It was not clear to me during my initial review if baseline data on the duration of periodic loss of flow in lower McNab Creek was collected. And, how the timing of loss of flow relates to fish periodicity (e.g., migration/spawning periods)	No further response required. To be
528	Round 1 Responses (20Oct2016)	FLNRO-108.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you - I look forward to reviewing these as part of the permitting process.	No further response required. To be

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be addressed at permitting.
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529	Round 1 Responses (20Oct2016)	FLNRO-109.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you.	No response required.
530	Round 1 Responses (20Oct2016)	FLNRO-110.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Watercourse 14 was wetted during our site visit on Oct 27th. I understand further information will be provided in the Water Licence application - I look forward to the submission and will provide further comments during the review process. Thank you.	No further response required. To
531	Round 1 Responses (20Oct2016)	FLNRO-111.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Perhaps peripherally related to this initial comment - FLNRO would like to see additional baseline data on CT trout use of WC2 both for juvenile rearing and for spring spawning. Some of this data has been provided but, FLNRO will be sending out a separate information request to support the water licence application	No further response required. To
532	Round 1 Responses (20Oct2016)	FLNRO-112.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Thank you	No response required.
533	Round 1 Responses (20Oct2016)	FLNRO-113.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	ok, thank you.	No response required.
534	Round 1 Responses (20Oct2016)	FLNRO-114.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	Sections 2.1 and 2.2 provide information on how habitat mapping and measurements were completed. But, while on the Oct 27th site visit there was mention of how riparian area was calcuated / ground truthed (e.g., using a combination of satellite photography and estimated percent cover while in the field?) and that is not included here in these sections. I recommend these details be included in the water licence application. Please provide a summary table of these results for the water licence application. Thank you.	No further response required. To
535	Round 1 Responses (20Oct2016)	FLNRO-115.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you.	No response required.
536	Round 1 Responses (20Oct2016)	FLNRO-116.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you for this added description, and for providing this verbally at the working group meeting.	No response required.
537	Round 1 Responses (20Oct2016)	FLNRO-117.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you for clarification and addressing this at the working group meeting. FLNRO would like to have further discussions during the permitting phase on the best way to include this overflow spill structure at the end of project life. But, we now understand conceptually how this system would work.	No further response required. To
538	Round 1 Responses (20Oct2016)	FLNRO-118.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you for the clarification	No response required.
539	Round 1 Responses (20Oct2016)	FLNRO-119.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you	No response required.
540	Round 1 Responses (20Oct2016)	FLNRO-120.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
541	Round 1 Responses (20Oct2016)	FLNRO-121.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
542	Round 1 Responses (20Oct2016)	FLNRO-122.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.

Proponent Response (Include Memo reference as applicable)2 o be addressed at permitting. o be addressed at permitting.	For Proponent Use
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	Document	For Working Group Use				
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543	Round 1 Responses (20Oct2016)	FLNRO-123.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
544	EAC Application / EIS (July 2016)	FLNRO-124.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	The Nov 4, 2016 survey of WC2 demonstrated that this channel is used by spawning chum. FLNRO would like to see similar baseline studies undertaken for spring-run cutthroat trout. Such baseline studies should also consider juvenile use in the fall - coinciding with chum spawning window	Please refer to Technical Memo er (WC2), Fish and Fish Habitat. As s cover making it difficult to observe activity and a lack of observation s conservative approach and assum WC2, based on suitable depth, vel Please note that the Fish and Fish overwintering) cutthroat trout cap
545	Round 1 Responses (20Oct2016)	FLNRO-125.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
546	Round 1 Responses (20Oct2016)	FLNRO-126.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	no further comment	No response required.
547	Round 1 Responses (20Oct2016)	FLNRO-127.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
548	Round 1 Responses (20Oct2016)	FLNRO-128.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged, however as per my comments above FLNRO prefers that the habitat offset be considered at a 2:1 ratio. Further discussions to follow during the permitting phase.	No further response required. To
549	Round 1 Responses (20Oct2016)	FLNRO-129.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	A point for clarification - I thought the only portion of the conveyor that would be burried is the portion that passes underneath the hydro line, the rest would be above-ground? Thank you for describing the additional mitigation measures. I look forward to seeing these details as part of the documents supporting the water licence application.	The Malt 2012 report from the Sec The proposed Project does not inc the existing roadway. A conveyor s Project. The conveyor system will and elevated sections of the conve drawings for the conveyor system measures, such as amphibian road physical barriers to amphibian mo As additional mitigation, habitat lin barriers to amphibian movement I Project Area will be converted to a vegetated, and will provide upland be maintained as movement corri- vegetation buffers to facilitate hab buffer areas will likely provide imp species. Endemic species of vegeta Vegetation species and planting lo maximize the benefits to aquatic h describe the vegetation species and
550	Round 1 Responses (20Oct2016)	FLNRO-130.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.

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Proponent Response (Include Memo reference as applicable)2

ntitled BURNCO Aggregate Project: Additional Information Regarding Watercourse Two tated in the memo cutthroat trout spawners tend to use small tributaries and associate with e their spawning behavior. A spring survey is unlikely record any observations of spawning should not be used to rule out spawning activity. Our assessment has taken a more ted that up to 200 m2 of potential spawning habitat for trout occurs in the upper section of locity and substrate.

Habitat Baseline (Appendix 5.1-A Section 3.2.1.1.) includes seasonal (summer rearing and pure data for WC2.

be addressed at permitting.

a to Sky Highway describes habitat fragmentation as a result of new highway construction. clude construction of new roadways and minimal increase in traffic volume is predicted for system is the only new linear feature that will be constructed as part of the Proposed be constructed with a combination of buried, at ground level, and elevated sections. Buried reyor system will reduce potential physical barriers to amphibian movement. Design m will be made available once complete. Please see response to FLNRO-127 for mitigation d-crossing structures and isolation fencing, in response to linear features and potential povement.

nkages and vegetation buffers will be maintained or provided where feasible to minimize between breeding ponds and adult upland habitat. Approximately 28 ha of the Proposed a pit-lake. The remaining 31 ha of the Proposed Project Area will be reclaimed and d habitat. Forested habitat in the marine foreshore and riparian habitat of McNab Creek will dors. Amphibian breeding ponds (existing and compensation ponds) will have 30 m bitat connectivity and noise reduction where feasible (see response to FLNRO-133). These portant terrestrial habitat for adult amphibians, including provincially and federally listed ation consistent with the original riparian vegetation at the site will be established. becations for buffer areas shall be selected with guidance from qualified professionals to nabitat and the survivability of the vegetation. The Vegetation Management Plan will nd buffers that will be maintained around the existing ponds and compensation ponds.

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551	Round 1 Responses (20Oct2016)	FLNRO-131.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
552	Round 1 Responses (20Oct2016)	FLNRO-132.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	ok	No response required.
553	Round 1 Responses (20Oct2016)	FLNRO-133.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	ok	No response required.
554	Round 1 Responses (20Oct2016)	FLNRO-134.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you	No response required.
555	Round 1 Responses (20Oct2016)	FLNRO-135.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	ok	No response required.
556	Round 1 Responses (20Oct2016)	FLNRO-136.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you	No response required.
557	Round 1 Responses (20Oct2016)	FLNRO-137.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you	No response required.
558	Round 1 Responses (20Oct2016)	FLNRO-138.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	ok	No response required.
559	Round 1 Responses (20Oct2016)	FLNRO-139.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	I agree that the lake margins should not be quantified as additional habitat area for amphibians.	No response required.
560	Round 1 Responses (20Oct2016)	FLNRO-140.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged	No response required.
561	Round 1 Responses (20Oct2016)	FLNRO-141.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you for the clarification and for addressing this point at the last Working Group meeting.	No response required.
562	Round 1 Responses (20Oct2016)	FLNRO-142.01	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	As per the Nov 4, 2016 survey of WC2, FLNRO is requesting further QEP interpretaion on the use of WC2 by chum and baseline field data on juvenile trout use of WC2 in the fall and during spring trout spawning window. This information is relevant to permitting. FLNRO will be sending separate email as follow-up.	No further response required. To be
563	EAC Application / EIS (July 2016)	FLNRO-142.11	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	comment acknowledged, as per comment above - FLNRO requests baseline data on cutthroat trout	Please note that the Fish and Fish H overwintering) cutthroat trout capt
564	Round 1 Responses (20Oct2016)	FLNRO-142.21	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	ok	No response required.

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be addressed at permitting.
Habitat Baseline (Appendix 5.1-A Section 3.2.1.1.) includes seasonal (summer rearing and oture data for WC2.

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565	EAC Application / EIS (July 2016)	FLNRO-142.31	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	acknowledged, and as above - Nov 4, 2016 surveys of WC2 demonstrate that the beaver dam(s) does not present complete blockage to fish passage	Please refer to Technical Memo ent (WC2), Fish and Fish Habitat. It is fi to fish passage and thus a spawner memo.
566	Round 1 Responses (20Oct2016)	FLNRO-142.41	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	As above, FLNRO is requesting baseline data on cutthroat trout as part of permitting process	No further response required. To b
567	Round 1 Responses (20Oct2016)	FLNRO-143.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	The direction of impact (which is not necessarily negative) is something that FLNRO would like to see verified through monitoring. We appreciate that the proponent & their QEPs will be providing this information as part of their licence application.	No further response required. To b
568	Round 1 Responses (20Oct2016)	FLNRO-144.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you for the additional information, these details will be further reviewed during the water licencing process	No further response required. To b
569	EAC Application / EIS (July 2016)	FLNRO-145.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	I agree that monitoring proposed will help to understand the operational impacts of the pit lake on McNab Creek. However, in addition - context on baseline conditions at the sensitive sections of McNab Creek (sections where flow intermittently goes subsurface) still needs to be clarified. More specifically, what is the timing, frequency and duration of flow loss in lower McNab Creek. Establishing a long-term baseline of this flow loss is preferred but, may not be reasonable or feasible to collect at this time. What is of most relevance to this discussion is will there be any losses in flow in McNab Creek that are attributed to the project and what is the location, timing and duration of those flow losses relative to fish migration windows.	The results of the analysis presente Creek that are attributable to the P
570	Round 1 Responses (20Oct2016)	FLNRO-146.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	thank you for the explaination - this portion of the review is now being undertaken by MEM, so no further FLNRO comments at this time	No further response required.
571	Round 1 Responses (20Oct2016)	FLNRO-147.1	24-Nov-16	Malissa Smith, FLNRO, Surface Water Authorizations	again, this is now a topic being reviewed by MEM. No further FLNRO comments at this time.	No response required.
572	EAC Application / EIS (July 2016)	ITNO-033	24-Nov-16	KL Stamford, GLTC	Pile driving for construction of the loading pier - If this project goes forward as outlined would the proponent please consider a communication to the local land-owners prior to pile driving giving them a heads up as well as a rough time which the work will be complete. This will be probably be a particular noisy time for locals to be in the area.	A noise management plan will be d owners about the timing of potenti

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Proponent Response

(Include Memo reference as applicable)2

ntitled BURNCO Aggregate Project: Additional Information Regarding Watercourse Two fully acknowledged that beaver dams should never be considered perminant obstructions r survey was conducted on 13 November 2016 and the results are documented in the

be addressed at permitting.

be addressed at permitting.

be addressed at permitting.

ed in the EAC Application/EIS indicate that there will not be any losses in flow in McNab Project.

developed prior to construction, which will include provisions to notify nearby property tially disruptive construction activities such as pile driving.

Application Review Issues Tracking	Application	Review	Issues	Tracking
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573	Round 1 Responses (20Oct2016)	TWN-117.1	24-Nov-16	Tsleil-Waututh Nation	Thank you for the comment - we understand what the scope does and does not include, hence our comment that disagrees with the scope. We strongly believe that by not assessing marine shipping on a cumulative level, ensuring the full travel length of the vessel is included, that this project will be approved without fully knowing the environmental impacts, especially Climate Change. We would like to see this included in the assessment.	TWN's comment is acknowledged a extensive and suitable for the assess On October 2, 2013, BURNCO subm CEAA Agency. The shipping analysi traffic of: 92% increase along Ramillies Cha 9.6% increase along Thornbrough 12.3% increase along Queen Cha 0% net change from south of Pas and 0% net change along the Fraser F CEA Agency responded to BURNCO marine shipping for the purposes of Channel, Thornbrough Channel and meet the existing shipping lanes in Langley were no longer included for Notwithstanding, Underway shippi Ears Bridge. Aggregate material will be shipped are suppled with aggregate from a - Polaris Material Corp.'s Orca Qua - Jack Cewe Ltd.'s Treat Creek Ope - Construction Aggregates Ltd.'s gr
574	Round 1 Responses (20Oct2016)	TWN-118.1	24-Nov-16	Tsleil-Waututh Nation	If there is baseline information to support human health and wildlife, please explain the following text from 4.1 that regarded our first comment. Please note that we do not include pathway components to be baseline data unless directly collected from humans and/or wildlife as this does not support our belief in the equal importance of both qualitative and quantitative data: "Unlike other components, field data is not used to directly measure existing risks to human and terrestrial wildlife health. Instead, existing risks must be estimated using the same risk assessment approach and methods used to evaluate how the Proposed Project may affect human and terrestrial wildlife health. As such, there is no baseline report for human and terrestrial wildlife health. Baseline data and information from the other disciplines are used in the assessment of human and terrestrial wildlife health."	The risk assessment uses baseline of vegetation data that were collected have been provided in the previous various teams are screened for the part of the process to identify cont base case (baseline) and project ca concern, so that the results can be the human health risk assessment incremental comparison which results
575	Round 1 Responses (20Oct2016)	TWN-119.1	24-Nov-16	Tsleil-Waututh Nation	We appreciate that the VC selection is inline with BCEAO requirements, however, we consistently disagree with this particular methodology in regards to BCEAO requirements. TWN strongly urges Proponents to go beyond the requirements, as well as encourages BCEAO to strengthen their requirements.	TWN's comment is acknowledged a consistent with EA practice in BC. I
576	Round 1 Responses (20Oct2016)	TWN-120.1	24-Nov-16	Tsleil-Waututh Nation	Please refer to our response for TWN-117	 TWN's comment is acknowledged a shipping lanes in the Strait of Georg and CEAA considered the following Project: 0% net change from south of Pas and 0% net change along the Fraser F

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Proponent Response

(Include Memo reference as applicable)2

and documented. Rationale is provided for LSA and RSA boundaries which we consider assment of the proposed Project. No further revisions are proposed.

mitted a Marine Shipping Scoping Rationale for the Proposed BURNCO Aggregate Project to sis indicated that the proposed Project would result in an incremental change in tug/barge

annel;

gh Channel;

rlotte Channel to south of Passage Island;

ssage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

D's submission on November 12, 2013. CEA Agency updated the scope of the assessment of the comprehensive study to continue to include barge traffic in Howe Sound, Ramillies ad Queen Charlotte Channel (south of Passage Island). Shipping from where the barges in the Strait of Georgia and in the Fraser River to BURNCO's existing facilities in Burnaby and or the assessment of marine shipping.

ing emissions have been considered, but not modelled, between the Project and Golden

d from Project to existing processing facilities in Burnaby and Langley. The current plants a combination of the following locations:

- arry at Port McNeil located on northern Vancouver Island, BC;
- erations located in Jervis Inlet, BC; and
- ravel mine located in Sechelt, BC

data from multiple discipline teams (air, water, fish etc.) in addition to the soil and ed specifically to support the human health risk assessment. The sources of baseline data is response. The baseline data and/or baseline predictions using the baseline data from the e protection of human health in the problem formulation stage of the risk assessment as taminants of potential concern. Risk estimates (e.g., mathematical calculations) for both ase are provided in the EA application (Section 9.1) for these contaminants of potential e easily compared. The presentation of baseline risk estimates in the EA report is unique to because the base case results provide context to the project risks and allow for the sults from the project, which is required by several regulatory agencies.

and documented. VC selection was done in accordance with the relevant guidance and is No further analysis is proposed.

and documented. In excluding marine shipping from where the barges meet the existing rgia and in the Fraser River to BURNCO's existing facilities in Burnaby and Langley, BCEAO g analysis of the incremental change in tug/barge traffic of associated with the Proposed

sage Island, along the Strait of Georgia, to the North and South Arms of the Fraser River;

River to the load-out facilities in Burnaby and Langley.

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577	Round 1 Responses (20Oct2016)	TWN-121.1	24-Nov-16	Tsleil-Waututh Nation	TWN understands your use of mitigation measures to create effective negligible effects; however, this is completely hypothetical, hence are disagreement with the methodology. How can an effect be considered negligible if there is no way to no if the mitigation measure will work? Many, if not most projects produce negative effects and outcomes that were "mitigated" on paper, but unsuccessful in real life once it's too late. TWN focuses on ensuring that these unplanned effects stop occurring in order to improve the conditions of our land, water and resources.	The effectiveness and uncertainty of effects. If mitigation measures are in the industry for example marine of the measure being effective is co- have lower (negligible, not-significa (e.g., magnitude, geographic exten provincial government. In addition Project. This is achieved through the management during the Proposed and the subsequent development of arising issues to be dealt with up fr effective as they are currently bein
578	Round 1 Responses (20Oct2016)	TWN-122.1	24-Nov-16	Tsleil-Waututh Nation	TWN does not find the response to be relevant to the comment. We find the "Importance to First Nations Groups" column to be lacking in relation to the items that are marked off as considered important, in addition to the correlation between Climate Change and Stakeholders. Please advise how this table will be revised to show all correlating factors that are important to these respective groups.	Tables 4-2 and Table 4-3 were mea Additional information regarding th be provided in the discipline specifi importance to all stakeholders, incl was selected as a stand-alone VC. I mean that it is not important to Fir Nations. The EAC Application/EIS will not be record of the Technical Working Gr during the Application Review - and CEA Agency for their consideration
579	Round 1 Responses (20Oct2016)	TWN-123.1	24-Nov-16	Tsleil-Waututh Nation	Please see comments above regarding a) using common species and b) regarding hypothetical information to assess potential effects. TWN strongly disagrees with both.	TWN's comment is acknowledged a the Project are expected to be effer requirements for the more commo (clean water, adequate flow, instre potential effects on these species w The effectiveness and uncertainty of effects. If mitigation measures are in the industry for example marine of the measure being effective is co- have lower (negligible, not-significa (e.g., magnitude, geographic exten provincial government. In addition, the compliance with m through the implementation of the Project will include the reporting of adaptive management techniques front and for plans to be adapted to being used.
580	Round 1 Responses	TWN-144.1	24-Nov-16	Tsleil-Waututh Nation	Thank you - please confirm that the conflicting text will be revised.	The EAC Application/EIS will not be record of the Technical Working Gr
581	Round 1 Responses (20Oct2016)	TWN-147.1	24-Nov-16	Tsleil-Waututh Nation	Received from EAO 16 Nov, 2016 - Thank you	No response required.

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Proponent Response (Include Memo reference as applicable)2

of mitigation measures were also considered as part of the characterization of residual known to be effective based on previous experience and widely used mitigation measures, e mammal monitoring for safety zones and underwater noise monitoring, then the certainty considered high. In general, mitigation measures that had higher certainty were evaluated cant) significance ratings [taking into consideration the other residual effect characteristics int etc.]]. This is in line with the current guidance documents provided by the federal and n, the compliance with mitigation measures will be monitored throughout the Proposed he implementation of the environmental management system. Environmental Project will include the reporting of all non-compliance events to the relevant regulators of adaptive management techniques to address these events. This system will also allow for ront and for plans to be adapted to manage mitigation measures that may not be proving ng used.

ant to present a summary of the VCs selected and the rationale for their selection. the selection of VCs and their importance to stakeholders and First Nations groups may also fic sections of the EAC Application/EIS. BURNCO understands the climate change is likely of cluding the public and the provincial and federal levels of the Canadian government. Thus, is If a VC was noted as "-" within the Importance to First Nations Groups column it does not rst Nations groups, rather those indicated as "Component known to be of interest to First

e re-issued, however, this information request and our response form part of the formal iroup's review of the assessment. Review comments provided by First Nations and others ad associated Proponent responses - are being trackedand submitted to the BCEAO and the n in preparing their assessment reporting.

and documented. The project design measures and mitigation measures incorporated into ective in avoiding effects on the salmonid species considered as VCs. Because the habitat on salmonid species are generally similar to those of chinook salmon and rainbow trout eam cover, benthic invertebrate food supply and suitable substrate) it is expected that will also be avoided.

of mitigation measures were also considered as part of the characterization of residual known to be effective based on previous experience and widely used mitigation measures, e mammal monitoring for safety zones and underwater noise monitoring, then the certainty considered high. In general, mitigation measures that had higher certainty were evaluated cant) significance ratings [taking into consideration the other residual effect characteristics nt etc.)]. This is in line with the current guidance documents provided by the federal and

nitigation measures will be monitored throughout the Proposed Project. This is achieved e environmental management system. Environmental management during the Proposed of all non-compliance events to the relevant regulators and the subsequent development of to address these events. This system will also allow for arising issues to be dealt with up to manage mitigation measures that may not be proving effective as they are currently

e re-issued, however, this information request and our response form part of the formal roup's review of the assessment. Therefore, the conflicting text has effectively been

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582	Round 1 Responses (20Oct2016)	TWN-148.1	24-Nov-16	Tsleil-Waututh Nation	Thank you for this appendix. We have reviewed the report and have follow up questions: 1. Section 3.2 states, "In the conceptual model plan submitted to BC MoE (Golder 2013), it was stated that due to the limited use of diesel combustion equipment, emissions such as SO2 and NO2 will be quantified and their impacts to the surrounding environment will be qualitatively discussed; while the particulate matters emissions, TSP, PM10, and PM2.5 will be assessed using dispersion modelling. However, based on a conversation with Health Canada tugboat exhaust effects will be modelled and assessed at sensitive receptors in the local and regional study areas." Is this tugboat modelling in addition to what was proposed in the conceptual model plan?	 The initial conceptual model pla Dispersion Model Plan, Technical M NO2 and SO2 emissions from tugbo (approved) detailed model plan, N associated with maneuvering were identified in the human and ecolog
583	Round 1 Responses (20Oct2016)	TWN-148.10	24-Nov-16	Tsleil-Waututh Nation	10.TWN would find it more useful to combine and expand Table 18 and 19 so that it is easier to compare the MM5 results to the observed data at Port Mellon.	10. TWN's comment is acknowledg proposed.
584	Round 1 Responses (20Oct2016)	TWN-148.11	24-Nov-16	Tsleil-Waututh Nation	11. TWN disagrees with the statement: " there will be no combustion or cooling tower stack emissions from this Project. Therefore, there will be no concerns for the effect on visibility around the Project site." Particulate matter could potentially have a visual impact, especially for the seasonal residences which are approximately 1 km away. Please explain how concerns for the effect on visibility will be assessed.	11. The text that is being reference visibility, as indicated by the section associated with the project because project. Please refer to Chapter 7.4 suspended particulates (dust).
585	Round 1 Responses (20Oct2016)	TWN-148.12	24-Nov-16	Tsleil-Waututh Nation	12. Please better explain this statement: "In addition to comparing MM5 data to observation additional another QA/QC procedure will be undertaken and results will be included in the Environmental Assessment." (section 7.1).	12. The additional quality checks w 5.7-B Section 2.2.4.5 and 2.2.4.6.
586	Round 1 Responses (20Oct2016)	TWN-148.13	24-Nov-16	Tsleil-Waututh Nation	13. Have there been any additional results or studies since this document? If so, please provide and if not, please indicate when we might expect them.	 The only additional investigatic comment and BURNCO's response MOE-051 BCMOE: Section 2.1.3.2 Data Proced determine, with any confidence, re occurred in November when partic BURNCO: Background metal concert (NAPS) dataset was investigated. T application case's concentrations (p background metal concentrations a Aggregate Project: Response to Information
587	Round 1 Responses (20Oct2016)	TWN-148.2	24-Nov-16	Tsleil-Waututh Nation	2. Regional background was to be established using three established air quality monitoring stations. MOE later instructed Golder to use just one of the sites (Langdale elementary) as the baseline. Please provide information as to how and why MOE made that decision. Additionally, only the most recent year's data (2013) was used - TWN recommends running the model for various years to check it is a good representative of the background.	2. The guidance provided by the Mi the most representative of air quali the use of monitoring data from La concentrations (Table 8 in Append
588	Round 1 Responses (20Oct2016)	TWN-148.3	24-Nov-16	Tsleil-Waututh Nation	3. SO2 and NO2 are not modeled for anything other than tugboat operation. However, there would be SO2 and NO2 emissions from bulldozing, excavating, forklifts, loaders. Please provide a rationale as to why they were not modeled.	3. As discussed in Section 5.7.5.2.1, normal operations. In addition, for additional vehicles (one excavator, combustion activities, NO2 and SO2 the Ministry of Environment within
589	Round 1 Responses (20Oct2016)	TWN-148.4	24-Nov-16	Tsleil-Waututh Nation	4. Figure 1 –TWN would like to see the list of source descriptions located to the bottom or side of the figure, rather than on top of the location of the seasonal residences.	 Requested information is preser
590	Round 1 Responses (20Oct2016)	TWN-148.5	24-Nov-16	Tsleil-Waututh Nation	5. TWN questions whether 1 hour of use per day of the Tug Boat is an accurate assumption? Please provide further information.	5. Tug boats will bring the barge to at the facility. The time it takes to l
591	Round 1 Responses (20Oct2016)	TWN-148.6	24-Nov-16	Tsleil-Waututh Nation	6. The report references the BC Air Quality Dispersion Modelling Guidelines, 2008. But there has since been an update (November 2015). Will the model be updated to reflect current guidelines?	 At the time of the assessment th modelling plan is anticipated.
592	Round 1 Responses (20Oct2016)	TWN-148.7	24-Nov-16	Tsleil-Waututh Nation	7. TSP was calculated from a 24 hour average and the annual average of PM10 – using US EPA procedures. TWN would like to see these calculations - please indicate where we can can find them.	7. US EPA 1986. Procedures for Est or PM10 Data. Electronic resource http://nepis.epa.gov/EPA/html/DL

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an (Golder Associates Ltd. 2013. BURNCO McNab Creek Aggregate Project Conceptual Air Memorandum Reference No. 1114220046-517-TM-Rev0-4700) did not include assessing oats; however, TSP, PM10 and PM2.5 emissions from tugboats were included. In the final IO2 and SO2 emissions from tugs in the vicinity of the Project, including emissions e included in the model and assessed at sensitive receptors (the sensitive receptors gical health risk assessment).

ged and documented, however, no additional updates to the detailed model plan are

ed refers specifically to fogging and icing, and the potential of fogging and icing to affect n heading. There are no expected concerns regarding visibility related to fogging and icing e there are no stationary combustion sources or cooling towers associated with the 4 regarding Project visual resources assessment, which includes consideration of

vere at the request of the BC MOE. The additional quality checks can be found in Appendix

on related to air quality was in response to BCMOE comment MOE-051. BCMOE's are summarized below:

essing: The limited data sets (2 TSP samples and 1 Dustfall sample) are insufficient to epresentative background metals concentrations and deposition rates. Also. sampling culate concentrations and any associated metals are likely to be low.

ntrations using the limited metals data within the National Air Pollution Surveillance The updated metal background concentrations were added to model predictions and the project plus background) screened through the human health assessment. The updated and human health screening are presented in 16-Nov-16 Technical Memo entitled BURNCO formation Request MOE-051.

10E at the time was that monitoring data from Langdale Elementary was considered to be lity in the vicinity of the Project. However, based on a brief assessment it was found that angdale Elementary did not necessarily result in the most conservative (highest) background dix 5.7-E), therefore all three stations were used to determine existing concentrations.

, the use of onsite vehicles will be limited at most to 3 onsite vehicles per year during r 30 days of the year (at a maximum of 14 hours per day) the pit will be expanded and four three rock trucks and one loader) will operate onsite. Due to the limited onsite 2 from onsite vehicles were not modelled. This is consistent with the approach agreed with the detailed model plan (Section 4.0, Appendix 5.7-E)

nted in supplemental Figure TWN-148.4

the Project dock, and move the loaded barge from the Project. Tug boats will not be idle be maneuver the barge into the facility has been estimated at 10% of total transport time.

ne BC MOE (2008) was the relevant guidance document. No updates to the model or

imating Probability of Nonattainment of a PM10 NAAQS Using Total Suspended Particulate last accessed April 24, 2014.

wait.htm?url=/Exe/ZyPDF.cgi/2000N9B4.PDF?Dockey=2000N9B4.PDF

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593	Round 1 Responses (20Oct2016)	TWN-148.8	24-Nov-16	Tsleil-Waututh Nation	8. Could you please provide a rationale as to why in the CALMET/CALPUFF models you use a 100 by 100m grid? In addition, was a sensitivity analysis completed?	 Model developer guidance insiresolve terrain (Exponent Enginee accessed 5 December 2016. http://www.src.com/calpuff/FAC McNab valley is approximately 4 I km north of Gambier Island. A gr features. Furthermore, 100 m gri and the find grid spacing has been additional sensitivity assessments
594	Round 1 Responses (20Oct2016)	TWN-148.9	24-Nov-16	Tsleil-Waututh Nation	9. Please explain the use of the 1:250,000 DEM instead of the BC Guideline's suggested 1:20,000?	 The 1:250,000 data at the proj (less than) the CALMET resolutior resampled at 100 m is not expect
595	Round 1 Responses (20Oct2016)	TWN-150.1	24-Nov-16	Tsleil-Waututh Nation	TWN understands this, however, we still believe that a comprehensive GHG emission analysis should occur with every project in regards to current provincial and federal targets.	TWN's comment is acknowledged both the federal and provincial go
596	Round 1 Responses (20Oct2016)	TWN-151.1	24-Nov-16	Tsleil-Waututh Nation	As stated in prior comments, as well as above, TWN does not see the lack of data to be a strong enough reason to either not use data, or to use outdated data. It needs to be the responsibility of the Proponent and regulatory body to create the data required to properly assess project effects. We would like to see more current data in this regard.	TWN's comment is acknowledgec consistent with guidance from the
597	Round 1 Responses (20Oct2016)	TWN-152.1	24-Nov-16	Tsleil-Waututh Nation	Some of the mentioned items in our comment are relevant and were available at the time of preparation, such as the UN framework, in addition, we believe that if new information becomes available while the EA process is ongoing is should be accepted and incorporated in order to ensure the least impacts possible. We would like to see the most current (now) policies and documents incorporated into this EA.	TWN's comment is acknowledged preparation of the assessment we
598	Round 1 Responses (20Oct2016)	TWN-153.1	24-Nov-16	Tsleil-Waututh Nation	Section found in 2.5.3.2 - thank you. TWN finds a disconnection between this framework and the Project plans. Especially in regards to Pitt Lake, as the land will not be returned to the state in which it was found. Please explain how this framework is thus being followed?	Section 2.5.2.3 presents a Sustain guided by this framework. Frame many of the concepts presented i plans described in Volume 3, Part Volume 4, Part G - Section 22: Ap activities and outcomes within the
599	Round 1 Responses (20Oct2016)	TWN-154.1	24-Nov-16	Tsleil-Waututh Nation	The response does not answer our questions or relate to the comment made.	The potential effects of the propo Development, Local Government valued components and the pote measures that the Project propor include measures to enhance em and services from local and First N
600	Round 1 Responses (20Oct2016)	TWN-156.1	24-Nov-16	Tsleil-Waututh Nation	This response again, does not answer our question, but re-states the facts to which we were commenting on. Please responsd to our question.	TWN's comment is acknowledged consider it to be responsive to the traditional territory of the Skwxw Skwxwú7mesh (Squamish) Natior
601	Round 1 Responses (20Oct2016)	TWN-158.1	24-Nov-16	Tsleil-Waututh Nation	Again, we would like our questions answered, rather than being provided additonal information that weaves around the actual question.	We have reviewed the earlier res SCRD continues to participate on
602	Round 1 Responses (20Oct2016)	TWN-159.1	24-Nov-16	Tsleil-Waututh Nation	Section 21 is a list of references for the entirety of the report - we would appreciate, as stated, a list for this section in particular.	Section 6.1.3.3.1 of the EAC Appli against which potential project ef Section 6.1.4. Citations are includ for each component of the assess beings on page 21-47.
603	Round 1 Responses (20Oct2016)	TWN-160.1	24-Nov-16	Tsleil-Waututh Nation	We understood the years and that there is a lot of data in the EIS; this is why we flagged this set of data in particular as it's not current, and has changed significatnly and therefore, we expect it to be updated.	TWN's comment is acknowledgeo Paper mill will not result in a mate Project effects would be consider

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tructs that ideally 10 grid cells should be between major geographic features in order to ering and Scientific Consulting. 2014. CALPUFF FAQs Answers. Electronic Resource last

Q-answers.htm#2.1.4).

km wide at the Project (mouth of the valley), and the mouth of the McNab Valley is about 3 rid size of 100 m (0.1 km) will allow for more than 10 grid cells between the major geographic id pacing is considered fine resolution for long range dispersion models (CALMET/CALPUFF) n accepted by the MOE in the detailed model plan (Appendix 5.7-E). Therefore, no s were undertaken.

ject site has a resolution of about 90 m at the project location. The resolution is better than n (100 m). Therefore, the difference between the 1:250,000 and 1:20,000 data when ted to affect the CALMET terrain resolution.

d and documented. The GHG assessment was undertaken using the guidance provided by overnment for an aggregate facility (non oil and gas facility). No further analysis is proposed.

d and documented. Describing existing climate using climate normals ending in 2010 are effected government. No additional analysis is proposed.

d and documented. Relevant guidelines and reference documents available at the time of ere used in the GHG and climate change assessment. No additional updates are proposed.

nable Development Framwork, and the handling of individual situations on the landscape are eworks of this type do not typically anticipate every situation on the landscape. However, in the framework align with the Environmental Management Program and the component t E, Section 16 of the EAC Application/EIS. The Reclamation and Effective Closure Plan (see opendix 4), for example, provides additional information about the various reclamation ne Project area.

osed Project are presented by four valued components (Labour Market, Regional Economic Revenue and Real Estate) in Section 6.1.5. This section itemizes specific indicators for these ential Project effects associated with each, and mitigation and benefits enhancement nent has committed toimplement (See Sec. 6.1.5.3). The benefit enhancement measures uployment of local and First Nations workers and Project procurement of materials, goods Nations owned and operated businesses.

d and documented. We have reviewed the earlier response provided (see TWN-156) and e original question. Section 6.1.2.3 (Administrative Boundaries) includes reference to the rú7mesh (Squamish) Nation as the Project site is located within the traditional territory of the

sponse provided (see TWN-158) and consider it to be responsive to the original question. The the Technical Working Group and is involved in the review of the EAC Application/EIS.

ication/EIS describes the methods for preparing the baseline conditions of the assessment ffects are compared. The baseline conditions for each Valued Component are presented in ded that refer to references presented in Section 21. Section 21 is broken into subheadings sment. Reference material for the economic assessment is listed in Section 21.2.3 which

d and documented. A more up to date employment figure for the Howe Sound Pulp and rerial change of the understanding of existing conditions such that an alteration of potential red. No update to the data cited in Section 6.1 is proposed.

Application Review Issues Tracking	

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604	Round 1	TWN-161.1	24-Nov-16	Tsleil-Waututh Nation	Our question was not answered, rather we were told what various sections represent. Please answer the question.	TWN's comment is acknowledged a
	Responses					effects on the Regional Economic D
	(200ct2016)					business revenues. Section 6.1.4.1
						"trades", but rather on local trainin
605	Pound 1	TWN 162 1	24 Nov 16	Tsloil Waututh Nation	TWN strengty appaurages this to occur	Section 2.5.4.
005	Rouniu I Responses	10010-105.1	24-1100-10			considered to include the Woodfib
	(200ct2016)					component". On 17-Nov-2016. the
	(/					
						As described in the Application Info
						Office on December 16, 2014), the
						Channel and extends across Thorn
						was not included in the cumulative
						RSA for real estate in the BURNCO
						the BURNCO Project site along the
						jetty on the west side of Howe Sou
						Sound, i.e. through Montagu Chan
						kilometres to the east of the north
						largely shielded by Anvil Island. The
						In addition, potential effects on rea
						identified in neither the Application
						this project. Potential effects on re
						the Woodfibre LNG Project Assessr
						Environmental Assessment Office.
						assessment certificate for the Woo
						Woodfibre LNG projects 80 LNG ca
						an increase of 1% in larger vessel tr
606	Round 1	TWN-164.1	24-Nov-16	Tsleil-Waututh Nation	Part C does not constiture an Aboriginal cultural health assessment - we stand by our original comment. In addition, TWN	TWN's comment is acknowledged a
	Responses				strongly disagrees with the methodology that states project associated changes will be positive at closure in relation to	health was not included in the scop
	(20Oct2016)				Aboriginal culture and history. We also strongly disagree with this statement in the response: "At closure, no effects are	that relate to the transmission of c
					anticipated in regard to quality of experience in connection with the sensory environment and environmental setting." As the	analysis is proposed.
					Pitt Lake is not planned to be cleaned up and the lands will not return to their original, or improved state, the experience in	
					connection to the environment will significantly change.	To further clarify our earlier respon
						perspective following closure.

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and documented. Section 6.1.5.2.2 of the EAC Application/EIS focusses on the anticipated Development, including on new business supply opportunities as measured by incremental 1.3, which was the subject of the earlier question (TWN-161), does not focus exclusively on ng opportunities that are relevant to the anticipated Project-related jobs as described in

ation to our 20-Oct-2016 response which stated that "A Technical Memo is being bre LNG Project into the cumulative effects assessment fo the real estate values following response was submitted to the BCEAO and to the CEA Agency:

ormation Requirements (AIR) document (issused by the BC Environmental Assessment e RSA for real estate includes the LSA, the west shore of Howe Sound along Thornbrough brough Channel to the northwest portion of Gambier Island. The Woodfibre LNG Project effects assessment of real estate because the activities of this project lie outside of the Project assessment. The proposed Woodfibre LNG facility lies several kilometres north of e west shore of Howe Sound. After leaving the Woodfibre processing facility and loading und, the proposed shipping route for the Woodfibre LNG Project is on the east side of Howe nel and Queen Charlotte Channel. The Woodfibre LNG shipping route is situated several nern areas of Gambier Island, and views to the east from this part of Gambier Island are e Woodfibre LNG shipping route lies to the east of Anvil Island.

al estate value due to LNG carrier shipping associated with the Woodfibre LNG Project were n Information Requirements document nor the environmental assessment application for eal estate values due to marine shipping associated with this project were not identified in ment Report (dated August 19, 2015) that was prepared and issued by the BC The BC Ministers of Environment and Natural Gas Development signed an environmental odfibre LNG Project on October 26, 2015.

arrier movements per year (approximate average of 7 per month), which would represent traffic in Howe Sound.

and documented. BURNCO agrees that a standalone assessment of Aboriginal cultural pe of the assessment. Part C considers potential effects on the exercise of Aboriginal rights culture and history, which in turn may affect cultural health and wellbeing. No further

nse, no impacts to surface water quality were identified in Pitt Lake from a human health

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607	Round 1 Responses (20Oct2016)	TWN-165.1	24-Nov-16	Tsleil-Waututh Nation	To confirm, the First Nations Health Authority was not contacted? And outside of Health Canada gaming consumption data, no Aboriginal policies or guidelines were used? Please explain the rationale for this. To note: FNHA provides much more than healthy eating tips and food safety factsheets, such as the First Nations Regional Health Survey posted on their website. http://www.fnha.ca/Documents/RHS_Report.pdf	Thank you for providing this refere rates for country foods or environ Site-specific consumption rates we Canada fish consumption rates for Nutrition and Environment Study (broken down by 'ecozone/culture The closest regional data are from which included 9 participating Firs fish/shellfish consumption (includi consumers only) for the Subarctic, consumer rate reported in Health for consumers only) from a Canad (fish and shellfish combined) was o should also be noted that changes fish/shellfish consumption pathwa Health Canada. 2007. Human Hea Chemical Safety. March 2007. Laurie Chan, Olivier Receveur, Har Environment Study. Results from f	
608	Round 1 Responses (20Oct2016)	TWN-166.1	24-Nov-16	Tsleil-Waututh Nation	We did have the opportunity to provide comments during the development of the AIR, which is stated several times here in the Proponent Responses. However, we would like to note that as per BC EAO guidelines, comments and questions are allowed and invited at each stage (ie. pre-app, Screening, application Review); these can be recurring comments or new comments. These stages are not static, but fluid with the attempt to make the application and thus the Project better with each stage. Comments at each stage are as equal and important as comments received in previous stages. The lack of mentioning a comment at an earlier stage should in no way deflect from the importance of that comment. We would hope that our comments at each stage are excepted and regarded as ways to inform decision making and improve the project overall.	TWN's comment is acknowledged Notwithstanding, we maintain tha methods described in the approve revisions are proposed.	
609	Round 1 Responses (20Oct2016)	TWN-167.1	24-Nov-16	Tsleil-Waututh Nation	Our comment still stands.	TWN's comment is acknowledged assessment, which we consider ex proposed.	
610	Round 1 Responses (20Oct2016)	TWN-168.1	24-Nov-16	Tsleil-Waututh Nation	Please provide us with the document(s)/reports that showcase the qualitative assessment used in the absense of quantitative data required for this assessment.	The Air Quality Cumulative Effects	
611	Round 1 Responses (20Oct2016)	TWN-169.1	24-Nov-16	Tsleil-Waututh Nation	Thank you for the response. We look forward, and expect to work with the Proponent on ways to incorporate the information into the application and Project.	No response required.	
612	Round 1 Responses (20Oct2016)	TWN-172.1	24-Nov-16	Tsleil-Waututh Nation	Thank you for the reponse. We look forward to these future meetings and discussions.	No response required.	
613	Draft First Nations Consultation Report (30Nov2016)	SN-085	2-Dec-16	Squamish Nation	Confidential Skwxwú7mesh Nation Revisions to BURNCO FN Consultation Report.	Confidential review comments dis	
614	Round 1 Responses (20Oct2016)	MOE-050.1	5-Dec-16	Graham Veale, MOE	If the dustfall sample was not used in the assessment, then the purpose in referencing it in the EA Application at all seems unclear. My comment regarding its lack of validity still stands but since the information does not appear to have any relevance to the assessment, there is no need to pursue the issue further.	MOE's comment is acknowledged	

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ence. We have reviewed the document, however it does not include reported consumption mental guidelines for water, soil, air, or food items.

rere not available for local First Nations at the time of the assessment. Therefore, the Health or 'high-consumers' was used to derive screening values for fish tissue. The First Nations Food (Chan et al 2010) reports consumption rates for a number of First Nations groups in BC e area'; however, First Nations local to the study area were not represented in the report. In Pacific Maritime/Subarctic/Northwest Coast and the Pacific Maritime/Plateau ecozones, st Nations communities in coastal BC. The reported average daily ingestion rates for ling salmon, halibut, lingcod, mussels, and crab) was 33.8 g/day (96.5 g/day corrected for c/Northwest Coast ecozone and 18.9 g/day (67.5 g/day for consumers only). The higho Canada (2007) is equivalent to the 90th percentile consumption rate of 45 g/day (49 g/day dian dietary survey. Therefore, use of the Health Canada high-consumer value of 49 g/day considered reasonable for preliminary screening purposes for coastal BC First Nations. It s in fish/shellfish tissue are not predicted to occur as a result of the project; therefore the ay was not retained for the risk assessment.

Ith Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Bureau of

rold Schwartz, Amy Ing and Constantine Tikhonov. 2011. First Nations Food, Nutrition, and British Columbia (2008/2009). Prince George: University of Northern British Columbia, 2011.

d and documented. We also acknowledge the iterative nature of the assessment process. at 'People' is a suitable VC for the human health risk assessment, consistent with the ed EAC Application Information Requirements which guided the assessment. No further

and documented. Rationale is provided for LSA and RSA boundaries for the public health tensive and suitable for the assessment of the proposed Project. No further revisions are

Assessment is presented in section Section 5.7.5.7 of the EAC Application/EIS.

cussed with Skwxwú7mesh Nation and incorporated into revised draft report.

and documented. No further work are required.

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615	Round 1 Responses (16Nov2016)	MOE-051.1	5-Dec-16	Graham Veale, MOE	Ref Section 1.0 of Technical Memo: For clarification, are the metals concentrations based on NAPS sampling of PM10 or PM2.5?	Within the NAPS data, metal conce sample provides metals concentrat (PM10-2.5) and fine (PM2.5) level. coarse (PM10-2.5) and dicotomous		
616	Round 1 Responses (16Nov2016)	MOE-051.2	5-Dec-16	Graham Veale, MOE	Ref Section 2.0 of Technical Memo: The rationale for rejecting the Eton and Madison Avenue NAPS station data is debatable. A large industrial emission source (Howe Sound Pulp & Paper Ltd - HSPP) is located approximately 10km to the south of the BURNCO site and HSPP emissions (including metals) likely influence the location under appropriate meteorological conditions. The Eton and Madison Avenue station (located close to industrial areas) may be more representative than the Rumble Street station or it may be overly influenced by the industrial sources so as to be too 'conservative' for assessment purposes. It may have been prudent to analyse data from both stations and determine if there are significant differences in metals concentrations rather than exclude one station on the basis of a questionable rationale.	MOE's comment is acknowledged a VOC and PAH concentrations; no n no additional analysis was underta		
617	EAC Application / EIS (July 2016)	SCRD-035	3-Oct-16	Janette Loveys, CAO, SCRD	i. The Fish Habitat Offset Plan needs to be implemented at the outset of the project to allow for mature vegetation cover and for adjustments to be made to ensure the plan functions as expected;	BURNCO has committed to constru to the existing groundwater fed ch		
618	EAC Application / EIS (July 2016)	SCRD-036	3-Oct-16	Janette Loveys, CAO, SCRD	ii. Sufficient funds should be set aside by BURNCO to allow for long term maintenance of the new stream and related infrastructure, such as the overflow gate and a channel from the pit lake, to ensure the plan functions as expected and to include a contingency plan to be followed if the compensation plan fails.	Agreed, BURNCO expects that the habitat offsetting will be required a		
619	EAC Application / EIS (July 2016)	SCRD-037	3-Oct-16	Janette Loveys, CAO, SCRD	iii. Designs of the aggregate processing and storage area must include elements to mitigate any negative impact due to sediment runoff into Harlequin Creek and Watercourse 5.	It is recognized that surface run off in Part G, Section 22, Appendix 3 o the ESCP; control measures are pro As the surficial soils are highly perr storm water management is collec Revegetation, vegetation covers, g measure. In addition, reclamation temporary sediment control.		
620	EAC Application / EIS (July 2016)	SCRD-038	3-Oct-16	Janette Loveys, CAO, SCRD	iv. If a new federal legislative criteria for negative impacts to fish habitat due to artificial lighting become applicable during the life of the project then impacts from artificial lighting need to be re-evaluated and updated mitigation measures applied.	If new federal government legislat then mitigation measures with res		
621	EAC Application / EIS (July 2016)	SCRD-039	3-Oct-16	Janette Loveys, CAO, SCRD	v. If new federal government legislative criteria for acoustic injury or disturbance to fish habitat becomes applicable during the life of the project then impacts from noise generating activity need to be re-evaluated and updated mitigation measures applied;	If new federal government legislat Project, then mitigation measures legislation.		
622	EAC Application / EIS (July 2016)	SCRD-040	3-Oct-16	Janette Loveys, CAO, SCRD	vi. BURNCO should evaluate the impacts of climate change, and specifically sea level rise. In the post closure phase of the project and factor into the anlysis the cumulative effects of periodic king tides and storm surges on the maximum of the range of high predicted sea level rise.	A detailed assessment of potential 5.8 of the EAC Application/EIS. Pot Project's contribution to climate ch project-related infrastructure. Potential effects of future sea-leve (sea-level height by 2100 relative t The predicted RSL2100 using the h Since the Proposed Project is expe little direct impact on the Proposed infrastructure and site reclamation that the predicted rising sea level v		
623	EAC Application / EIS (July 2016)	SCRD-041	3-Oct-16	Janette Loveys, CAO, SCRD	i. The impact on salmonids of contaminants in the water column due to disturbance of sediment needs to be assessed;	Project activities with potential to following: pile installation, vessel increased contaminant exposure) of from the above listed activities ha 5.2.5.2.3.1, Section 5.2.5.4.1.1 and potential adverse effects associate Application/EIS.		

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entrations at Burnby South is provided for ICPMS and the Dicotomos samples. The ICMPS itions at the fine level (PM2.5), and the dicotomos method provides metals at the coarse . The maximum 98th percentiles concentration of either the ICPMS (PM2.5), dicotomous is fine (PM2.5) was used to establish the bckground metal concentrations.

and documented. On further investigation, the Eton and Madison NAPS station monitored metals were monitored. Since the Eton and Madison NAPS station did not monitor metals, aken.

ucting the habitat offset channel extension prior to construction of the Project and effects nannel.

provision of a letter of credit covering monitoring, construction and maintenance of any under the fisheries protection provisions of the Fisheries Act.

f control is a key aspect to the Erosion and Sediment Control Plan (ESCP) which is included of the EAC Application/EIS. Harlequin Creek and WC5 are identified as critical areas within oposed for construction, operations and closure phases of the Project.

meable, we do not anticipate a high volume of surface runoff. The primary approach to ction and infiltration. No point source discharges of surface water are proposed. geotextile matting, resurfacing and water course armouring will be primary control (revegetation) will occur in a progressive matter. Silt fencing is proposed as needed for

tive criteria for negative impacts to fish habitat due to artificial lighting becomes applicable, spect to managing artificial lighting will be based on the most current legislation.

tive criteria for acoustic injury or disturbance to fish habitat becomes applicable during the with respect to managing acoustic noise emissions will be based on the most current

I climate change effects of the Proposed Project is presented in Volume 2, Part B – Section tential effects considered were changes in GHG emissions as a result of the Project, the hange through the emission of GHG's, and how potential changes in climate will affect

el rise are addressed in Section 5.8.5.2 of the EAC Application/EIS. The predicted RSP2100 to 2007 levels) using the mean sea-level rise was 18 cm, with a possible range of 6 to 30 cm. high predicted sea-level rise was 88 cm, with a possible range of 57 to 118 cm.

ected to be completed by 2035 it is expected that rising sea levels of this amount will have d Project operation phase. The Proposed Project closure plan consists of removing surface n including a ground and surface water-fed lake (the pit lake), and therefore it is expected will have little impact on Proposed Project closure.

result in re-suspension of sediments as a result of seafloor disturbance are limited to the propeller scour, and vessel wake wash. The impacts of altered water quality (including on salmonids as a result of seabed disturbance and subsequent sediment resuspension is been assessed under Vol. 2 of the EAC Application (refer to Section 5.2.5.2.1.1, Section d Section 5.2.5.4.1.3). Mitigation measures that will be implemented to avoid or minimize and with sediment disturbance are outlined in Section 5.2.5.3.1 and Table 5.2-18 of the EAC

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624	EAC Application / EIS (July 2016)	SCRD-042	3-Oct-16	Janette Loveys, CAO, SCRD	ii. More thorough studies and surveys should be completed on glass sponge reef presence within 200m of any part of the project area, and along any loaded barge transit routes, during the life of the project;	Glass sponges are known to occur to baseline investigations, detailed un proposed marine infrastructure (as information recorded on existing has potential sponge reef habitats. The infrastructure (load-out jetty or wal these organisms (i.e., water depths which glass sponge reefs occur). In reefs occur in proximity to the prop Ramillies Channel (Volume 4, Part C along the proposed shipping route to propeller wash effects at the cor propeller scour impacts on the seat uppermost depths of glass sponge I velocities derived from wave and ti waves were developed from wave I Buoy (Environment Canada Station proposed tug-assisted barge mover and below the velocity threshold (O along the proposed shipping route scour on glass sponge assemblages forward in the assessment.
625	EAC Application / EIS (July 2016)	SCRD-043	3-Oct-16	Janette Loveys, CAO, SCRD	iii. The possible presence and impact on Northern Abalone, a species at risk, needs to be assessed;	As part of marine baseline investiga and subtidal footprints of the propo- methods, with detailed informatior dive surveys in the marine environr abalone habitat were present in the Application. Potential adverse imp negligible – not significant (Table 5.
626	EAC Application / EIS (July 2016)	SCRD-044	3-Oct-16	Janette Loveys, CAO, SCRD	iv. If new federal government legislative criteria for acoustic injury or disturbance to marine mammals, or marine birds, becomes applicable during the life of the project then impacts of noise generating activity need to be re-evaluated and updated mitigation measures applied;	If new federal government legislativ applicable during the construction period and the mose on the mose of the mos
627	EAC Application / EIS (July 2016)	SCRD-045	3-Oct-16	Janette Loveys, CAO, SCRD	v. Vessel operators should receive an appropriate amount of training on how to avoid impact with marine mammals, as part of overall environmental related training, and records need to be kept of any incidents.	Mitigation measures applicable to v and marine mammals are outlined ship strikes on marine mammals. V mammal strike.
628	EAC Application / EIS (July 2016)	SCRD-046	3-Oct-16	Janette Loveys, CAO, SCRD	vi. An on-site 24 hour/seven days a week attendant should be required during the life of the project in order to respond to and mitigate the effects of a chemical or hydrocarbon spill.	BURNCO plans to have a caretaker powered, there are very few poten EAL™ Hydraulic Oil 32 and 46 or eq Potential impacts on surface water specific Materials Storage, Handling Emergency Response Plan(s) (SPER monitor the implementation and po Operational water quality monitori
629	EAC Application / EIS (July 2016)	SCRD-047	3-Oct-16	Janette Loveys, CAO, SCRD	vii. The proponent should be encouraged to engage in and be an active and ongoing contributor to the BC Ministry of Forests, Lands and Natural Resources Opertions process to develop a Cumulative Effects Assessment Framework and the Squamish Nation Marine Environmental Plan.	As a property owner and stakehold Howe Sound. EA is not typically a f objectives. BURNCO is committed to supportin

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hroughout Howe Sound, in water depths below -20 m (chart datum). As part of marine derwater biophysical surveys were conducted in the proposed subtidal footprints of the well as adjacent areas) using SCUBA and towed video survey methods, with detailed abitat and species present in these areas. This included systematic surveys targeting field surveys concluded that no glass sponge reefs were present in the proposed marine Ikway/conveyor) footprint. This information agrees with known habitat preferences of in the proposed marine infrastructure footprint are shallower than the depth range in terms of interaction of glass sponge reef habitat with shipping activities, known sponge bosed shipping route in several locations, with the closest occurring at the mouth of G - Section 22.0 - Appendix 5.2-A, Figure 3). However, water depths at these locations are below -25 m (chart datum). As such, potential impacts from shipping would be limited responding depths of these glass sponge reef occurrences. To assess this potential impact, bed were assessed at a modelled depth of -20 m (chart datum) to correspond with the habitat. Jet velocities generated by the tug propeller at -20 m were compared to natural idal activity in Howe Sound. Estimates of maximum horizontal velocity associated with wind hindcasts from available wind data for the Strait of Georgia using the Halibut Bank Ocean 46146) and are summarized in Table 5.2-12. At -20 m depth, the jet velocities of the ments were shown to be within the same magnitude as tidal currents present at this depth 0.25 m/s) required for seabed particle mobilization (USACE 1989). Given that water depths in the RSA are typically below -20 m (chart datum), the potential effects of tug propeller in the proposed shipping corridors were considered negligible and were not carried

gations, detailed underwater biophysical surveys were conducted in the proposed intertidal posed marine infrastructure (as well as adjacent areas) using SCUBA and towed video survey on recorded on existing habitat and species present in these areas. This included systematic imment using DFO-certified abalone biologists. The field surveys concluded that no abalone or ne proposed marine infrastructure footprint, as indicated in Section 5.2.5.5.1.2 of the EAC pacts of the Project on abalone and abalone habitat were therefore considered to be 5.2-25).

ive criteria for acoustic injury or disturbance to marine mammals or marine birds becomes phase of the Project, then mitigation measures with respect to managing acoustic noise st current legislation.

vessel operators to avoid and/or minimize potential physical interactions between vessels in Section 5.2.5.3.1.4 of the EAC Application/EIS. This includes methods in how to avoid ressel operators will be required to record any potential incidents involving a marine

onsite to respond to any issues that may arise. Since the project is primarily electric tial sources of hydrocarbons. The hydraulic fluid would be biodegradable such as Mobil uivalent.

quality from possible fuel spills will be mitigated through the implementation of taskg and Waste Management Plan(s) (MSHWMP) and a site-specific Spill Prevention and P; details provided in Volume 3, Part E – Section 16.0). An environmental monitor will erformance of the material handling, spill prevention and emergency response plans. ing will be undertaken according to permit requirements.

er in the area, BURNCO would be pleased to participate in a broader planning exercise for forum for developing new land and resource use planning areas, designations, or

ng the Squamish Nation's Marine Environmental Planning process.

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630	EAC Application / EIS (July 2016)	SCRD-048	3-Oct-16	Janette Loveys, CAO, SCRD	i. Consideration to reclamation of other portions of BURNCO's property should be set out as a means of identifying potential offset areas to mitigate negative impacts, such as the loss of land to the pit lake, and provide habitat enhancements.	The Proposed Project footprint was undisturbed habitat (including mat Reclamation and Effective Closure restoration, methods of rehabilitat reclamation will occur progressivel supporting wildlife as soon as poss be developed as part of the Wildlif data that will help evaluate the effo
631	EAC Application / EIS (July 2016)	SCRD-049	3-Oct-16	Janette Loveys, CAO, SCRD	ii. Regarding amphibian habitat replacement, the proposed pond within the BC Hydro right-of-way should be relocated so it is not impacted by maintenance of the right-of-way.	BURNCO is working with FLNRO an not anticipated to affect routine m
632	EAC Application / EIS (July 2016)	SCRD-050	3-Oct-16	Janette Loveys, CAO, SCRD	i. Air quality monitoring stations should be located within or near the McNab Strata community and in the northern part of Gambier Island, and in a location along the Sea to Sky corridor, for the life of the project and these monitoring stations should be established at the outset of the project in order to establish meaningful baseline information;	Air quality monitoring will begin pr Within Section 5.7.6 of the EAC Ap Control Management Plan. This pl locations, parameters to be monitor meteorological monitoring program The predicted air quality concentra predicted to be well below the rele
633	EAC Application / EIS (July 2016)	SCRD-051	3-Oct-16	Janette Loveys, CAO, SCRD	ii. Information from the air quality monitoring stations must be made publicly available;	Air quality monitoring results can bagencies.
634	EAC Application / EIS (July 2016)	SCRD-052	3-Oct-16	Janette Loveys, CAO, SCRD	iii. The environmental certificate needs to include strong measures to address air quality problems and clearly identify the provincial or federal agency that is responsible for enforcement;	The comment is noted. In addition to conditions stipulated following receipt of an Environmer
635	EAC Application / EIS (July 2016)	SCRD-053	3-Oct-16	Janette Loveys, CAO, SCRD	iv. Aggregate composition tests need to be done to ensure that harmful chemicals are not released during processing.	The project related release of meta was based on site specific testing of Section 9.1).
636	EAC Application / EIS (July 2016)	SCRD-054	3-Oct-16	Janette Loveys, CAO, SCRD	i. Noise monitoring stations need to be located within or near the McNab Strata community and in the northern area of Gambier Island for the life of the project;	Noise monitoring locations will be levels at the McNab Strata and at E
637	EAC Application / EIS (July 2016)	SCRD-055	3-Oct-16	Janette Loveys, CAO, SCRD	ii. Information from the noise monitoring stations must be made publicly available;	Details of processing the noise more results can be made publicly availa
638	EAC Application / EIS (July 2016)	SCRD-056	3-Oct-16	Janette Loveys, CAO, SCRD	iii. The environmental certificate needs to include strong measures to address noise problems and clearly identify the provincial or federal agency that is responsible for enforcement;	Measures for mitigating potential r Plan will be developed, which will i will establish a mutually agreeable or concern.
639	EAC Application / EIS (July 2016)	SCRD-057	3-Oct-16	Janette Loveys, CAO, SCRD	iv. Site operations shall be consistent with Sunshine Coast Regional District Noise Control Bylaw No. 597, 2008.	Operations will be restricted to 7 A Noise.
640	EAC Application / EIS (July 2016)	SCRD-058	3-Oct-16	Janette Loveys, CAO, SCRD	v. The design of noise mitigation berms, especially on the north side of the site, should pay particular attention to the topographical amplifications of the McNab Valley and its surrounding steep and mountainous terrain.	The noise model developed for the and accounted for noise propagation included conservative assumptions A noise management plan will be c
						response plan to noise concerns re

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as sited in an area with a long history of anthropogenic disturbance to minimize impacts to ture forest) and to generally minimize adverse effects on terrestrial resources. A Plan will be developed and will outline the goals associated with wildlife habitat ting wildlife habitat, and parameters to gauge the success of reclamation. Habitat ly over the life of the Proposed Project to return habitat to a functional capability for sible. A detailed wildlife mitigation and monitoring plan has not yet been developed but will fe Management (Protection) Plan to minimize impacts on terrestrial resources and to collect fectiveness of implemented mitigations.

nd DFO on the suitable locations of proposed new amphibian ponds. The current location is naintenance of the existing transmission line. The existing access road will remain in place.

rior to the Project operations.

oplication/EAC the Project Proponent has committed to developing an Air Quality and Dust an will include details on ambient air and meteorological monitoring such as monitoring coring and instruments used to monitor. In addition, establishment of an air quality and m has been identified as a specific mitigation measure within Section 5.7.

ations as a result of the Proposed Project, in combination with existing levels were evant air quality criteria at Gambier Island (Ekins Point) and along the Sea to Sky Corridor.

be made publicly available through arrangements with BURNCO and relevant government

d in the Environmental Assessment Certificate, relevant permitting will also be undertaken ntal Assessment Certificate.

als within particulate matter to the air (that was used in the human health risk assessment) of the aggregate. No significant effects to public health were predicted (Volume 2, Part B,

included as part of the Noise Management Plan. Stations will be located to monitor noise Ekins Point on Gambier Island.

nitoring results will be determined in the Noise Management Plan. Noise monitoring able through arrangements with BURNCO and relevant government agencies.

noise effects are presented in Table 18-1 of the EAC Application/EIS. A Noise Management include a response plan to noise concerns received from nearby property owners. BURNCO mechanism for engaging with the McNab Creek Strata owners regarding issues of benefit

AM to 9 PM, consistent with the SCRD Noise Control Bylaw section regarding Machine

e prediction of noise effects for this project considered the design of the proposed berms ion over water and attenuation (or lack thereof) due to barriers and topography. The model s such as modelling a downwind condition in every direction from the project.

developed prior to construction, which will include a commitment to noise monitoring and a acceived from nearby property owners. Document

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nsideration should be given that the four month construction phase be completed within the period of time when	The estimated duration

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641	EAC Application / EIS (July 2016)	SCRD-059	3-Oct-16	Janette Loveys, CAO, SCRD	vi. Consideration should be given that the four month construction phase be completed within the period of time when McNab Creek residential properties, recreational activities and facilities on North Gambier are less frequently used. Construction in the late fall to early spring timefram may be more prudent to reduce impacts.	The estimated duration of project quickly, while others will take long associated with the location of the A noise management plan will be response plan to noise concerns re Point.
642	EAC Application / EIS (July 2016)	SCRD-060	3-Oct-16	Janette Loveys, CAO, SCRD	i. The SCRD supports BURNCO'S commitment to local hiring and procurement;	Comment acknowledged. Informa
643	EAC Application / EIS (July 2016)	SCRD-061	3-Oct-16	Janette Loveys, CAO, SCRD	ii. The SCRD supports BURNCO'S commitment to reaching a benefit agreement with the McNab Strata community;	Comment acknowledged. Informa
644	EAC Application / EIS (July 2016)	SCRD-062	3-Oct-16	Janette Loveys, CAO, SCRD	iii. Marine tourism activities should be incorporated into the Access Management Plan.	The Marine Transport Managemen marine tourism vessels, and for op
645	EAC Application / EIS (July 2016)	SCRD-063	3-Oct-16	Janette Loveys, CAO, SCRD	iv. Should the project proceed the SCRD wishes to enter into a discussion with BURNCO regarding a mutually acceptable community benefits agreement.	BURNCO has proposed a McNab C operation, based on output, to enl Funding of projects would be given include: - Mitigation of project effects - Bringing amenities to our neares: - Supporting non-political groups a - Children's camps - Local united Way or similar orgar - Public amenities The CEF is a funding mechanism w a fee were introduced, then the Cl
646	EAC Application / EIS (July 2016)	SCRD-064	3-Oct-16	Janette Loveys, CAO, SCRD	i. Recreational access to existing anchorages in the area need to be maintained;	Anchorage by Project and non-pro specifications of the Marine Trans and reflect Navigation Protection I
647	EAC Application / EIS (July 2016)	SCRD-065	3-Oct-16	Janette Loveys, CAO, SCRD	ii. Adequate safety lighting needs to be installed on marine facilities.	The Marine Transport Management and the Navigation Protection Pro- installed and maintained.
648	EAC Application / EIS (July 2016)	SCRD-066	3-Oct-16	Janette Loveys, CAO, SCRD	i. The SCRD Lighting Guidelines must be followed for the lifetime of the project.	Volume 2, Part B, Section 7.4.5.3.2 Sunshine Coast Regional District O and avoid lighting impacts as a pro from the Guide on the Limitation o impacts.
649	EAC Application / EIS (July 2016)	SCRD-067	3-Oct-16	Janette Loveys, CAO, SCRD	i. Post-closure maintenance of the lake outflow supported by sufficient bonding should be a condition of the environmental assessment certificate.	BURNCO defers to the BCEAO on p Mines Act permitting is required w credit is typically required as part of intended. Details regarding the proposed En in Volume 3, Part E – Section 16 an Environment monitoring plans wil compliance with Certificate condit consist of two main components: of for these monitoring initiatives.

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construction will be up to two years. Some components will be constructed relatively ger depending on manufacturing times, construction windows and other limitations e Project site.

developed prior to construction, which will include a commitment to noise monitoring and a eceived from nearby property owners, including receptors across the water such as Eakins

ation is noted as being present. No further information required.

tion is noted as being present. No further information required.

nt Plan (see Sec. 16.2.2.11) will have relevant information for all marine vessels, including perators of tourism facilities that have a marine component, such as summer camps.

Community Enhancement Fund (CEF) that would consist of money set aside each year of hance the McNab community through targetted funding on projects throughout the region. n priority by BURNCO's Management Committee based on a number of criteria that would

t neighbours

actively improving Howe Sound through cleanup efforts, habitat improvements, etc.

nizations providing funding to community programs

which may be replaced by a Sunshine Coast Regional District fee at some future date. If such EF would cease.

oject vessels within the Project's marine control zone will be subject to the direction and port Management Plan, and this document will incorporate Transport Canada requirements Program permitting (which the Proposed Project is subject to).

nt Plan (see Sec. 16.2.2.11) will specify aids and navigational lights as per Project planning gram permitting process. The navigational aids and lights specified in this plan will be

2 of the EAC Application/EIS indicates adherence to design goals contained within the Outdoor Lighting Guidelines to maintain the quality of the night-time lighting environment oposed mitigation for potential lighting effects. Additional recommendations are identified of the Effects of Obtrusive Light from Outdoor Lighting Installations (CIE) to avoid lighting

potential conditions of environmental assessment certification.

which includes provisions for a performance and reclamation bond. In addition, a letter of of the Fisheries Act authorization until the works are determined to be functioning as

vironmental management and monitoring programs for the Proposed Project are provided nd 17 of the EAC Application/EIS.

I be developed by qualified environmental professionals and implemented to achieve ions and with terms and conditions of regulatory permits and approvals. Monitoring will compliance monitoring and effects monitoring. BURNCO commits to providing the funding Line No.

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AC Application / IS (July 2016)	SCRD-068	3-Oct-16	Janette Loveys, CAO, SCRD	ii. BURNCO needs to provide clarification of the impacts of the well on surface water is needed.	As presented in Section 5.6.5.2 operations. Although groundy represents less than 0.3 % of t overall groundwater flow. The Protection Regulation (part of
AC Application /	SCRD-069	3-Oct-16	Janette Loveys, CAO, SCRD	iii. BURNCO's commitment to monitoring site conditions for groundwater and surface water and to recalibrate the model as the project progresses needs to be a condition of the environmental certificate. This should also include making this information public.	BURNCO defers to the BCEAO A Water Management Plan, cu applications, will provide a lon mitigation plan to reduce pote the receiving environment. Th assurances outlined in the EAC quantity and water quality mo to show a trend towards poter undertaken. Adaptive manage - Continue to evaluate the exte - During the wet season, if wat Berm then the valves in the cu on the western slope. - The height of the pit lake at t or lowering stop logs) at closur closure. BURNCO will develop a project including project schedule, cor
AC Application / IS (July 2016)	SCRD-070	3-Oct-16	Janette Loveys, CAO, SCRD	iv. The sediment and erosion prevention measures need to be documented in a mitigation plan need to be provided for review.	Suspended sediment sampling site-specific erosion and sedim Section 22.0: Appendix 3). We ground disturbance activities a implementation of erosion and observations. Additional event undertaken to inspect erosion Monitoring will be conducted sediment inputs against backg control measures and the pote
AC Application / IS (July 2016)	SCRD-071	3-Oct-16	Janette Loveys, CAO, SCRD	v. BURNCO needs to provide clarification if increased evapotransirpation from the lake was incorporated into water modeling.	The hydrogeological modelling the EAC Application/EIS. Confirming that increased eva specified flux boundary that re simulation in the area of the p
AC Application / IS (July 2016)	SCRD-072	3-Oct-16	Janette Loveys, CAO, SCRD	vi. BURNCO needs to provide clarification if recharge applied in the groundwater model looked at difference rates for construction, operation and closure due to different ground cover and whether the groundwater modelling did sensitivity studies to look at different hydraulic properties of the bedrock.	The hydrogeological modelling Section 22, Appendix 5.6-D of The groundwater model simul- including at closure. The mode area. The assessment of uncer

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2.1.2 of the EAC Application/EIS, the well will be pumped at a daily rate of 160 m3/day during water flow will be affected near to the well, which will be installed near the wash plant, it the total groundwater flow through the valley deposits and as such will have negligible effect to e specific well design is not complete but will meet the requirements of the 2016 Groundwater f the Water Sustainability Act brough tinto force in February 2016).

on potential conditions of environmental assessment certification.

urrently being prepared for inclusion in the Mines Act and Water Sustainability Act Permit ng-term water management strategy that includes the management of water resources, a ential effects to water resources and an effects monitoring plan to monitor water resources in he plan is designed to meeting the preliminary mitigation measures and commitments and C Application/EIS and those required by the Water Sustainability Act. Based on the water ponitoring programs (hydraulic heads and quality), if observed water levels and water quality start intial negative effects to the receiving environment, then adaptive management will be ement techniques to be implemented as required include:

ent of the pit during operations.

ter levels in the pit lake become higher than has been designed for the Pit Lake Containment Ilverts will be closed to reduce the amount of water reporting to the pit from the surface water

the outlet structure can be adjusted to increase or decrease the level of the pit lake (e.g., adding re to maintain the hydraulic gradient between McNab Creek and the Project Area following

ct-specific website that will be maintained to keep stakeholders informed regarding the Project, nstruction activities, operating information, and noise and air quality monitoring data.

g will be conducted in accordance with the Environmental Management Plan for the Project. A ment control plan has been developed for each Project phase (please see Volume 4, Part G – eekly inspections by a qualified environmental monitor will be conducted during periods when are being undertaken. Inspections will include a description of pre-site activity conditions, and sediment control measures, monitoring of control measures, and records of visual at-based inspections, in response to expected storm events or heavy rain events, will also be a control measurements according to the Sediment and Erosion Control Plan (see Section 7.0). I immediately upstream and downstream of disturbed areas in order to compare potential ground levels. These inspections will help determine the effectiveness of erosion and sediment tential need to implement additional measures.

and analysis conducted for the Project is presented in Part G, Section 22, Appendix 5.6-D of

poration resulting fromthe change in pit lake surface area was incorporated into the model. epresents recharge to groundwater from precipitation was automatically adjusted during model it lake for increased evaporation at each phase of mine development.

g and analysis conducted for the Project, including sensitivity analyses, are presented in Part G, the EAC Application/EIS.

The groundwater model simulated groundwater conditions resulting from aggregate removal throughout the Project life, including at closure. The model boundaries were adjusted over time to account for chnages in ground cover and lake surface area. The assessment of uncertainty in model predictions was carried out by conducting a model sensitivity analysis, including simulations of the flux representing groundwater discharge from bedrock to the valley fill aquifer (base case +/- 2).

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655	EAC Application / EIS (July 2016)	SCRD-073	3-Oct-16	Janette Loveys, CAO, SCRD	vii. The environmental assessment certificate needs to include monitoring requirements following closure/reclamaion of the site to ensure that the model's conclusions were accurate.	Details regarding the proposed em in Volume 3, Part E – Section 16 ar initiatives. Environment monitoring plans will compliance with EA certificate con two main components: compliance Compliance monitoring will occur construction and operational Envir Proponent and contractors' enviro benchmarks. Where possible, an a on the results of the monitoring pr BURNCO will submit a report to th times: - At least 30 days prior to the start - On or before January 31 in each y - At least 30 days prior to the start - On or before January 31 in each y - At least 30 days prior to the start - On or before January 31 in each y - At least 30 days prior to the start - On or before January 31 in each y - At least 30 days of completing Clo Effects monitoring will include per
656	EAC Application / EIS (July 2016)	SCRD-074	3-Oct-16	Janette Loveys, CAO, SCRD	viii. The influence of the pit lake level on flow and level of McNab Creek should be monitored seasonally and during peak and reduced precipitation periods, and over a long enough period, to find the best level to maintain in the pit and McNab Creek.	water and aquatic health. The study reference area. Monitoring plans we A Water Management Plan, currer applications, will provide a long-te mitigation plan to reduce potentia the receiving environment. The pla assurances outlined in the EAC App quantity and water quality monito to show a trend towards potential undertaken. Adaptive management - Continue to evaluate the extent of - During the wet season, if water le Berm then the valves in the culver on the western slope. - The height of the pit lake at the of closure.
657	EAC Application / EIS (July 2016)	SCRD-075	3-Oct-16	Janette Loveys, CAO, SCRD	ix. The effect of any upwelling of groundwater originating from the pit and entering McNab Creek or directly into Howe Sound via the foreshoure should be assessed to determine if it is likely to disturb spawning area or contrbute to undesirable siting effects.	Please refer to Technical Memo er (WC2), Fish and Fish Habitat. Ther the proposed pit lake. The increas spawning by improving intergrave estuary will not be changed but it Health Assessment found that the all life history stages of salmonids.

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wironmental management and monitoring programs for the Proposed Project are provided nd 17 and are summarized below. BURNCO commits to funding for these monitoring

I be developed by qualified environmental professionals and implemented to achieve nditions and with conditions of all required permits and approvals. Monitoring will consist of the monitoring and effects monitoring.

during all phases of Proposed Project activities as a part of the Proposed Project ronmental Protection Plans (EPPS). Compliance monitoring will include assessment of onmental performance using specifically developed performance indicators and adaptive management approach will be used to modify management plans as needed based rogram.

he BCEAO on the status of compliance with the Certificate Conditions, at the following

- of Construction;
- year after the start of Construction;
- t of Operations;
- year after the start of Operations;
- of Closure and Reclamation;
- year after the start of Closure and Reclamation; and
- osure and Reclamation.

iodic sampling or studies on/of groundwater, vegetation, wildlife, fish, air quality, surface dies will be conducted with a Proposed Project study area (receiving environment) and a will establish timelines and schedule for each monitoring activity (e.g., give years for post-

Inty being prepared for inclusion in the Mines Act and Water Sustainability Act Permit erm water management strategy that includes the management of water resources, a al effects to water resources and an effects monitoring plan to monitor water resources in an is designed to meeting the preliminary mitigation measures and commitments and plication/EIS and those required by the Water Sustainability Act. Based on the water oring programs (hydraulic heads and quality), if observed water levels and water quality start I negative effects to the receiving environment, then adaptive management will be nt techniques to be implemented as required include:

of the pit during operations.

evels in the pit lake become higher than has been designed for the Pit Lake Containment ts will be closed to reduce the amount of water reporting to the pit from the surface water

butlet structure can be adjusted to increase or decrease the level of the pit lake (e.g., adding o maintain the hydraulic gradient between McNab Creek and the Project Area following

ntitled BURNCO Aggregate Project: Additional Information Regarding Watercourse Two re is predicted to be increased groundwater influx into the groundwater-fed channels below sed levels of influx and more stable baseflows is expected to improve conditions for I flow supporting egg and alevin survival. The total amount of freshwater input into the will be more uniformly distributed amongst the groundwater-fed channels. The Aquatic Water quality of the pit lake Outflow (both surface and groundwater) would be suitable for

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658	EAC Application / EIS (July 2016)	SCRD-076	3-Oct-16	Janette Loveys, CAO, SCRD	x. A plan for post-project use of the pit lake should be in place to consider issues such as potential stocking of fish.	A Reclamation and Effective Closu Application/EIS. The plan describe management structures, remove s pit. Progressive and ongoing reclamati will use progressive reclamation o extraction and pit area around the development of the existing berm containment berm, surface water operational extraction schedule. O parameters, and fish, vegetation a reclamation monitoring suggested
659	EAC Application / EIS (July 2016)	SCRD-077	3-Oct-16	Janette Loveys, CAO, SCRD	i. The lakeshore slope should be designed to ensure that people and animals that use the lake can easily get on shore.	A Reclamation and Effective Closu Application/EIS. The plan describe management structures, remove s pit. The perimeter of the pit lake 5.3-55 described in Section 5.3 of
660	EAC Application / EIS (July 2016)	SCRD-078	3-Oct-16	Janette Loveys, CAO, SCRD	1. That the Proponent monitors turbidity and total suspended solids when lake water is discharged into the stream channel.	Suspended sediment sampling wil site-specific erosion and sediment Section 22.0: Appendix 3). A Water Management Plan, currer applications, will provide a long-te mitigation plan to reduce potentia the receiving environment. The pla assurances outlined in the EAC Ap
661	EAC Application / EIS (July 2016)	SCRD-079	3-Oct-16	Janette Loveys, CAO, SCRD	2. That sediment, erosion and water management practices are reassessed as the water balance model is updated, and that any changes to water,sediment and erosion management practices are communicated to the SCRD.	Suspended sediment sampling wil site-specific erosion and sediment Section 22.0: Appendix 3). Weekly ground disturbance activities are b implementation of erosion and see observations. Additional event-bas undertaken to inspect erosion con Monitoring will be conducted imm sediment inputs against backgrou control measures and the potentia
662	EAC Application / EIS (July 2016)	SCRD-080	3-Oct-16	Janette Loveys, CAO, SCRD	3. That the SCRD request a detailed conceptual plan for closure conditions and consider how to best support appropriate future land use in the area.	A Reclamation and Effective Closu Application/EIS. The plan describe management structures, remove s pit. Progressive and ongoing reclamat will use progressive reclamation o extraction and pit area around the development of the existing berm containment berm, surface water operational extraction schedule. (parameters, and fish, vegetation a reclamation monitoring suggested

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re Plan is provided in Volume 4, Part G – Section 22.0: Appendix 4 of the EAC es the proposed measures and commitments to manage, maintain and monitor water surface facilities, and reclaim areas and develop a functional ecosystem in the freshwater

ion activities will occur throughout all phases of mine development. The Proposed Project if the site that includes ongoing reclamation activities taking place alongside active e proposed operations area. Site planning will include landscaping, further design and along the north edge logging road of the pit area, along with the creation of southern pit features, fisheries habitats and vegetation throughout the site consistent with the Ongoing monitoring will be conducted for relevant noise and dust, water quality and wildlife resources. Details regarding the monitoring program (in addition to the d in the plan) is provided in Volume 3, Part E – Section 17.0 of the EAC Application/EIS.

re Plan is provided in Volume 4, Part G – Section 22.0: Appendix 4 of the EAC es the proposed measures and commitments to manage, maintain and monitor water surface facilities, and reclaim areas and develop a functional ecosystem in the freshwater will be designed to allow for an escape route for large mammals (See Mitigation Measure Mthe EAC Application/EIS).

l be conducted in accordance with the Environmental Management Plan for the Project. A control plan has been developed for each Project phase (please see Volume 4, Part G-

ently being prepared for inclusion in the Mines Act and Water Sustainability Act Permit erm water management strategy that includes the management of water resources, a al effects to water resources and an effects monitoring plan to monitor water resources in lan is designed to meeting the preliminary mitigation measures and commitments and oplication/EIS and those required by the Water Sustainability Act.

Il be conducted in accordance with the Environmental Management Plan for the Project. A control plan has been developed for each Project phase (please see Volume 4, Part G – v inspections by a qualified environmental monitor will be conducted during periods when being undertaken. Inspections will include a description of pre-site activity conditions, diment control measures, monitoring of control measures, and records of visual sed inspections, in response to expected storm events or heavy rain events, will also be ntrol measurements according to the Sediment and Erosion Control Plan (see Section 7.0). mediately upstream and downstream of disturbed areas in order to compare potential nd levels. These inspections will help determine the effectiveness of erosion and sediment al need to implement additional measures.

re Plan is provided in Volume 4, Part G – Section 22.0: Appendix 4 of the EAC es the proposed measures and commitments to manage, maintain and monitor water surface facilities, and reclaim areas and develop a functional ecosystem in the freshwater

ion activities will occur throughout all phases of mine development. The Proposed Project if the site that includes ongoing reclamation activities taking place alongside active e proposed operations area. Site planning will include landscaping, further design and along the north edge logging road of the pit area, along with the creation of southern pit features, fisheries habitats and vegetation throughout the site consistent with the Ongoing monitoring will be conducted for relevant noise and dust, water quality and wildlife resources. Details regarding the monitoring program (in addition to the d in the plan) is provided in Volume 3, Part E – Section 17.0 of the EAC Application/EIS.

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Application Rev	view Issues	s Tracking

	Document	For Working Group Use				
Line No.	Rev (Date)	REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)	
663	Round 1 Responses (20Oct2016)	SCRD-081	8-Dec-16	David Rafael, SCRD	 Staff report provided to BURNCO for information. Staff report states that: BURNCO has addressed most issue raised by the SCRD in Board Resolution 367/16 Recommendation No. 4 SCRD will review BURNCO's responses to the complete set of issues when made available by the EAO SCRD requests opportunities to consider subsequent plans and provide input to the approval agency before the plans are approved SCRD staff will contact representatives from McNab Creek Strata and provide an update SCRD will continue to revew the mines permitting process. 	SCRD's Staff Report is acknowledge
668	Draft First Nations Consultation Report (12Dec2016)	SN-086	15-Dec-16	Ratcliffe & Company representing Squamish Nation	Confidential Skwxwú7mesh Nation Revisions to BURNCO FN Consultation Report.	Confidential review comments disc
669	Draft First Nations Consultation Report (12Dec2016)	TWN-173	15-Dec-16	Tsleil-Waututh Nation	TWN will aim to provide comments as early as we can within the first two weeks of January.	Acknowledged. BURNCO is comm remainder of Application Review and a second secon
670	Draft First Nations Consultation Report (12Dec2016)	TWN-174	13-Jan-17	Tsleil-Waututh Nation	TWN has had time now to review the draft report and at this time does not have any further comments. We appreciate the opportunity to review the report and found that our previous comments were well integrated into this new version. We look forward to continued correspondence and communication in regards to the Project as this may not be an exhaustive list of our comments and concerns. In the same email from December 14, we also received your responses to our Round 1 comments (October 20). I am wondering if there will be a Round 2 occurring, or as it seems from the correspondence from EAO re: the suspension, that the next round will move directly to the Draft Assessment Report?	Acknowledged and thank you. In response to your inquiry about E Agnecy and were also included in A Nos. 573-612, pages 30-34 of the A Updated Appendix A resent for info
671	Synchronous Permitting Discussions with MMPO	MEM-058	17-Jan-17	Ministry of Energy and Mines, Major Mines Project Office	BURNCO to include maintenance and fuel support facilitites in the MAPA.	Acknowledged.
672	Synchronous Permitting Discussions with MMPO	MEM-059	17-Jan-17	Ministry of Energy and Mines, Major Mines Project Office	BURNCO to include BC Building Guidelines for their design information for footings and foundations.	Acknowledged.
673	Synchronous Permitting Discussions with MMPO	FLNRO-152	17-Jan-17	Ministry of Natural Resource Operations (FLNRO)	A Management Plan is required to be submitted with the [Lands Act Water Lot Lease] Application that includes a site plan with engineering drawings, includin an overview of the improvements from profile and top-down perspectives.	Acknowledged.
674	Synchronous Permitting Discussions with MMPO	FLNRO-153	17-Jan-17	Ministry of Natural Resource Operations (FLNRO)	The site plan should also include a project description that includes the present state of the site, the proposed changes and plans for reclamation.	Acknowledged.

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ed and documented.

cussed with Skwxwú7mesh Nation and incorporated into final report.

nitted to continuing consulting with Tsleil-Waututh Nation in a meaningful way throughout and beyond.

BURNCO responses to Round 2 comments, these have been provided to BCEAO and CEA Appendix A of the Draft Consultation Report dated December 12 (Application Review ID Appendix).

formation.
BURNCO Aggregate Project Application Review Issues Tracking

	Document	For Working Group Use					
Line No.	Rev (Date)	REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)		
675	EAC Application / EIS (July 2016)	FLNRO-154	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	FLNRO requests additional baseline data be collected in McNab Creek. FLNRO agrees with the recommendations provided in Allan Dakin's assessment dated Feb 6, 2017, addressed to DFO, and subsequently requests the following: a) BURNCO is to provide the following information collected at six stations along McNab Creek as indicated below. These stations should be spaced at approximate 300m intervals, starting 300m upstream of station MCUS and ending 300m downstream of MC-DS. If these stations were numbered from north to south, Stations 2 and 5 would be at MC-US and MC- DS respectively. The information required at each station should include: o An elevation profile of the existing creek channel covering the wetted area required to pass the estimated annual low flow, and assuming the lowest estimated seepage loss; o A photograph of channel at the site; o An opinion on the degree of hydraulic connection between invert of the channel and the local area water table. In some cases, this may require digging down to the water table; and, o Estimates of the flow past the station for 5 and 10 year frequency low flow events, for both the 5 and 10 day periods. These estimates should account for the lowest, most likely and highest estimate of seepage loss over the previous (upstream) 300m interval. These sets of calculations should then be repeated for project operation Years 5, 10 and 16.	No surface water flows measured f groundwater model therefore the o results. McNab Creek surface water immediately adjacent to the site we The Chapman Creek data were not Predicted direction (positive vs. neg Creek flow estimates. Flow estimat positive effect (i.e., reduction in dro potential negative impacts. There is no resistance to groundwa groundwater flow system. The evid close to McNab Creek have hydraul bed deposits consist of granular ma calibration of the hydrogeology mo lower permeable layer beneath Mc In order to monitor flows at the pro measurements at each station wou establish relationships between wa and accurate rating curves at the pro -A significant fraction of the flow w particularly significant during perior -The channel bed is mobile and per rating requires a unique flow rate for	
676	EAC Application / EIS (July 2016)	FLNRO-155	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	b) The above-mentioned information should then be used to describe the loss of connectivity, including seasonality, frequency and duration, as well as modeled estimates of the same once mining commences and at different phases of the mining operation.	See Tables 1 and 2 (dated 07-Apr-2 plan is provided in the Water Mana As requested, additional analysis to for McNab Creek, and correlated w technical memo prepared as a supp the EA, these data will be used to c effect (i.e., reduction in drought du site-specific impacts of the BURNCC negative) or the magnitude of the e	
677	EAC Application / EIS (July 2016)	FLNRO-156	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	 c) BURNCO is to use the guidance on assessment and development of instream flow thresholds (EFN) for higher risk, larger scale projects that is already well established in BC and is provided in the three documents referenced below. Although this guidance was designed for hydropower water licence applications, the overall procedure is consistent with other provincial aquatic guideline methodologies and widely accepted habitat-flow approaches. Moreover, Lewis et al. 2004 has proven effective in providing agency reviewers with the information they need to adjudicate water licence applications. BURNCO is to follow guidance contained in the following documents when developing its plan for additional baseline data collection in McNab Creek. Guidance documents are as follows: o Assessment Methods for Aquatic Habitat and Instream Flow Characteristics in Support of Applications to Dam, Divert, or Extract Water from Streams in British Columbia (Lewis et al. 2004); o Development of instream flow thresholds as guidelines for reviewing proposed water uses (Hatfield et al. 2003); and o Guidelines for the collection and analysis of fish and fish habitat data for the purpose of assessing impacts from small hydropower projects in British Columbia (Hatfield et al. 2007). 	There are no predicted losses to ba designed to evaluate the effects of Lewis et al. 2004 was provided by F	

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from McNab Creek or derived from Chapman Creek were used as inputs to the choice of Chapman Creek as a reference stream did not influence the groundwater model er elevation data (collected over 4 years) recorded at MC-US and MC-DS stations vere used as inputs to the groundwater model.

t used to access any negative site-specific impacts of the BURNCO Project on McNab Creek. egative) and magnitude of the effect (amount of water) were independent from McNab ites derived from Chapman Creek were only used as a means to quantify a predicted rought duration). It is noted that this positive effect was not claimed as an offset for any

ater flow beneath McNab Creek. That is, the creek has a direct hydraulic connection to the dence for this is that (1) piezometers in the northern portion of the alluvial fan that are ulic heads similar to the water level elevations observed in McNab Creek and (2) the creek aterial that is similar in nature and permeability to that of the alluvial fan. To achieve odel results with the measured water levels in McNab Creek as a boundary condition, no cNab Creek was required.

roposed stations and measure changes in flow between these stations, a series of flow uld be required. Measurements would be required through the range of flows of interest to ater levels and discharge. The ability to accurately measure flow rates and develop stable proposed locations would be compromised by several factors:

would be unmeasurable as it would be passing through the coarse bed materials, ods of low flow;

riodically deposits large woody debris resulting in variable stages for a given flow rate (a for a given stage);

result in minimal variation in stage as a result of changes in flow; and,

2017) for seasonality analysis details. How these values factor in to the trigger response agement Plan (WMP).

to predict low flow for McNab Creek at the BURNCO Project site using the Box Canyon data with the long term Capilano flow data will be carried out. This analysis will be presented in a oplement to the Water Management Plan at permitting. As with the analysis presented in create a synthetic hydrograph and will be used as a means to quantify a predicted positive uration). The results of this analysis will in no way influence the assessment of any negative CO Project on McNab Creek including the predicted direction of an effect (positive vs. effect (the rate at which water moves from McNab Creek to the groundwater table).

aseflow in McNab Creek from current conditions. The guidance documents referenced are f a predicted flow reduction and are therefore not directly relevant to the Proposed Project. FLNRO and was used as a general guideline in the development of the WMP.

BURNCO Aggregate Project

Application Review Is	ssues Tracking
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	Document				For Working Group Use	
Line No.	Rev (Date)	REF	Date (i.e. 04-Aug-16)	Reviewer Name	Comment (Include Memo reference as applicable)	
678	EAC Application / EIS (July 2016)	FLNRO-157	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO is to identify the predicted monthly range in water temperatures of groundwater seeping into the reach of McNab Creek below elevation 5m (as per Allan Dakin's Figure 1 in Feb 6, 2017 memo to DFO), before and after the Pit lake is established. Burnco is to integrate the water temperature estimates with fish periodicity information (see FLNRO request below) to identify months and/or specific timing when surface water inflows to McNab creek may be most sensitive to changes in temperature from Groundwater/Pit Lake inputs.	See 07-Apr-2017 and 10-Apr-2017 temperatures that could seep into the fan to McNab Creek does not o pit lake to the lower reaches of McI
679	EAC Application / EIS (July 2016)	FLNRO-158	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	At the above-mentioned McNab Creek flow monitoring locations (See FLNRO-154), BURNCO is to collect the following: • Substrate composition and ratios; • bank morphometry; • capability/suitability to support fish at various flows; and, • fish utilization of the location. Reliance should not simply be placed on Wetted Usable Areas, but estimates of suitable habitat for various life history aspects and species of fish. All above-mentioned data requested should follow the appropriate provincial and federal data collection methods (e.g., Guideline documents identified under FLNRO request #1 (FLNRO-156)).	The requested approach to evaluat under differing flows makes sense, Currently the surface water flow pr the Project. Is this request seeking stages during natural seasonal varia predicted increases in baseflows? for the evaluation of instream flow effects we would like to discuss an flow related effects and will show g ability to accurately measure flows unlikely to detect actual variations http://www.env.gov.bc.ca/wld/door
680	EAC Application / EIS (July 2016)	FLNRO-159	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO is to provide a periodicity chart that graphically and concisely represents the timing and duration of flow needs for all species and life stages of fish that utilize the potentially impacted reach of McNab Creek. Please see attached provincial guidance on how to develop an aquatic species periodicity chart. This periodicity information is to be integrated with the above-requested items #1-3 (FLNRO-154 - FLNRO-158).	A species periodicity chart docume information. The chart is used in co predicted flow changes with life his activities. Since the hydrogeologica expected that there will be benefici See 10-Apr-2017 Technical Memo e Fish and Fish Habitat for a periodici Creek and WC 2 as it relates to tem
681	EAC Application / EIS (July 2016)	FLNRO-160	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	Surface water input information to the Groundwater Model is to be updated with the McNab Creek surface water flow measurements requested in item #1 (FLNRO-154), and/or, as indicated by Allan Dakin, BURNCO may also wish to review data collected at the Box Canyon Hydropower project and consider revisiting the predicted low flows for McNab Creek at the BURNCO project site.	No surface water flows measured fi groundwater model therefore the of results . Predicted direction (positiv McNab Creek flow estimates. Flow reduction in drought duration). McI MC-DS were groundwater model in The flow rates in McNab Creek are flow rate in McNab Creek during Pr indicative of an Project-related adv than predicted hydraulic gradient b measurement of effects on McNab the Proposed Project is provided in As requested, additional analysis to for McNab Creek, and correlated w technical memo prepared as a supp the EA, these data will be used to co effect (i.e., reduction in drought du site-specific impacts of the BURNCC negative) or the magnitude of the e

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Technical Memos that address the predicted monthly range in water groundwater lower McNab Creek and WC 2 and the potential effects to fish populations. Seepage from occur currently and is not expected to occur in the first 5 years of mining. Seepage from the Nab Creek will only occur in the latter years of mining and at closure.

ting and quantifying available fish habitat for various species and life history stages of fish , if there was a prediction that the Project would cause a reduction in surface flows. redictions all indicate minor increases in baseflows within McNab Creek during the life of g to quantify and compare the availability of fish habitat for various species and life history iations in flow? If so how will this information be used to evaluate the effects of the The use of weighted usable area rather than wetted usable area is standard practice in BC v effects (see link below). If weighted usable area is to be used to monitor flow related alternative approach. Riffle habitats are the mesohabitat that will be the most sensitive to greater changes in weighted usable area associated with changes in flow. However, the is in McNab Creek at the proposed locations is expected to be of limited accuracy and in flow.

cuments/bmp/assessment_methods_instreamflow_in_bc.pdf

ents the timing and use of specific habitat but it does not normally contain flow requirement conjunction with predicted changes to the seasonal hydrograph to compare the timing of story events to determine whether predicted flow changes will effect specific life history cal modelling has predicted small to moderate increases in baseflow in McNab Creek it is cial effects to fish at all life history stages.

entitled Pit Lake Hydrodynamic Modelling for BURNCO Aggregate Project - Implications to city chart showing life history timing for fish species utilizing the lower reaches of McNab nperature effects.

from McNab Creek or derived from Chapman Creek were used as inputs to the choice of Chapman Creek as a reference stream did not influence the groundwater model ve vs. negative) and magnitude of the effect (amount of water) were independent from vestimates derived from Chapman Creek were used to quantify the positive effect (i.e., cNab Creek surface water elevation data (collected over 4 years) recorded at MC-US and nputs.

e currently highly variable as presented in the meeting on March 10, 2017. Due to this, a roject conditions lower than measured during baseline data collection would not be verse effect(s) on McNab Creek flows. A lower water level in the pit lake and/or a higher between the water level in McNab Creek and the groundwater system will provide a direct o Creek flows. Additional details regarding the monitoring strategy and response triggers for n the attached WMP.

o predict low flow for McNab Creek at the BURNCO Project site using the Box Canyon data with the long term Capilano flow data will be carried out. This analysis will be presented in a plement to the Water Management Plan at permitting. As with the analysis presented in create a synthetic hydrograph and will be used as a means to quantify a predicted positive uration). The results of this analysis will in no way influence the assessment of any negative CO Project on McNab Creek including the predicted direction of an effect (positive vs. effect (the rate at which water moves from McNab Creek to the groundwater table).

BURNCO Aggregate Project

Application Review Issues Tracking

	Document	For Working Group Use				
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682	EAC Application / EIS (July 2016)	FLNRO-161	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	Include wildlife impact assessment as part of overall impact assessment to McNab Creek (e.g., loss of potential grizzly bear utilization of fish in McNab watershed)	Losses from McNab Creek during n predicted to be greater during min a result, there are no potential adv
683	EAC Application / EIS (July 2016)	FLNRO-162	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	EAO should consider including a condition in the EA Certificate which allows FLNRO and the proponent to develop appropriate mitigation plan to compensate for impacts to amphibian habitat. This plan would likely be located in an Operation Environmental Monitoring Plan and would include annual reporting requirements to FLNRO.	BURNCO will be providing an amph This will be submitted to FLNRO wi
684	EAC Application / EIS (July 2016)	FLNRO-163	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	 a) The proponent's QEP is to clarify the value of the baseline spawning habitat characterised in the lower section of WC2. b) During project operations, if surface water flows are reduced in WC2, what would the subsequent value of the "more than 2,000m2 of the offset channel habitat" be for salmon spawning habitat (referenced from p 7 of above-mentioned Golder memo)? c) What is the proposed water quality (specifically oxygen levels) of the groundwater infiltrating into the compensation channel (during operations and after closure)? Is there a risk of anoxic conditions in the compensation channel? 	 A) The proposed design for the chaspawning channels and should prospawning activity was observed du B) The reduction in surface flow asschannel extension. The surface flow operations. C) As described in the Aquatic Heal groundwater quality and temperat salmonids to complete all life histo offset channel has consistently had
685	EAC Application / EIS (July 2016)	FLNRO-164	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO provides a description and commitment to contingency plans/adaptive management plans/mitigation measures to address the potential impacts to McNab Creek (from the updated modelling exercise) and those impacts which are not predicted by the modelling but may be observed during operations, for example, compensation for predicted impacts and contingency measures for unexpected/additional losses. If, for example, the lake level or the flow in McNab creek is lower than the baseline at any given time during pit operations, what elevations of flows will be trigger a re-assessment of the mining operations and what contingency plans would be available for rectifying the problems? Please follow the Provincial Environmental Mitigation Policy for determining and presenting mitigation and compensation measure to FLNRO.	channels). Deviations between the predicted a predicted positive effect on McNab current conditions. The WMP will in from McNab Creek will be less thar objective). See attached DRAFT Water Manag the adaptive management plan for
686	EAC Application / EIS (July 2016)	FLNRO-165	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO uses water level data and channel geometry at MC-US and MC-DS to provide estimates of low flows at these two stations and compare this with computer generated estimates.	In order to use recorded water level between these stations, a series of establish a relationship between w and accurate rating curves at these -A significant fraction of the flow w particularly significant during perio -The channel bed is mobile and per rating requires a unique flow rate f -The channel is broad which would -The channel has multiple stems, o These factors would result in an un the difference in flow between the of data which is not indicative of th the Project.

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mining are predicted to be less than current conditions. That is, baseflow in McNab Creek is ning than current conditions. Positive effects on flow rates in McNab Creek are predicted. As verse effects to wildlife as a result of changes in the flows in McNab Creek.

hibian breeding pond compensation strategy as committed to in the EAC Application/EIS. ith the Water Sustainability Act application within the Wildlife Protection Plan (WPP).

annel extension will meet the factors and criteria used by DFO to evaluate groundwater-fed wide conditions similar to the existing run habitat in the lower section of WC 2 where uring the November 2016 survey.

ssociated with the loss of the upper segment of WC 2 will not effect flows in the proposed w in the channel extension will be almost entirely derived from groundwater influx during

Ith assessment provided in Surface Water Resources Section of the application (5.5.7.2), the ture entering the offset habitat and existing lower segment of WC 2 will be suitable for ory stages including spawning. The groundwater well located in the area of the proposed d DO levels above 5.0 mg/L (criteria used by DFO to evaluate groundwater-fed spawning

and monitored pit lake water levels may identify a reduction in the magnitude of the b Creek and the need for mitigation years in advance of flows in McNab Creek approaching incorporate a buffer to account for the uncertainty in the model predicted so that losses n current conditions (e.g., the mine plan will be adjusted accordingly to meet this

ement Plan (WMP, dated 07-Apr-2017) that addresses the trigger action response plan and the Proposed Project and follows the Provincial Environmental Mitigation Policy.

els at MC-US and MC-DS to characterize flows at these stations and changes in flow f flow measurements would be required through the range of flows of interest in order to vater level and discharge. The ability to accurately measure flow rates and develop stable e two locations would be compromised by several factors:

would be unmeasurable as it would be passing through the coarse bed materials, this is ods of low flow;

priodically deposits large woody debris resulting in variable stage for a given flow rate (a for a given stage);

result in minimal variation in stage as a result of changes in flow; and,

obstructions, turbulence and eddies.

nacceptably large margin of error which would be significantly larger than the magnitude of e two stations (which would be the primary purpose of collecting these data). The collection he actual conditions would lead to a misinterpretation of baseline conditions and effects of

BURNCO Aggregate Project

Application	Review	Issues	Tracking	
Application	ILC VIC VV	133463	Trucking	

	Document	For Working Group Use				
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687	EAC Application / EIS (July 2016)	FLNRO-166	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO provides a copy of Golder's Draft September 29, 2014 report entitled "Surface Water Hydrology Baseline".	The Surface Water Hydrology Base Measurements of baseflow in McN groundwater system and the flow variable measurements of baseflow measurements of 26,793 m3/day. them as unreliable calibration targ baseflows fell within this measured calibrated model, the model was c current conditions.
688	EAC Application / EIS (July 2016)	FLNRO-167	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO provides information on flow monitoring station MC-US-1, including construction information, flow rating curve and graphical and/or tabulated flow data. Also, was this data used to estimate low flows in Mc Nab Creek in the channel north of the Burnco project site? If so how?	Please see the attached technical r US-01.
689	EAC Application / EIS (July 2016)	FLNRO-168	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO indicates the lowest elevation of the channel inverts at each station on all four of the graphs presented on Figures C1 to C5 in Appendix 5.6-A, indicates if there were any areas in the McNab Creek channel north and east of the Project site where no surface flow was observed during the monitoring period, and if so, how large an area and for what duration?	Yes, there were periods were no si transducer data at MC-DS that was very low flow/no flow were made: - 2011, this was estimated to exterd - 2012, it was estimated to extend to 13. Visual confirmation of no flo - 2013, it was estimated to extend events around August 15 and Sept Although the full extent of this ver DS or about 500 metres. The lowest elevation of the channe 5.6-A are: GC-DS = 0.45 m GC-US = 2.65 m MC-DS = 4.75 m
690	EAC Application / EIS (July 2016)	FLNRO-169	14-Feb-17	Ministry of Natural Resource Operations (FLNRO)	BURNCO reviews the Box Canyon data and considers revising its predicted low flows for McNab Creek at the BURNCO project site.	As requested, additional analysis to for McNab Creek, and correlated w technical memo prepared as a sup the EA, these data will be used to o effect (i.e., reduction in drought du site-specific impacts of the BURNC negative) or the magnitude of the

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eline report was finalized and is included as Appendix 5.5-A of the EAC Application/EIS. Nab Creek are presented in the attached technical memorandum. The hydraulic heads in the in WC 2 were the primary calibration targets for the groundwater model. The highly w ranged from 12,772 m3/day to 66,372 m3/day, with an average based on five . Due to the highly viable nature of these measurements their reliability/accuracy rendered gets therefore they could only be used as a reality check. That is, as long as the predicted id range and the more reliable hydraulic head and WC 2 flows were simulated by the considered a reliable tool in predicting the relative effects of the Project compared to

memo that details the construction, rating curve development and the data recorded at MC-

surface flows were observed. The entire area affected was not quantified. Based on is installed in a side channel/pond in McNab Creek, the following estimates of periods of

nd from September 2 to 15

I from August 19 to October 12 with a rainfall event initiating some flow from September 9 low occurred on September 7, 2012

from July 27 to August 27

f from August 1 to September 23 with short duration flows (1 to 2 days) due to rainfall tember 3.

ry low flow/no flow area is unknown it extend at least the entire area down stream of MC-

el inverts at each station on all four of the graphs presented on Figures C1 to C5 in Appendix

to predict low flow for McNab Creek at the BURNCO Project site using the Box Canyon data with the long term Capilano flow data will be carried out. This analysis will be presented in a oplement to the Water Management Plan at permitting. As with the analysis presented in create a synthetic hydrograph and will be used as a means to quantify a predicted positive uration). The results of this analysis will in no way influence the assessment of any negative CO Project on McNab Creek including the predicted direction of an effect (positive vs. effect (the rate at which water moves from McNab Creek to the groundwater table).