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## 1.0 EXECUTIVE SUMMARY

### 1.1 Introduction

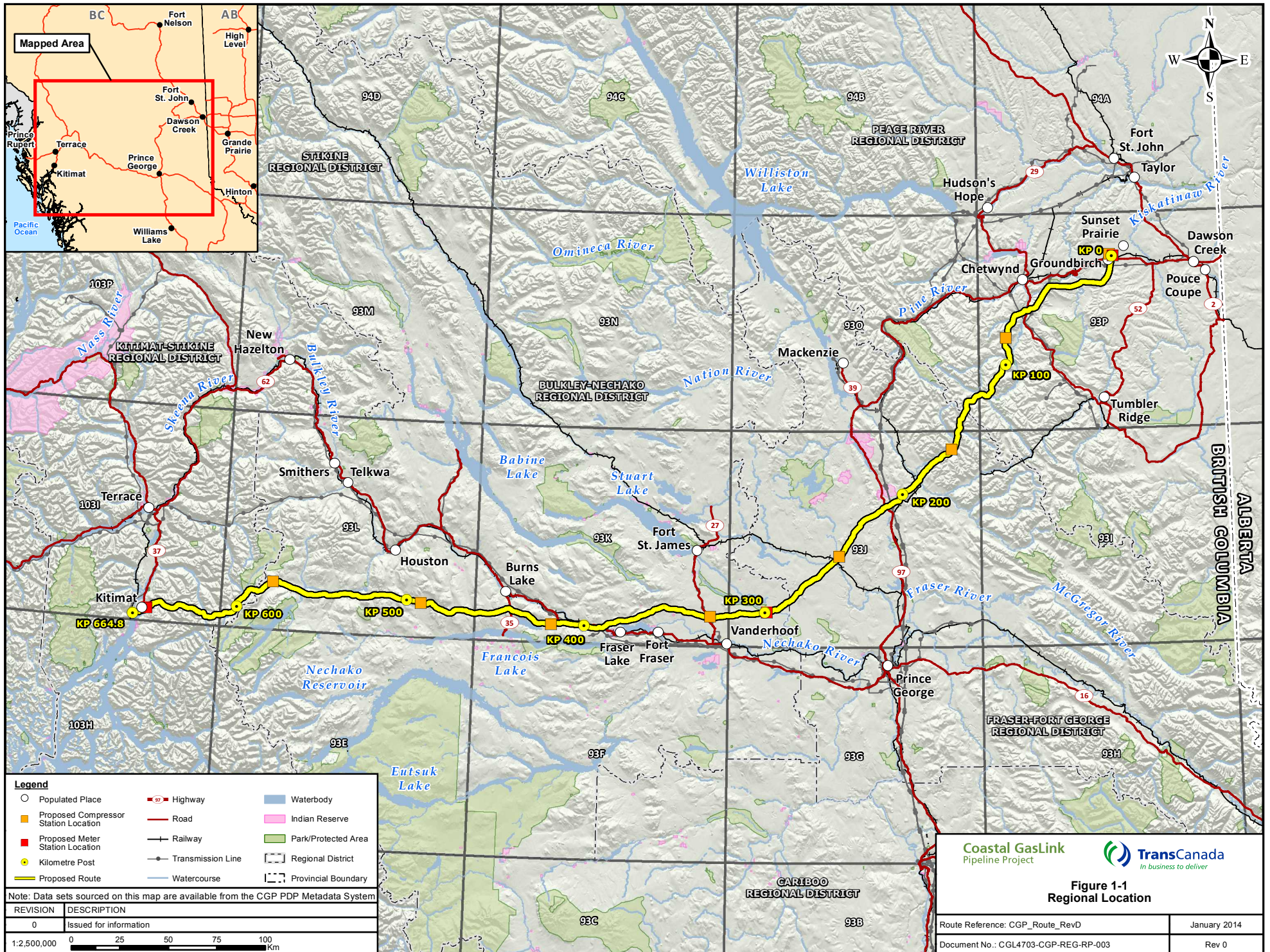
1 Coastal GasLink Pipeline Ltd. (Coastal GasLink), a wholly owned subsidiary of  
2 TransCanada PipeLines Limited (TransCanada), is applying to the British Columbia  
3 Environmental Assessment Office (BC EAO) for an Environmental Assessment  
4 Certificate (EAC) under the BC *Environmental Assessment Act* (BC EAA) for the  
5 proposed Coastal GasLink Pipeline Project (the proposed Project) (Figure 1-1). The  
6 proposed Project includes the construction and operations of an approximately  
7 650 km natural gas pipeline and additional facilities from the area near the  
8 community of Groundbirch (about 40 km west of Dawson Creek, BC) to the proposed  
9 LNG Canada Development Inc. (LNG Canada) liquefied natural gas (LNG) export  
10 facility near Kitimat, BC.

### 1.2 Project Description

11 The proposed Project will involve the construction of an approximately 650 km  
12 48 inch (NPS 48) (1,219 mm) diameter natural gas transmission pipeline from an area  
13 near the community of Groundbirch (approximately 40 km west of the City of  
14 Dawson Creek, BC) to the proposed LNG Canada export facility in the District of  
15 Kitimat, BC. The proposed Project includes the installation of permanent facilities  
16 that include compressor stations at up to eight locations and meter station at up to  
17 three locations. To construct the proposed Project, ancillary sites, such as access  
18 roads, temporary bridges, storage areas for equipment and pipe, as well as  
19 construction camps to house workers, will also be required.

20 The proposed Project will have an initial capacity of approximately 2 to 3 billion  
21 cubic feet/day (bcf/d) (56 million cubic metres per day [mmcm/d] to 85 mmcm/d),  
22 with the potential for expansion up to approximately 5 bcf/d (142 mmcm/d).

23 Once regulatory approvals have been received, construction of the proposed Project is  
24 scheduled to start in 2015 to 2016. Pre-construction activities include the  
25 development of camps and storage yards, clearing, and access and right-of-way  
26 (ROW) preparation. Mainline construction activities include construction of the  
27 pipeline, compressor stations and meter stations. Based on current construction  
28 planning, the proposed Project will be constructed in eight sections as determined by  
29 factors such as terrain, access and seasonal conditions. Construction activity will  
30 occur during winter or summer in each of the sections. The proposed Project is  
31 expected to be commissioned by the end of the decade.



### **1.2.1 Purpose of the Proposed Project**

1 The purpose of the proposed Project is to connect natural gas producing areas in  
2 northeast BC with the proposed LNG Canada export facility near Kitimat, BC, to  
3 access new global natural gas markets. It is expected that the proposed Project will  
4 connect to the NOVA Gas Transmission Ltd. System near Groundbirch, BC.

### **1.2.2 Project Benefits**

5 The proposed Project will, over 30 years, contribute billions of dollars in  
6 construction-related expenditures, labour income and employment, and taxes to the  
7 municipal, provincial and federal governments, which will benefit all Canadians.

8 The proposed Project provides employment opportunities for both Aboriginal and  
9 local non-Aboriginal populations, and financial gains both provincially and nationally.  
10 Construction and operation of the proposed Project will foster employment, labour  
11 income and government revenues, and contribute to the expansion of employment  
12 opportunities and business capacity. The proposed Project will create substantial  
13 short-term employment and contracting opportunities during the planning and  
14 construction phases, and a limited number of long-term jobs during Project operations.  
15 The major benefits of the proposed Project include:

- 16 • total construction spending expected to exceed \$4 billion
- 17 • an increase in Canadian Gross Domestic Product estimated to be \$4.3 billion, with  
18 BC's share expected to be 50% (over an assessed 30-year Project life)
- 19 • the equivalent of 37,201 person-years of employment generated during  
20 construction
- 21 • the equivalent of \$1.4 billion in labour income in BC
- 22 • the equivalent of \$0.5 billion in federal tax revenues
- 23 • the equivalent of \$0.2 billion in provincial tax revenues
- 24 • the equivalent of \$20.9 million in annual property tax revenues
- 25 • the equivalent of \$625 million in other municipal revenues over the life of the  
26 proposed Project

27 Coastal GasLink has and will continue to work with Aboriginal groups and non-  
28 Aboriginal communities to allow them to share in the benefits and opportunities  
29 provided by the proposed Project.

30 Coastal GasLink is also assessing the potential for waste heat recovery from natural  
31 gas turbines at compressor stations. Opportunities to utilize waste heat recovery  
32 generation (WHRG) technology on compressor stations will be evaluated at certain  
33 locations. In some cases, WHRG may not only supply the required power to meet

1 electrical demands at the compressor station, but could also result in surplus power  
2 for output to the electricity grid. This could provide benefits to communities and  
3 displace emissions.

4 The Archaeological Impact Assessment initiated during the pre-application stage of  
5 the proposed Project will be completed to inform construction planning. Information  
6 was gathered on the presence of known archaeological features and heritage resources,  
7 and the potential for additional finds. Site mitigation implemented during the  
8 construction phase will advance the knowledge and understanding of heritage  
9 resources along the proposed route.

### 1.2.3 Land Use

10 The vast majority of the proposed route crosses provincial Crown lands.  
11 Approximately 4.5% of the proposed route crosses private land, including several  
12 land parcels held under title to the Haisla Land Trust in the District of Kitimat. The  
13 proposed route does not cross any federally owned or administered land. The  
14 proposed Project crosses the traditional territory boundaries of 31 Aboriginal groups  
15 and two Tribal Councils, as described in the EAO-approved Aboriginal Consultation  
16 Plan. Information about traditional land use is included in Section 16 and Section 23  
17 of the Application.

18 The area crossed by the proposed Project supports a variety of activities on private  
19 and Crown lands. These activities include:

- 20 • forestry
- 21 • agriculture and grazing
- 22 • mineral and coal exploration and development
- 23 • oil and gas
- 24 • trapping
- 25 • hunting and guide outfitting
- 26 • fishing
- 27 • tourism and commercial recreation

### 1.2.4 Alternatives Considered

28 Alternative means of conducting the proposed Project refers to the various ways that  
29 may be technically and economically feasible to implement and carry out the  
30 proposed Project. Coastal GasLink evaluated alternative means through the routing  
31 and siting process. These may include alternative routes for the pipeline or locations  
32 for the facility sites, methods of construction and mitigation.

1 Coastal GasLink has conducted a thorough pipeline route and facility site  
2 identification, analysis and evaluation process for the proposed Project that resulted in  
3 identifying and evaluating a number of potential route and facility site alternatives.

4 The process of selecting an appropriate pipeline route and facility sites involved the  
5 collaboration of experts from various disciplines, including land, environment,  
6 engineering and construction, as well as the consideration of input from Aboriginal  
7 groups, regulatory agencies, landowners and other stakeholders, and the public. The  
8 route and facility site identification and selection process involved:

- 9 • identifying the control points (the proposed pipeline start and end points)
- 10 • determining the evaluation criteria
- 11 • engaging Aboriginal groups, regulatory agencies, landowners and other  
12 stakeholders, and the general public
- 13 • conducting engineering and environmental field investigations

14 Representatives from Coastal GasLink conducted a preliminary route assessment  
15 using desktop reviews to identify a conceptual corridor as the basis for detailed  
16 environmental study, community consultation and future engineering work.

17 Once the conceptual corridor was developed, further revisions and refinements were  
18 made to identify potential route alternatives and define a study corridor to focus the  
19 field investigations and assessment of potential adverse effects. Based on the findings  
20 of the field investigations, the route was further refined, resulting in the proposed  
21 route described in this Application.

22 Coastal GasLink will finalize the detailed ROW design during detailed engineering  
23 and permitting. The detailed ROW design will reflect engineering, construction and  
24 operations considerations, further site-specific constraint mapping and further field  
25 investigations, as well as input from Aboriginal groups, regulatory agencies,  
26 landowners and other stakeholders, and the general public.

### 1.2.5 Regulatory Framework and Applicable Permits

27 The proposed Project is a reviewable project under Section 10(1)(c) of the BC EAA.  
28 The proposed Project constitutes a reviewable project pursuant to Part 4 of the  
29 Reviewable Projects Regulation (BC Reg 370/02) since the proposed Project includes  
30 a new transmission pipeline facility with a diameter > 323.9 mm and a length of  
31  $\geq 40$  km.

32 Coastal GasLink will also require permits to construct and operate a pipeline pursuant  
33 to Section 25 of the BC *Oil and Gas Activities Act*.

1 In addition to the authorizations described above, a number of other permits, licences,  
2 approvals and authorizations will be required as discussed in Section 1.3, Applicable  
3 Permits, of the Application.

4 An overview of key milestones during the pre-application and application review  
5 stages is provided in Table E-1.

**Table E-1: Key Milestones During the Provincial EA Process**

Key Milestone <sup>a)</sup>	Date(s)	Action
<b>Pre-application Stage</b>		
Project Description	October 30, 2012	Coastal GasLink submitted a Project Description for the proposed Project to the BC EAO for review.
Section 10 Order	December 11, 2012	BC EAO issued a Section 10 Order pursuant to Section 10(1)(c) of the BC EAA stating that the proposed Project was reviewable under the BC EAA and requires an EAC in order to proceed.
Selection of Valued Components (VCs)	February 15, 2013	Coastal GasLink submitted the Selection of Valued Components document to the BC EAO for review.
Draft Application Information Requirements (AIR)	February 15, 2013	Coastal GasLink submitted the Draft AIR to the BC EAO.
Draft AIR Public Notification Plan	February 20, 2013	Coastal GasLink submitted the Draft AIR Public Notification Plan to the BC EAO.
Working Group meeting no. 1	March 4 to 5, 2013	A Working Group meeting for the proposed Project was held in Prince George, BC, to review and comment on the Draft AIR. The deadline for Working Group comments on the Draft AIR was March 22, 2013.
Section 11 Order	March 8, 2013	The BC EAO issued a procedural Order pursuant to Section 11 of the BC EAA (Section 11 Order).
Public comment period for Draft AIR	March 11 to April 10, 2013	The public was invited to comment on the Draft AIR (30 day comment period).
Public Consultation Plan	March 13, 2013	Pursuant to Part H, Section 17.1 of the Section 11 Order of the BC EAA, Coastal GasLink submitted the Public Consultation Plan for the proposed Project to the BC EAO.
Public open houses for Draft AIR	March 19 to 27, 2013	The BC EAO hosted open houses during the public comment period in Burns Lake, Prince George, Dawson Creek, Chetwynd and Terrace, BC. The purpose of the open houses was to explain the purpose and content of the Draft AIR, the BC EAO process, answer questions regarding the Project and receive feedback about the studies or information required for a comprehensive EA.

**Table E-1: Key Milestones During the Provincial EA Process (cont'd)**

Key Milestone <sup>a)</sup>	Date(s)	Action
<b>Pre-application Stage</b>		
Wildlife Sub-working Group meeting	April 11, 2013	A BC EAO sub-working group meeting was held in Smithers, BC, to discuss specific details about the Coastal GasLink wildlife and wildlife habitat program. Discussion focused on the field programs and refinement of the VCs and key indicators (KIs) to be included in the AIR.
Fisheries and Aquatics Sub-working Group meeting	April 11, 2013	A BC EAO sub-working group meeting was held in Smithers, BC, to discuss specific details about the Coastal GasLink aquatics program, including the field program. Specific details about aquatic VCs and KIs were discussed and resolution on the content of the AIR was reached.
Greenhouse Gas (GHG) Emissions Sub-working Group meeting	April 15, 2013	A BC EAO sub-working group meeting was held in Victoria, BC, to discuss the approach to be taken by Coastal GasLink to assess the potential adverse effects of Project GHG emissions and reach a common understanding of the requirements to be outlined in the AIR.
Public Consultation Plan approved	April 16, 2013	BC EAO approved the Public Consultation Plan.
Aboriginal Consultation Plan	April 26, 2013	Pursuant to Part G, Section 14.1.1 of the Order under Section 11 of the BC EAA, Coastal GasLink submitted the Aboriginal Consultation Plan for the proposed Project to the BC EAO.
Public Consultation Report 1	April 30, 2013	Pursuant to Part H, Section 19.1 of the Order under Section 11 of BC EAA, Coastal GasLink submitted the Public Consultation Report 1 for the proposed Project to the BC EAO.
Aboriginal Consultation Report 1	May 3, 2013	Pursuant to Part G, Section 16.1 and Section 16.3.1 of the Order under Section 11 of BC EAA, Coastal GasLink submitted the Aboriginal Consultation Report 1 for the proposed Project to the BC EAO.
Public Consultation Report 1 approved	May 15, 2013	BC EAO approved the Public Consultation Report 1.
Issue response memos to Draft AIR and responses	May 23, 2013	BC EAO issued the final issues tracking document that summarizes Draft AIR comments received from members of the Working Group, the public, Aboriginal groups and the BC EAO, including Coastal GasLink's responses to the comments and queries.
AIR	May 23, 2013	BC EAO issued the approved AIR.
Draft AIR Public Notification Plan approved	May 30, 2013	BC EAO approved the Draft AIR Public Notification Plan.
Aboriginal Consultation Plan approved	May 30, 2013	BC EAO approved the Aboriginal Consultation Plan.
Aboriginal Consultation Report 1 approved	May 30, 2013	BC EAO approved the Aboriginal Consultation Report 1.

**Table E-1: Key Milestones During the Provincial EA Process (cont'd)**

Key Milestone <sup>a)</sup>	Date(s)	Action
<b>Pre-application Stage</b>		
Application for an Environmental Assessment Certificate filed	January 29, 2014	Coastal GasLink files the Application for an EAC with the BC EAO.
Application evaluation for completeness	February 28, 2014	BC EAO concludes its evaluation of the Application's completeness within 30 days of receiving the Application.
Application for an EAC accepted	March 2014	BC EAO accepts the Application for an EAC.
Application review	TBD	BC EAO will start 180-day Application review period.
Public comment period for Application	TBD	Public comment period will be held on the Application within 180-day review period.
Working Group meeting no. 2	TBD	A Working Group meeting will be held to review the Application within the 180-day review period.
Draft Assessment Report	TBD	The BC EAO will prepare and distribute the draft Assessment Report during the 180-day review period to Coastal GasLink, the Working Group and Aboriginal groups for input.
Assessment Report	TBD	The BC EAO will submit the final Assessment Report to the BC EAO Executive Director.
Executive Director referral to Ministers	TBD	The BC EAO Executive Director will submit the EAC package to the Minister of Environment and the Minister of Energy, Mines and Petroleum Resources for decision.
<b>Project Decision by Ministers Stage</b>		
Issuance of Conditional Certificate	TBD	Once approved, a conditional certificate will be issued and the proposed Project will be authorized to proceed to the permitting stage.
Ministers' decision posted on electronic Project Information Centre (e-PIC)	TBD	The BC EAO will post the responsible Ministers' decision, assessment report, the Executive Director's reasons and recommendations, and the EAC on e-PIC.
a) This table describes the key milestones that have occurred during the Pre-application stage and those expected to occur during the Application Review and Project Decision stages, and is not inclusive of all consultation activities conducted during the Pre-application stage. Detailed summaries of consultation activities with the public and Aboriginal groups are provided in Sections 23 and 24.		

### 1.3 Aboriginal Consultation

1 Aboriginal consultation has been an integral part of this Application and will continue  
2 throughout the Project execution. Aboriginal consultation for the proposed Project  
3 has been guided by TransCanada's principles, policies and programs. An Aboriginal  
4 Consultation Plan (ACP) was submitted to the BC EAO pursuant to the Order issued  
5 under Section 11 of the BC EAA. A primary objective of the ACP is to build and  
6 maintain positive long-term relationships with Aboriginal groups potentially affected  
7 by the proposed Project. Coastal GasLink has conducted a comprehensive

1 consultation and engagement program with Aboriginal groups, designed to  
2 accomplish the objectives outlined in the ACP, as well as the Application Information  
3 Requirements (AIR). The ACP is available on the e-PIC site for the proposed Project  
4 ([http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic\\_document\\_392\\_35638.html](http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_392_35638.html)).

5 Feedback and input received during Aboriginal consultation activities have informed  
6 the effects assessment and other Project plans, to contribute to the development of the  
7 Application.

8 As consultation continues throughout the Application review process, Coastal  
9 GasLink continues to engage with Aboriginal groups to discuss specific interests, and  
10 potential adverse environmental, economic, social, heritage and health effects of the  
11 proposed Project, with a view to finding mutually satisfactory measures for avoiding,  
12 mitigating or, where appropriate, otherwise addressing or accommodating those  
13 potential adverse effects.

14 The approved ACP describes how Coastal GasLink intends to communicate its plans  
15 and timelines for the proposed Project to Aboriginal groups. The ACP also describes  
16 how Coastal GasLink intends to

- 17 • explain the technical aspects and potential adverse effects of the proposed Project
- 18 • learn about Aboriginal interests and the potential adverse effects of the proposed  
19 Project on those interests
- 20 • consider Aboriginal issues and inputs
- 21 • identify how the feedback received during Aboriginal consultation will inform the  
22 Application

23 While the Crown is ultimately responsible for ensuring that the obligation to consult  
24 with Aboriginal groups is satisfied, certain aspects have been delegated to Coastal  
25 GasLink in the Section 11 Order. During the pre-application stage, both the BC EAO  
26 and Coastal GasLink have engaged Aboriginal groups by providing the opportunity to  
27 review key documents and to attend Working Group and Sub-working Group  
28 meetings.

29 Table E-2 lists the Aboriginal groups that have been identified within the ACP as  
30 having an interest in, or being potentially affected by, the proposed Project, and being  
31 involved in the Environmental Assessment (EA) process through Aboriginal  
32 consultation and engagement. These Aboriginal groups may either be directly  
33 affected by or have expressed a specific interest in the planning, construction or  
34 operations of the proposed Project.

**Table E-2: Aboriginal Groups Identified in the Aboriginal Consultation Plan with an Interest in or Potentially Affected by the Proposed Project**

<b>Aboriginal Groups</b>		
	Treaty 8 First Nations	McLeod Lake Indian Band Saulteau First Nations West Moberly First Nations
	First Nations	Ts'il Kaz Koh First Nation (Burns Lake Band) Dark House Haisla Nation Kitselas First Nation Lheidli-T'enneh First Nation Nadleh Whut'en First Nation Nak'azdli Band Nee-Tahi-Buhn Band Office of the Wet'suwet'en Hereditary Chiefs Saik'uz First Nation Skin Tyee Nation (Skin Tyee First Nation) Stellat'en First Nation Wet'suwet'en First Nation Yekooche First Nation
Section 11 Order, Schedule C Aboriginal Groups <sup>b)</sup>	Treaty 8 First Nations	Blueberry River First Nations <sup>d)</sup> Doig River First Nation <sup>d)</sup> Fort Nelson First Nation Halfway River First Nation Prophet River First Nation Treaty 8 Tribal Association
	First Nations	Carrier Sekani Tribal Council Lake Babine First Nation Lax Kw'alaams Indian Band Metlakatla First Nation Nazko First Nation Tl'azt'en Nation Gitga'at First Nation <sup>e)</sup>
Other Communities <sup>c)</sup>	First Nations	Hagwilget Village Council (Hagwilget Nation Village Council) Moricetown First Nation
	Métis	Métis Nation British Columbia Kelly Lake Métis Settlement Society

**Table E-2: Aboriginal Groups Identified in the Aboriginal Consultation Plan with an Interest in or Potentially Affected by the Proposed Project (cont'd)**

Notes:	
a)	Consultation and Invitation to Participate on Working Group.
b)	Notification.
c)	Although not identified in the Order, Coastal GasLink will continue to provide information and undertake engagement activities with additional Aboriginal groups as part of its overall engagement program.
d)	On February 21, 2014, the EAO issued a Section 13 Order that adds Blueberry River First Nations and Doig River First Nation to Schedule B of the Section 11 Order.
e)	On February 21, 2014, the EAO issued a Section 13 Order that adds Gitga'at First Nation to Schedule C of the Section 11 Order.

### 1.3.1 Consultation Planned During Application Review

1 During the application review stage, Coastal GasLink remains committed to ongoing  
2 consultation with Aboriginal groups. Once the Application is filed with the BC EAO,  
3 Coastal GasLink will continue to engage with Aboriginal groups and will implement  
4 all commitments and agreements between Coastal GasLink and participating  
5 Aboriginal groups. Consultation activities will be completed according to the  
6 consultation requirements detailed in the Section 11 Order and the Coastal GasLink  
7 ACP. This will include notification, consultation and reporting. Additional  
8 information on the planned activities is outlined below.

9 A full description of the approach for consulting with Aboriginal groups, including  
10 past and planned consultation activities during the pre-application and application  
11 review stages, is provided in Section 23 of this Application, the Coastal GasLink  
12 ACP and the Aboriginal Consultation Report 1 available on the EAO e-PIC site  
13 ([http://a100.gov.bc.ca/appsdata/epic/html/depoy/epic\\_document\\_392\\_35638.html](http://a100.gov.bc.ca/appsdata/epic/html/depoy/epic_document_392_35638.html)).  
14 Aboriginal Consultation Report 2 was filed with the BC EAO at the same time as this  
15 Application, and a third report will be completed during the Application review.

### 1.3.2 Summary of Issues, Concerns and Interests

16 During the consultation activities completed before filing this Application, some  
17 common issues and concerns were raised by Aboriginal groups. Coastal GasLink has  
18 tracked the issues, concerns and interests identified by Aboriginal groups through the  
19 consultation activities that have occurred to date.

20 Table E-3 provides a summary of the key issues and concerns raised during the  
21 Application preparation stage, as well as Coastal GasLink's response to those issues  
22 or concerns. Reference to the section of this Application where this issue is addressed  
23 is also provided. A full description of the Aboriginal consultation results and all  
24 specific comments are described in detail in Section 23 of this Application. Coastal

1 GasLink has noted and responded to all comments received during the Aboriginal  
2 consultation process.

**Table E-3: Summary of Key Issues and Concerns Raised by Aboriginal Groups During Aboriginal Consultation Activities**

Issue, Concern or Interest	Coastal GasLink Response	Topic and Reference to Section of Application
Potential adverse effects on watercourses	Coastal GasLink has assessed the potential adverse effects of the proposed Project on watercourses during all stages of the proposed Project.	7 Aquatic Environment Appendix 2-A EMP
Potential negative effects of multiple projects in the region	Coastal GasLink has completed cumulative effects assessments for each of the Valued Components (VCs) outlined in the AIR.	4 to 10 Environmental Effects Assessment 11 to 12 Economic Effects Assessment 13 to 16 Social Effects Assessment 17 to 18 Heritage Effects Assessment 19 to 20 Health Effects Assessment
Need for training and employment opportunities	Coastal GasLink continues to engage Aboriginal groups to identify local workforce capabilities and training requirements.	11 to 12 Economic Effects Assessment
Need for contracting opportunities	Coastal GasLink continues to engage with Aboriginal groups to maximize contracting opportunities associated with the proposed Project for Aboriginal businesses.	11 to 12 Economic Effects Assessment
Confidentiality of Traditional Land Use (TLU) and Traditional Ecological Knowledge (TEK) information	Aboriginal groups consider some TLU and TEK data and information to be confidential and, as a result, this information is not included in materials submitted on the public record for the EA. However, the information has and continues to be used in developing mitigation plans with Aboriginal groups.	4 to 10 Environmental Effects Assessment 14 Land and Resource Use 16 Traditional land and Resource Use 20 Human and Ecological Health 23 Aboriginal Consultation
Protection of caribou and caribou habitat	Coastal GasLink has assessed the potential adverse effects of the proposed Project on caribou and caribou habitat during all stages of the proposed Project.	10 Wildlife and Wildlife Habitat Appendix 2-A EMP
Potential adverse effects on wildlife	Coastal GasLink has assessed the potential adverse effects of the proposed Project on wildlife during all stages of the proposed Project.	10 Wildlife and Wildlife Habitat Appendix 2-A EMP

**Table E-4: Summary of Key Issues and Concerns Raised by Aboriginal Groups During Aboriginal Consultation Activities**

Issue, Concern or Interest	Coastal GasLink Response	Topic and Reference to Section of Application
Number of other resource development projects in the territory stresses capacity to engage	Coastal GasLink has and will continue to provide Capacity Funding to potentially affected Aboriginal groups and will offer to negotiate Project agreements that will span the life of the proposed Project with each directly affected Aboriginal group.	23 Aboriginal Consultation
Need for attention to pipeline safety	Coastal GasLink's design and plans for constructing the pipeline meet or exceed all applicable regulatory requirements and industry standards. Coastal GasLink will have a comprehensive management process during operations to maintain pipeline integrity and safety.	21 Accidents or Malfunctions  Note: Information regarding the integrity and performance of the pipeline and related infrastructure will be addressed through the BC OGC process.
Desire for long-term benefits over the life of the proposed Project	Coastal GasLink will continue to discuss long-term benefits of the proposed Project with the Aboriginal groups identified in Schedule B of the Section 11 Order.	1 Proposed Project Overview
Need to maintain country food (e.g., berries and game)	Coastal GasLink, in consultation with Aboriginal groups, has assessed the potential of the proposed Project to adversely affect the quality of country foods (e.g., plants, fish and meat), and will identify measures to avoid, reduce or mitigate the potential adverse effects of the proposed Project on the quality of country foods.	20 Human Health 16 Traditional Land and Resource Use Appendix 2-A EMP
Potential adverse effects on fisheries	Coastal GasLink has assessed the potential for adverse effects on fisheries in its assessment of the aquatic environment, and specifically, the VC protection of recreationally, commercially and culturally important fish and fish habitat. Coastal GasLink identifies measures to avoid, reduce or mitigate the potential adverse effects of the proposed Project on fisheries.	7 Aquatics Appendix 2-A EMP
Potential adverse effects on areas of cultural significance	Coastal GasLink has assessed the potential adverse effects of the proposed Project on heritage resources in the EA and identifies measures to avoid, reduce or mitigate the potential adverse effects of the proposed Project on cultural sites.	16 Traditional Land and Resource Use 18 Heritage Resources

**Table E-5: Summary of Key Issues and Concerns Raised by Aboriginal Groups During Aboriginal Consultation Activities**

Issue, Concern or Interest	Coastal GasLink Response	Topic and Reference to Section of Application
Potential adverse effects on air quality	Coastal GasLink has assessed the potential adverse effects of the proposed Project on air quality during all stages of the proposed Project.	6 Atmospheric Environment 19 Health Effects Assessment Appendix 2-A EMP
Potential adverse effects on water quality	Coastal GasLink assessed the potential adverse effects of the proposed Project on water quality during all stages of the proposed Project.	5 Geophysical Environment 7 Aquatics 14 Land and Resource Use 20 Human and Ecological Health Appendix 2-A EMP
Potential adverse effects on culturally important plants (such as medicinal plants)	Coastal GasLink will include the knowledge provided by Aboriginal groups in the assessment of potential adverse effects of the proposed Project on culturally important plants, and will identify measures to avoid, reduce or mitigate the potential adverse effects.	8 Vegetation 16 Traditional Land and Resource Use Appendix 2-A EMP
Concern that the proposed Project would be converted to an oil pipeline	The Coastal GasLink pipeline has been designed as a natural gas transportation pipeline; there are no plans to convert the line to an oil pipeline. Coastal GasLink will enter into contracts for a minimum of 25 years, for the transportation of natural gas to the LNG Canada export facility.	1 Proposed Project Overview
Concern with the Project timelines	Coastal GasLink's customer is targeting a market window for Canadian LNG exports in the Asia Pacific market near the end of the decade. Coastal GasLink is working toward achieving that target. Coastal GasLink continues to work with communities to ensure communication and engagement efforts are effective and appropriate, and is providing capacity funding to Aboriginal groups to assist with the resources needed to participate in engagement activities.	1 Proposed Project Overview

**Table E-3: Summary of Key Issues and Concerns Raised by Aboriginal Groups During Aboriginal Consultation Activities (cont'd)**

Issue, Concern or Interest	Coastal GasLink Response	Topic and Reference to Section of Application
Potential adverse effects on Aboriginal and Treaty rights	<ul style="list-style-type: none"> <li>• Coastal GasLink respects the legal and constitutional rights of Aboriginal peoples and recognizes that its relationship with Aboriginal peoples is separate and different from that of the Crown.</li> <li>• Coastal GasLink is committed to an open and transparent engagement process so that Aboriginal groups are informed and actively involved in all aspects of the proposed Project.</li> <li>• Coastal GasLink will continue to work with Aboriginal groups to identify the impacts of the Project activities on the community's values and needs to work toward finding mutually acceptable solutions and benefits.</li> <li>• The proposed Project has provided capacity funding to Aboriginal groups along the proposed route so they can meaningfully participate in Project planning, review and development.</li> <li>• Coastal GasLink has proposed a number of specific mitigation measures to address concerns about the exercise of Aboriginal Rights and Title, and those measures are summarized below in the sections addressing the specific concerns.</li> </ul>	16 Traditional Land and Resource Use 23 Aboriginal Consultation
Need for reclamation and protection measures for watercourses	Coastal GasLink has assessed the potential adverse effects on watercourses in its assessment of the aquatic environment and will identify measures to avoid, reduce or mitigate potential adverse effects. The assessment will contain a description of pipeline installation methods and preliminary mitigation.	7 Aquatic Environment Appendix 2-A EMP
As a result of new roads, potential for increased access for recreational harvesters to the area, leading to increased pressure on wildlife and fish resources	An Access Control Management Plan has been provided in the preliminary Environmental Management Plan (EMP) for the proposed Project as part of the Application.	14 Land and Resource Use 16 Traditional Land and Resource Use Appendix 2-A EMP

**Table E-3: Summary of Key Issues and Concerns Raised by Aboriginal Groups During Aboriginal Consultation Activities (cont'd)**

Issue, Concern or Interest	Coastal GasLink Response	Topic and Reference to Section of Application
Potential adverse effects of fracking	Coastal GasLink acknowledges the concern with respect to hydraulic fracturing; however, hydraulic fracturing is not included within the scope of the proposed Project.	Not within the scope of the proposed Project
Potential adverse effects on vegetation and plant communities	Coastal GasLink has assessed the potential adverse effects of the proposed Project on vegetation and plant communities during all stages of the proposed Project.	8 Vegetation Appendix 2-A EMP
Potential adverse effects on wetlands	Coastal GasLink has assessed the potential adverse effects of the proposed Project on wetlands during all stages of the proposed Project.	9 Wetlands Appendix 2-A EMP
Potential adverse effects on old forests	Coastal GasLink has assessed the potential adverse effects of the proposed Project on old forests during all stages of the proposed Project.	8 Vegetation Appendix 2-A EMP
Need for integrity of traplines to be protected	Coastal GasLink understands that Aboriginal peoples may trap in areas that may or may not be located within registered traplines. Both nonregistered and registered trapping activities are described in the Traditional Land and Resource Use section. Coastal GasLink continues to collect information from potentially affected Aboriginal groups to describe the current use of the land and resource activities for traditional purposes. Coastal GasLink will contact affected trappers to discuss potential adverse effects of the proposed Project on their trapping activities, and develop appropriate mitigation.	14 Land and Resource Use 16 Traditional Land and Resource Use Appendix 2-A EMP
Potential for erosion of steep hills and banks	Coastal GasLink has assessed potential adverse effects of the proposed Project on terrain integrity. The Application contains mitigation to avoid, reduce or otherwise mitigate the potential adverse effects of the proposed Project on terrain integrity.	5 Geophysical Environment Appendix 2-A EMP
Human health concerns	The potential to adversely affect human health is included in this Application. The Application contains mitigation to avoid, reduce or mitigate the potential adverse effects of the proposed Project on human health.	20 Human and Ecological Health

#### 1.4 Public Consultation

1 Public consultation has been an integral part of the development of this Application  
2 and will continue throughout the proposed Project. Coastal GasLink has conducted a  
3 comprehensive consultation and engagement program with the public, as outlined in  
4 the Public Consultation Plan (PCP) as approved by the EAO available on the e-PIC  
5 site for the proposed Project  
6 ([http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic\\_document\\_392\\_35636.html](http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_392_35636.html)).

7 The goal of Coastal GasLink’s public consultation program is to convey plans and  
8 schedules for the proposed Project in order to gather input from landowners and other  
9 stakeholders and the general public. The feedback received during the public  
10 consultation has informed the Application and the Project planning process.

11 Coastal GasLink’s Public Consultation Plan uses the following terminology to  
12 describe segments of the public who may take an interest in the proposed Project:

- 13 • stakeholders (e.g., landowners, trappers, tenants and tenure holders, hunting and  
14 guiding outfitters)
- 15 • municipal and regional government and services (e.g., emergency services,  
16 elected officials, economic development organizations)
- 17 • public (e.g., media, interest groups, colleges, training providers, interested  
18 individuals, business organizations)

19 The proposed Project’s public consultation program will be ongoing throughout all  
20 phases of the proposed Project and, in addition to meeting regulatory requirements, is  
21 intended to promote long-term relationships with interested parties that are based on  
22 mutual respect. In addition, public consultation is intended to build a community  
23 understanding of the proposed Project with the goal of sharing information about  
24 Project plans and activities while gaining a clear understanding of how people may be  
25 affected by the proposed Project.

26 Table E-4 lists the public stakeholder groups that have been identified in the PCP as  
27 having an interest in or being potentially affected by the proposed Project, in addition  
28 to being involved in the EA process through the public consultation program.

**Table E-6: Public Stakeholders with an Interest in or Potentially Affected by the Proposed Project**

Stakeholder Groups
Local government (municipal and regional district governments) – elected officials and staff
Private landowners, tenants and tenure holders, and trappers
Community media
Interested individuals (general public)
Economic development organizations

**Table E-4: Public Stakeholders with an Interest in or Potentially Affected by the Proposed Project (cont'd)**

Stakeholder Groups
Business organizations
Local and provincial fire, police and ambulance services
Registered hunting and guiding outfitters
Colleges and training providers
Community service providers (in relation to community investment opportunities and other socio-economic issues)
Environmental non-governmental organizations having an interest in the Project area
Land use planning agencies, heritage interest groups and recreation groups

**1.4.1 Consultation Planned During Application Review**

1 During the Application review stage in 2014, Coastal GasLink will continue to  
 2 engage and communicate with public, stakeholders, the general public, and municipal  
 3 and regional government and services to build strong relationships and to address any  
 4 questions or concerns regarding the proposed Project. Coastal GasLink will address  
 5 and work to resolve stakeholder issues and concerns.

6 Coastal GasLink will notify stakeholders of the regulatory applications and  
 7 opportunities for stakeholders to provide comments to the regulatory authorities.  
 8 Landowners and stakeholders, and particularly, directly affected landowners and  
 9 stakeholders who are subject to notification and consultation directed by regulatory  
 10 authorities, will remain informed about the proposed Project. Coastal GasLink will  
 11 also engage with landowners to acquire the necessary land rights for the proposed  
 12 Project, identify and address additional or outstanding questions and concerns, and  
 13 ensure that appropriate methods and mitigation are developed, if appropriate.

14 Table E-5 provides a summary of the consultation and communication activities  
 15 proposed to support the review of the Project Application, including a formal public  
 16 comment period, under the BC EAA.

**Table E-7: Consultation Planned During Application Review**

Activity/Material	Distribution/Details, as Directed in the Section 11 Order
Distribution of the Project Application	On submission of the Application to the BC EAO and its Working Group, copies will be distributed to: <ul style="list-style-type: none"> <li>• Aboriginal groups</li> <li>• project information repositories (libraries in communities along or near the proposed route)</li> </ul>
Placement of advertisements regarding BC EAO public comment period	Coastal GasLink will notify the public of opportunities to comment on the Application, as directed in the Section 11 Order, by: <ul style="list-style-type: none"> <li>• placing notification at least 7 days prior to the start of the BC EAO formal public comment period</li> <li>• placing advertisements in Project area newspapers, radio station announcements or other means acceptable to the Project Assessment Lead</li> <li>• posting on Coastal GasLink Project website and BC EAO's e-PIC website</li> </ul>
Public comment period	The EAO's public comment period, as defined in the Section 11 Order, of at least 45 days, will be held on the Application.
Placement of advertisements for public events (i.e., open houses)	Coastal GasLink will place advertisements in Project area newspapers, radio station announcements or other means acceptable to the Project Assessment Lead at least 7 days prior to the date on which the event is scheduled. These advertisements will include the date, time and location of the open house. Advertisements will also be posted on the BC EAO's e-PIC website.
Continue consultation with landowners in the Project area	Coastal GasLink will continue consultation with land and tenure holders and will meet to discuss the Application, as requested.
Public open houses	Public open houses, at the direction of the BC EAO, in the Project area municipalities are intended to provide Project information and solicit public comment on the Application.
Prepare responses to public comments	Coastal GasLink will prepare responses to public comments received during the BC EAO public comment period and will submit them to the Project Assessment Lead within any time limits set. Responses will be posted on the BC EAO's e-PIC website.
Preparation of consultation report	Coastal GasLink will present findings from the Application review phase to the BC EAO.

**1.4.2 Summary of Issues, Concerns and Interests**

1 Table E-6 provides a summary of key issues and concerns raised during the  
 2 Application preparation stage (i.e., EAO open houses, Coastal GasLink community  
 3 information sessions, and correspondence and meetings with government agencies  
 4 and other interested parties), and Coastal GasLink's response to those issues or  
 5 concerns. Reference to the section of the Application where this issue is addressed is  
 6 also provided. A full description of the public consultation results and all specific  
 7 comments during public consultation are described in detail in Section 24 of this  
 8 Application. Coastal GasLink has noted and responded to all comments received  
 9 during the public consultation process.

**Table E-8: Summary of Key Issues and Concerns Raised During Public Consultation Activities**

<b>Issue, Concern or Interest</b>	<b>Origin of Concern</b>	<b>Coastal GasLink Response<sup>a)</sup></b>	<b>Topic and Reference to Section of Application for an EAC</b>
<p>Pipeline routing: potential effect on agricultural land, agricultural operations, enjoyment of property, scenic views, compensation and associated safety concerns</p>	<p>Landowners, especially in the communities of Lone Prairie and Sukunka Valley (near Chetwynd), Fort Fraser/Fraser Lake and Bald Hill (Burns Lake area)</p>	<p>Coastal GasLink made large adjustments to its proposed route, especially near Lone Prairie, Sukunka Valley, Fort Fraser and Fraser Lake, as well as the Bald Hill area near Burns Lake.</p> <p>Coastal GasLink continues to work with landowners and other stakeholders in the refinement of the proposed route.</p> <p>Coastal GasLink is committed to working collaboratively with each landowner on an individual basis to reach an agreement regarding compensation.</p>	<p>1.4: Alternative Means of Undertaking the Proposed Project 14: Land and Resource Use</p>
<p>Economic benefits and potential adverse effects: fair opportunities to bid for construction-related work, local hiring, desire for skills training in advance of construction, and potential adverse effects on local and regional labour markets from multiple potential projects</p>	<p>Local governments, businesses, community colleges and the public</p>	<p>Coastal GasLink has met and continues to meet with Aboriginal groups and non-Aboriginal communities along the Project corridor to establish good working relationships, to determine community capacity, to explain procurement requirements and to explore opportunities for training and local hiring.</p> <p>Coastal GasLink has developed a plan to work with training providers to organize skills development and work readiness training across the Project area.</p>	<p>1.5: Project Benefits 12: Employment and Economy Effects Assessment</p>
<p>Economic benefits and potential adverse effects: access to ROW timber for local mills</p>	<p>Local governments: Vanderhoof, Burns Lake, Fraser Lake, Houston and the Regional District of Bulkley-Nechako</p>	<p>Coastal GasLink has conducted an assessment of timber volumes as part of its field studies program. The Project will handle timber according to generally accepted forestry practices and will work with industry to bring wood fibre to local markets wherever practical.</p>	<p>1.5: Project Benefits Note: Information regarding the fibre utilization plan will be addressed through the BC OGC process.</p>

**Table E-6: Summary of Key Issues and Concerns Raised During Public Consultation Activities (cont'd)**

Issue, Concern or Interest	Origin of Concern	Coastal GasLink Response <sup>a)</sup>	Topic and Reference to Section of Application for an EAC
Economic benefits and potential adverse effects: fair compensation for landowners, sometimes including proposals for annual payments to landowners for ROW compensation	Local governments: Peace River Regional District, Regional District of Bulkley-Nechako and Dawson Creek	The practice of providing up-front lump sum payments for ROW easements prevails across North America and provides fair compensation to landowners for losses during construction and any subsequent inconvenience. For easements, landowners retain ownership of the land and the freedom to make use of the land.	1.5: Project Benefits
Economic benefits and potential adverse effects: desire for tangible long-term benefits to communities from the Project	Local governments: Houston, Terrace, Vanderhoof, Chetwynd, Kitimat, Prince George, Mackenzie, Fort St James, Regional District of Fraser-Fort George and the Regional District of Kitimat-Stikine	The Project Benefits section describes potential benefits, including skills enhancement, business development, employment and contracting opportunities, community investment initiatives and annual tax revenue, all of which will support community infrastructure and services.	1.5: Project Benefits
Operating safety: pipeline maintenance, integrity, inspections, leak detection and emergency response	Local governments (numerous) and the public	As the proposed pipeline goes into operation, Coastal GasLink will implement TransCanada's pipeline integrity program and emergency response procedures. Coastal GasLink will also implement its public awareness program, which focuses on ongoing awareness and damage prevention.	1.1: Proponent Description 22: Accidents or Malfunctions

**Table E-6: Summary of Key Issues and Concerns Raised During Public Consultation Activities (cont'd)**

Issue, Concern or Interest	Origin of Concern	Coastal GasLink Response <sup>a)</sup>	Topic and Reference to Section of Application for an EAC
Environmental potential adverse effects from construction, especially disturbance of fish habitat at water crossings, water quality and acid rock drainage	Local governments: Smithers, Mackenzie, Chetwynd and the public	Coastal GasLink has completed field studies to collect baseline data for watercourses to be crossed by the proposed Project and understands the fish and fish habitat values of these watercourses.  The vulnerability of aquifers and wells close to the proposed Project will be assessed to inform construction decisions for controlling groundwater flow directions and flow rates. Aquifers with flow attributes potentially affected by densification, engineered fill placement or excavations will be identified.	5.7: Acid Rock Drainage 7: Aquatic Environment 20: Human and Ecological Health
Potential adverse effects on wildlife, generally, with possible implications for hunting and trapping	Public	Coastal GasLink has conducted environmental field studies, including studies on species at risk. Based on the results of the field studies and consultation, measures have been developed to avoid or mitigate potentially adverse effects, and are included in the Application for review.	10: Wildlife and Wildlife Habitat
Potential adverse effects on species at risk, such as caribou habitat	Local governments: Chetwynd, Mackenzie	Coastal GasLink has conducted environmental field studies, including studies on species at risk. Based on the results of the field studies and consultation, measures have been developed to avoid or mitigate potentially adverse effects, and are included in the Application for review.	10: Wildlife and Wildlife Habitat

**Table E-6: Summary of Key Issues and Concerns Raised During Public Consultation Activities (cont'd)**

Issue, Concern or Interest	Origin of Concern	Coastal GasLink Response <sup>a)</sup>	Topic and Reference to Section of Application for an EAC
Potential adverse effects on vegetation and plant communities, particularly through the introduction of invasive species	Burns Lake and Houston	Coastal GasLink has identified and considered the potential adverse effects on vegetation and plant communities and has identified effective measures to avoid, reduce or mitigate potential adverse effects of the proposed Project.  Coastal GasLink has formed a partnership with the BC Invasive Species Council to update the Council's training curriculum and to raise public awareness and community capacity with respect to this issue.	8: Vegetation 25: Construction and Operational Environmental Management Plans and Follow-up Programs
Potential adverse effects on air quality	Kitimat	The potential adverse effects of the proposed Project on air quality during all stages of the proposed Project are addressed in this Application.	6: Atmospheric Environment
Local potential adverse effects from construction: rural vehicle traffic, noise and dust, construction camps, immediate area potential adverse effects, interaction with haying and cattle operations, interaction with back-country recreation, increased access for hunters, recreational users and predators with the development of a pipeline ROW	Groundbirch, Lone Prairie and Bald Hill rural communities, City of Fort St. John, Peace River Regional District and the Regional District of Bulkley-Nechako	Coastal GasLink will continue to build relationships with residents to identify potential issues. Social potential adverse effects related to construction are included in this Application and specific feedback from stakeholders inform detailed construction planning. Discussions with local officials will continue with regard to construction planning.  Cattle operation concerns will be addressed on a landowner by landowner basis. Mitigation may include temporary fencing or temporary relocation of cattle, if necessary.  Coastal GasLink has assessed the potential for increased access by hunters and other recreational users to previously inaccessible areas in the examination of Current Use of Land and Resources. An Access Control Management Plan and a Traffic Control Management Plan are provided in the preliminary EMP for the proposed Project.	10: Wildlife and Wildlife Habitat 14.5: Current Use of Land and Resources 10: Community and Regional Infrastructure and Services 25: Construction and Operational Environmental Management Plans and Follow-Up Programs Appendix 2-A EMP

**Table E-6: Summary of Key Issues and Concerns Raised During Public Consultation Activities (cont'd)**

Issue, Concern or Interest	Origin of Concern	Coastal GasLink Response <sup>a)</sup>	Topic and Reference to Section of Application for an EAC
Potential adverse effects on local public and commercial services from construction: pressure on recreation facilities, policing, medical clinics, addictions counselling and hotel accommodation	Municipal governments: Terrace, Kitimat, Tumbler Ridge, Chetwynd, Hudson's Hope and Fort St John	Coastal GasLink will work with local communities and governments to ensure that appropriate services are in place to support construction of the proposed Project and to address potential increase in demand on local services. Potential adverse effects of the proposed Project on community and regional infrastructure are addressed in this Application.	15: Community and Regional Infrastructure and Services
Potential adverse effects on trapper trails during construction and access and safety concerns	Trappers Association	Trappers are typically notified in advance of activities. If they require any access during construction, appropriate measures will be developed.	14.5: Current Use of Land and Resources
Compressor station: potential noise and the location of compressor stations	Groundbirch, Bald Hill, Buck Flats (Houston) and rural communities	Coastal GasLink has completed an assessment of potential adverse effects of noise for the proposed Project. Siting of compressor station locations and station design will take into account the proximity of communities and other potential receptors.	6.5: Acoustic Environment
Potential cumulative adverse effects of many pipeline projects crossing the province	Local governments: Dawson Creek, Houston, Burns Lake, Prince George, Chetwynd, Terrace and Smithers	The potential adverse effects of the proposed Project on numerous VCs that fall into the five pillars for environmental assessment considered by the BC EAO, including: <ul style="list-style-type: none"> <li>• Environment</li> <li>• Social</li> <li>• Economic</li> <li>• Heritage</li> <li>• Health</li> </ul> The cumulative adverse effects assessment has considered all other past, present and reasonably foreseeable future projects.	4 to 20: Effects Assessments

**Table E-6: Summary of Key Issues and Concerns Raised During Public Consultation Activities (cont'd)**

Issue, Concern or Interest	Origin of Concern	Coastal GasLink Response <sup>a)</sup>	Topic and Reference to Section of Application for an EAC
Concern about financial liability and environmental risk associated with future pipeline abandonment	Lone Prairie, Tumbler Ridge, Peace River Regional District and the Regional District of Fraser-Fort George	At the time of pipeline decommissioning and abandonment, Coastal GasLink will communicate its plan to landowners and local governments. The plans for decommissioning and abandonment will comply with regulatory direction at that time and will be subject to the applicable regulatory reviews and approvals.	1.2: Proposed Project Description
Emergency Response - pressure on emergency services to respond to potential incidents during construction and operations	Dawson Creek, Burns Lake and Terrace	This application addresses the potential adverse effects of the proposed Project on community utilities and services, including emergency services.	15: Community and Regional Infrastructure and Services
Safe operation of the pipeline in the potential event of an earthquake, landslide or erosion	Dawson Creek, Terrace and Chetwynd	Coastal GasLink acknowledges the importance of addressing the potential adverse effects of the environment on the proposed Project. This application describes a combination of environmental factors that may have an effect on the proposed Project, and the potential adverse effects of seismic events, erosion and mass wasting events will be considered. The potential adverse effects of the proposed Project are also considered during route selection, as well as in the assessment of the geophysical environment.	1.4: Alternative Means of Undertaking the Proposed Project 5: Geophysical Environment 22: Effects of the Environment on the Project

## 2.0 ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS

1 Sections 5 to 10 of the Application identify and assess the potential adverse effects of  
2 the proposed Project on the following environmental topics:

- 3 • geophysical environment
- 4 • atmospheric environment
- 5 • aquatic environment
- 6 • vegetation
- 7 • wetlands
- 8 • wildlife

9 The assessments focus on key issues that are of particular interest to regulatory  
10 agencies, participating Aboriginal groups or stakeholders.

11 Technical data reports (TDRs) support the effects assessments by providing detailed  
12 background information on existing conditions and are provided as appendices to the  
13 Application.

### 2.1 Geophysical Environment

14 The AIR identified the following three VCs to be considered in the geophysical  
15 environment assessment: soil capability, terrain integrity and acid rock drainage  
16 (ARD).

#### 2.1.1 Soil Capability

17 Potential adverse effects on soil capability are restricted to the Project Footprint and  
18 include:

- 19 • soil loss due to wind or water erosion at any time when the soil surface is exposed  
20 and unprotected
- 21 • soil compaction and rutting from heavy vehicles and equipment travelling on soils,  
22 particularly when they are wet
- 23 • altered landscape contours and drainage patterns resulting from improper soil  
24 replacement and recontouring during reclamation
- 25 • topsoil loss or degradation due to poor soil handling practices during construction

26 With the application of industry-accepted best practices, including strict adherence to  
27 soil handling recommendations developed specifically for the proposed Project,  
28 specific measures to prevent or alleviate soil compaction, and careful monitoring and  
29 maintenance of vegetation cover and drainage, potential residual adverse effects are

1 expected to be of low magnitude and of low likelihood of occurrence, and are  
2 assessed to be not significant. No cumulative adverse effects are anticipated.

### 2.1.2 Terrain Integrity

3 Potential adverse effects related to terrain integrity include potential slope instability  
4 and surface erosion during construction, operations, and decommissioning and  
5 abandonment activities associated with the proposed Project. Mitigation is based on  
6 industry-accepted best practice to address potential adverse effects, and includes:

- 7 • conducting terrain stability site assessments on slopes identified during the terrain  
8 stability analysis being completed by Coastal GasLink's engineering contractor  
9 prior to completion of final design
- 10 • implementing erosion and sediment control measures to prevent the loss of  
11 surface materials
- 12 • revegetating disturbed areas following machine and final cleanup to promote  
13 vegetation establishment to reduce the risk of loss of surface materials
- 14 • reclaiming slopes to a stable angle following completion of construction activities
- 15 • monitoring the proposed Project during the operations phase to identify any areas  
16 of slope instability or surface erosion and taking necessary corrective actions to  
17 address any identified problem areas

18 With implementation of mitigation, no potential residual adverse effects of the  
19 proposed Project on terrain integrity are predicted. As there are no potential residual  
20 adverse effects predicted, a cumulative effects assessment is not required.

### 2.1.3 Acid Rock Drainage

21 Potential adverse effects of ARD are associated with the lowering of pH of water,  
22 affecting water quality. The risk of producing ARD is greatest during pipeline  
23 construction. Proposed mitigation for ARD includes updating the desktop analysis for  
24 ARD for the proposed route and conducting field investigations to confirm areas of  
25 ARD as detailed design progresses. Where areas of ARD are confirmed through  
26 further field studies, appropriate mitigation that is considered industry-accepted best  
27 practices and that has been effective in the past will be applied.

28 Following the determination of rock types, application of ARD mitigation and  
29 implementation of follow-up monitoring, no significant potential residual adverse  
30 effects of ARD are anticipated during construction, operations, and decommissioning  
31 and abandonment. Considering there are no predicted potential residual adverse  
32 environmental effects, characterization of potential residual and cumulative adverse  
33 environmental effects was not required.

## 2.2 Atmospheric Environment

1 The AIR identified the following three VCs to be considered in the atmospheric  
2 environment assessment: acoustic environment, air quality and greenhouse gas  
3 emissions.

4 The atmospheric environment assessment was based on information obtained from  
5 available literature, relevant regulatory guidelines, local knowledge and modelling of  
6 noise, air quality and greenhouse gas emissions.

### 2.2.1 Acoustic Environment

7 The potential residual adverse environmental effects on the acoustic environment  
8 associated with the proposed Project are increases in ambient noise levels during  
9 construction and operations. Construction, commissioning and testing activities may  
10 temporarily affect a specific area's acoustic environment; however, once the activities  
11 end, the acoustic environment will return to its original state with no potential  
12 residual adverse effects.

13 The potential residual adverse effects from operations of the proposed compressor  
14 stations will occur whenever the compressor stations are operating. Once the  
15 activities cease, no potential residual adverse effects on the acoustic environment will  
16 be present and the environment will return to its pre-Project state.

17 Potential adverse effects of the proposed Project on the acoustic environment can be  
18 mitigated through the application of industry-accepted best practices, such as  
19 imposing timing for noisy activities and employing noise abating technologies.

20 The potential residual adverse effects were predicted to be not significant with a high  
21 degree of confidence. No cumulative adverse effects on the acoustic environment are  
22 expected as there are no other energy related facilities in the acoustic Regional Study  
23 Area (RSA).

### 2.2.2 Air Quality

24 Potential air quality adverse effects were assessed for five criteria air contaminants:  
25 sulphur dioxide, nitrogen dioxide, carbon monoxide, inhalable particulate and volatile  
26 organic compounds, for the Project construction, operations, and decommissioning  
27 and abandonment phases. The effects of the decommissioning and abandonment  
28 phase are assumed equal to those during the construction phase.

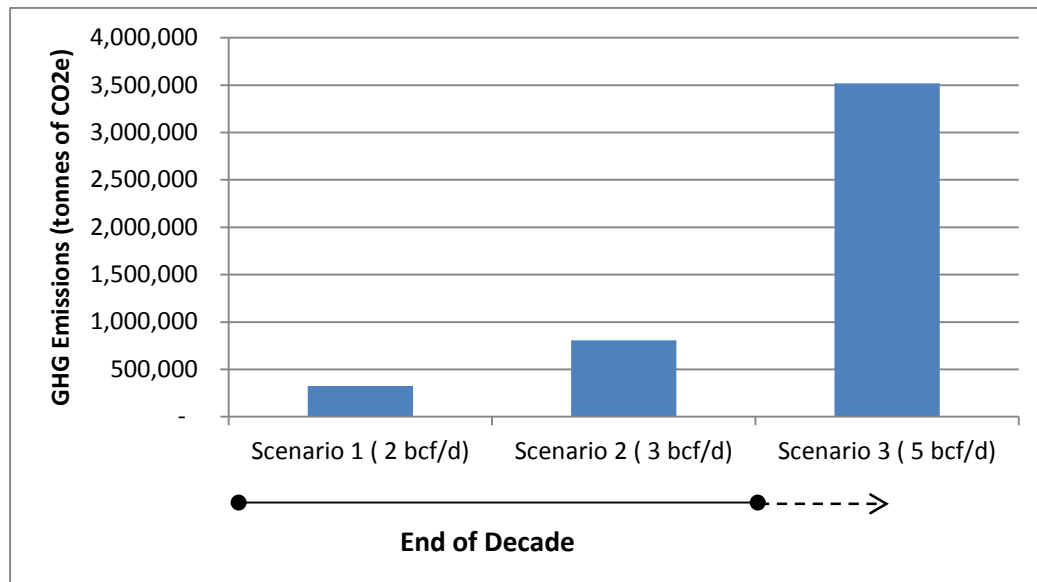
29 Implementation of mitigation reduced the magnitude of the potential adverse effects.  
30 Construction phase measures are based on industry-accepted best practices and  
31 examples include water spraying to reduce dust emissions, reduced construction  
32 vehicle emissions from engine idling, maintaining well-tuned engines and matching  
33 equipment capacity to needed duty, and reduced open burning of unsalvageable

1 timber and slash (by mulching and spreading it on the ROW). Operations phase  
2 effects on air quality are caused by the compressor stations and can be reduced by use  
3 of best available technologies and practices. The potential residual adverse effects on  
4 air quality were determined to be long-term, of medium magnitude and, therefore, not  
5 significant. A cumulative effects assessment was not completed because no future  
6 projects with nearby emission sources were identified.

### 2.2.3 Greenhouse Gas Emissions

7 Greenhouse gas emissions were calculated for the construction and operations phases  
8 of the proposed Project. The proposed Project will have an initial capacity of  
9 approximately 2 to 3 bcf/d with the potential for expansion up to approximately  
10 5 bcf/d. The assessment of GHG emissions is based on the expansion scenario of  
11 approximately 5 bcf/d. The comparison of the estimated GHG emissions for the  
12 initial capacity scenarios and the potential expansion scenario is shown in Figure E-2.  
13 For the purpose of this assessment, and to present a very conservative scenario, the  
14 emissions for the decommissioning and abandonment phase were assumed equal to  
15 those estimated for the construction phase.

16 In compliance with the AIR, Coastal GasLink carried out its assessment of  
17 greenhouse gases following Canadian Environmental Assessment Agency 2003  
18 guidelines. Based on the Canadian Environmental Assessment Agency method for  
19 incorporating GHG considerations in environmental assessments (CEAA 2003), “the  
20 environmental assessment process cannot consider the bulk of GHG emitted from  
21 already existing developments. Furthermore, unlike most project-related  
22 environmental effects, the contribution of an individual project to climate change  
23 cannot be measured” (CEAA 2003). To evaluate the potential adverse effects of these  
24 emissions, provincial, national and global GHG emissions totals were compared to  
25 annual Project emissions. Construction GHG emissions were estimated to be  
26 2.439 Mt/CO<sub>2</sub>e over the construction period, while operations GHG emissions were  
27 estimated to be 3.517 Mt CO<sub>2</sub>e/y, representing an expansion or worst-case scenario.  
28 The estimated annual operations GHG emissions from the expansion case  
29 (approximately 5 bcf/d) of the proposed Project will be small in a global context  
30 (0.012% of estimated global emissions, based on global estimates by UNSD [2010])  
31 and in a Canadian national context (0.50% of national 2011 emissions), but notable  
32 on a provincial scale (6.0% of BC 2011 emissions). The estimated annual operations  
33 GHG emissions from the two initial capacity scenarios (approximately 2 and 3 bcf/d)  
34 will be 0.6% and 1.4% of BC 2011 emissions, respectively.



**Figure E-2: Estimated Emissions from Operations Scenarios**

1 Carbon dioxide (CO<sub>2</sub>) emissions from stationary combustion equipment were based  
 2 on source specifications. However, the BC GHG Reporting Regulation requires CO<sub>2</sub>  
 3 emissions from stationary combustion equipment to be quantified based on generic  
 4 natural gas emission factors applicable to the entire province. As a reasonability  
 5 check, CO<sub>2</sub> emissions were calculated using both methodologies. The comparison  
 6 between the two approaches identified source-specific information to be 3% greater  
 7 than BC GHG Reporting Regulation methods. This supports the fact that the  
 8 assessment has been conducted in an accurate but conservative manner.

9 The Project will be designed and operated to comply with federal GHG emission  
 10 programs and policies in BC, which includes the participation in the BC Carbon Tax  
 11 system. As most of the GHG emissions released from the Project originate from fuel  
 12 combustion, a large amount of taxes will be paid annually. Coastal GasLink  
 13 acknowledges the importance of GHG emissions management and the existing  
 14 legislative framework in BC. Coastal GasLink will work with the appropriate  
 15 government agencies in BC and engage in a dialogue about GHG emissions in the  
 16 provincial context. A detailed GHG management Plan will be completed once the  
 17 proposed Project is approved. Mitigation of GHG emissions is, therefore, realized by  
 18 direct management and compliance with the BC *Carbon Tax Act*. In light of the  
 19 proposed mitigation and scientific consensus on climate change, the contribution of  
 20 the Project’s GHG emissions would not be reasonably expected to materially affect  
 21 global climate change.

22 Greenhouse gas emissions are persistent in the atmosphere and take more than 100  
 23 years to chemically break down (i.e., long-term reversibility after each Project phase).  
 24 However, all of the potential residual adverse effects are considered to be not

1 significant because of the small GHG emission (and lost sink) contributions to global  
2 emissions (and sinks).

### 2.3 Aquatic Environment

3 The AIR identified the following four VCs to be considered in the aquatic  
4 environment assessment: protection of recreationally, commercially or culturally  
5 important fish and fish habitat, species of conservation concern, surface water and  
6 groundwater.

7 The aquatic environment assessment was based on information obtained from  
8 available literature, relevant regulatory guidelines, ATK, TEK and field data results.

#### 2.3.1 Protection of Recreationally, Commercially, and/or Culturally Important Fish and Species of Conservation Concern

9 The potential adverse effects on the VCs recreationally, commercially and/or  
10 culturally important fish and species of conservation concern include:

- 11 • alteration or loss of riparian habitat function
- 12 • alteration or loss of instream habitat
- 13 • increased suspended sediment concentrations in the water column
- 14 • fish mortality and injury associated with the construction and hydrostatic testing  
15 of the pipeline
- 16 • disturbance to instream habitat due to increased access to fish habitat
- 17 • increased potential for fish mortality or injury due to increased access to fish and  
18 fish habitat
- 19 • blockage of fish movements
- 20 • interbasin transfer of aquatic organisms

21 Mitigation has been recommended that is technically and economically feasible and  
22 takes into consideration the sensitivity of watercourses on the proposed route,  
23 including habitat characteristics, fish species present and instream work windows.  
24 The mitigation is designed to protect riparian habitat values, reduce erosion potential  
25 and implement appropriate reclamation measures. The proposed mitigation is based  
26 on tested, industry-accepted best practices and is thought to reduce the potential for a  
27 harmful alteration, disruption or destruction of fish and fish habitat due to  
28 construction and operations of the proposed Project.

29 The potential residual adverse effects were all determined to be not significant.

30 A quantitative assessment of combined effects on riparian disturbance, instream  
31 disturbance and fish mortality was deemed to be the most appropriate approach for

1 the cumulative effects assessment of species of fish and their habitat that are  
2 recreationally, commercially and/or culturally important. The cumulative effects  
3 assessment considered the contribution of the proposed Project to riparian habitat  
4 disturbance, instream habitat disturbance, fish mortality and blockage of fish  
5 movements in the RSA. The residual cumulative adverse effects were determined to  
6 be not significant.

### 2.3.2 Surface Water

7 The potential adverse effects on surface water include:

- 8 • reduction of surface water quality
- 9 • contamination of aquatic environment as a result of withdrawal and release of  
10 hydrostatic test water
- 11 • alteration of stream flow volumes as a result of hydrostatic test water withdrawal  
12 and release
- 13 • alteration of natural surface flow patterns
- 14 • instability of trench at locations with high water table
- 15 • disruption of stream flow

16 The mitigation strategies outlined in the Application are based on industry-accepted  
17 best practice. Key mitigation is expected to reduce erosion and its effects on surface  
18 water quality to low-to-medium levels. Erosion control mitigation will be identified  
19 on a site-specific basis and, where warranted, will include erosion control structures,  
20 reclamation and revegetation to stabilize the banks, and reclamation of riparian areas.  
21 Implementation of mitigation is expected to reduce or eliminate potential residual  
22 adverse effects.

23 Significance was determined based on a threshold with qualitative and quantitative  
24 components. The potential residual adverse environmental effects were all determined  
25 to be not significant.

26 The cumulative effects assessment of surface water involved both quantitative and  
27 qualitative components. Two potential residual adverse effects were identified:  
28 Project contribution to cumulative increases in effects on water quality and Project  
29 contribution to cumulative increases in effects on water quantity. The residual  
30 cumulative adverse effects on surface water were determined to be not significant.

### 2.3.3 Groundwater

31 The potential effect for this VC is the reduction in groundwater quality and quantity.

32 Key mitigation includes collecting debris and other waste materials and disposing of  
33 these materials in accordance with Waste Management and Spill Contingency Plans,

1 following the Contaminated Soils Management Plan, and ensuring equipment is well-  
2 maintained and free of fluid leaks. The mitigation proposed has been tested on similar  
3 projects and is considered to be industry-accepted best practice.

4 The potential residual adverse environmental effect on this VC is the disruption of  
5 groundwater flow where springs are encountered. The potential residual adverse  
6 effect is considered to be not significant.

7 Cumulative adverse effects include Project contribution to combined effects on  
8 groundwater quantity. The cumulative residual adverse effect is considered to be not  
9 significant.

## 2.4 Vegetation

10 The topic of vegetation includes ecological interactions at both the community level  
11 and plant species level with the proposed Project. The assessment focuses on areas of  
12 native vegetation potentially affected by the proposed Project. The AIR identified the  
13 following two VCs to be considered in the vegetation assessment: ecological  
14 communities of concern and plant species of concern.

15 The potential adverse effects of the proposed Project on both VCs were assessed  
16 through three effects pathways:

- 17 • clearing of native vegetation and maintenance of an earlier seral stage
- 18 • introduction or spread of invasive plants
- 19 • introduction or spread of forest pests

20 The vegetation assessment was based on information obtained from available  
21 literature, relevant regulatory guidelines, ATK, field results and terrestrial ecosystem  
22 mapping.

### 2.4.1 Ecological Communities of Concern

23 The ecological communities of concern assessment focused on the following two key  
24 indicators: native vegetation communities and ecological communities at risk. The  
25 vegetation categories considered under native vegetation communities included: old  
26 forests, Douglas-fir forests, aspen forests, deciduous forests, alpine/subalpine areas  
27 and grasslands. Ecological communities at risk for the proposed Project include those  
28 listed as Red or Blue by the BC Conservation Data Centre. Five Red-listed and 34  
29 Blue-listed ecological communities were identified on the proposed route (as  
30 determined using terrestrial ecosystem mapping [TEM]).

31 Given the scope of the proposed Project, potential adverse effects on ecological  
32 communities of concern cannot be completely avoided or alleviated with mitigation.  
33 Consequently, potential residual adverse environmental effects are predicted to result

1 from the proposed Project. Most of the potential residual adverse effects on  
2 vegetation will be reversible in the medium to long term. Some potential residual  
3 adverse effects are more challenging to mitigate and, therefore, may result in  
4 permanent effects. Effects on alpine and subalpine habitats, grasslands and ecological  
5 communities at risk are considered more challenging to mitigate.

6 Mitigation for ecological communities of concern was developed in accordance with  
7 TransCanada standards, industry-accepted best practice and regulatory guidelines. If  
8 an ecological community of concern is identified during construction, site-specific  
9 mitigation for ecological communities at risk will be developed following the  
10 Ecological Community of Concern and Plant Species of Concern Discovery  
11 Contingency Plan. With the application of mitigation, potential residual adverse  
12 effects on ecological communities of concern are expected to be not significant.

#### 2.4.2 Species of Concern

13 The species of concern assessment focused on the following two key indicators: plant  
14 species at risk and traditionally important plant species. Plant species at risk for the  
15 proposed Project include vascular plants, non-vascular plants and lichen species listed  
16 as Red or Blue by the BC Conservation Data Centre or on Schedule 1 of the federal  
17 *Species at Risk Act* (SARA). Traditionally important plant species were those  
18 identified by Aboriginal groups whose traditional territories are crossed by the  
19 proposed route; species used for a variety of purposes, such as medicine, ceremony,  
20 food or fibre. Aboriginal participants identified a number of plants that are important  
21 for cultural, nutritional and medicinal purposes, including berries, leaves, roots,  
22 lichen, fungi, bark, sap and wood of specific trees.

23 Potential residual adverse effects included combined effects on occurrences of plant  
24 species at risk and combined effects on occurrences of whitebark pine. Two Red-  
25 listed and 15 Blue-listed plant species with 36 separate occurrences were identified in  
26 the Vegetation RSA. The SARA-listed whitebark pine was observed in 25 locations  
27 in the Vegetation LSA and 36.8 ha of the associated Blue-listed whitebark pine  
28 ecological community occurs in the Vegetation LSA (determined through TEM).  
29 Potential residual adverse effects for traditionally important plant species include  
30 combined effects on traditionally important plant species. The TEK collected during  
31 the vegetation field surveys identified and confirmed issues of concern. In particular,  
32 47 traditionally important plant species were identified, including plants from the tree,  
33 shrub and herb layers, including bryophytes and lichens.

34 Mitigation for species of concern was developed in accordance with TransCanada  
35 standards, regulatory guidelines and industry-accepted best practices. Site-specific  
36 mitigation will be developed following the Ecological Community of Concern and  
37 Plant Species of Concern Discovery Contingency Plan.

1 With the application of mitigation, potential residual adverse effects on species of  
2 concern are expected to be not significant.

3 The proposed Project is expected to contribute to cumulative adverse effects on  
4 vegetation in combination with existing and reasonably foreseeable future  
5 disturbances. Because surface disturbances can affect ecological communities of  
6 concern and species of concern, existing activities and the proposed Project will act  
7 cumulatively to increase disturbance to these VCs in the Vegetation Local Study Area  
8 (LSA) and RSA. The residual cumulative adverse effects on vegetation are expected  
9 to be not significant.

## 2.5 Wetlands

10 The AIR identified a single VC to be considered in the wetlands assessment: wetland  
11 function. The wetlands assessment was based on information obtained from available  
12 literature, relevant regulatory guidelines, TEK, field results and terrestrial ecosystem  
13 modelling.

### 2.5.1 Wetland Function

14 Wetland function takes into account the hydrological, habitat and biogeochemical  
15 functions that a wetland provides. Potential adverse effects of the proposed Project on  
16 wetland function include the loss or alteration of hydrologic, habitat and  
17 biogeochemical function. Loss or alteration of hydrologic function can include  
18 changes to the flow regime or alteration of soil properties through soil compaction.  
19 Loss or alteration of habitat functions mainly occurs through the clearing of vegetation  
20 and the alteration of open water wetlands that provide wildlife habitat. Increased  
21 sediment transport from construction activities can alter water quality and changes in  
22 the hydrologic regime can alter decomposition rates affecting biogeochemical  
23 functions, such as nutrient cycling and carbon sequestration. The proposed Project is  
24 expected to temporarily alter approximately 219 ha of wetlands, which constitutes  
25 approximately 2.9% of the wetland area in the LSA.

26 Proposed mitigation to avoid or reduce potential adverse effects on wetland function  
27 includes construction practices that address wetland hydrologic, habitat and  
28 biogeochemical function. Recovery of hydrologic function is essential to reduce  
29 potential adverse effects on all wetland functions and proposed mitigation includes  
30 re-establishing pre-disturbance contours and installing measures to reduce soil  
31 compaction. Mitigation to reduce potential adverse effects on habitat function  
32 includes natural recovery of vegetation in wetlands and re-establishment of wetland  
33 contours to maintain the flow regime in the wetland (e.g., maintaining open water for  
34 wildlife). To address potential adverse effects on biogeochemical function,  
35 recommended mitigation includes preserving organic substrates, maintaining the seed  
36 bank, and reducing erosion and sedimentation in conjunction with recovery of  
37 hydrological function. Potential residual adverse effects include the alteration of

1 hydrologic, habitat and biogeochemical function until grade and natural flow regime  
2 are reclaimed, vegetation is re-established and sedimentation is controlled.

3 Previous experience, including post-construction monitoring, indicates that  
4 implementation of mitigation is expected to successfully recover wetland function  
5 and that wetland function is resilient following disturbance. Mitigation proposed for  
6 the proposed Project is considered to be industry-accepted best practice. The potential  
7 residual adverse effects of the proposed Project on wetland function are predicted to  
8 be not significant. As wetland function in temporarily disturbed wetlands is expected  
9 to be resilient following the implementation of appropriate mitigation, residual  
10 cumulative adverse effects resulting from the proposed Project are also expected to be  
11 not significant.

## 2.6 Wildlife

12 The AIR identified one VC to be considered in the wildlife assessment: wildlife and  
13 wildlife habitat. The wildlife assessment was based on information obtained from  
14 available literature, relevant regulatory guidelines, ATK, field results, terrestrial  
15 ecosystem modelling, and species and habitat specific models.

### 2.6.1 Wildlife and Wildlife Habitat

16 The proposed Project will affect wildlife and wildlife habitat. Potential project effects  
17 considered include changes in wildlife habitat, changes in wildlife movement and  
18 increased wildlife mortality risk. Potential project effects include both direct and  
19 indirect pathways arising from construction and operations of the proposed Project.

20 The wildlife and wildlife habitat assessment focused on 21 key indicators. The key  
21 indicators were selected based on experience from past projects, guidance from  
22 regulatory agencies, input from potentially affected Aboriginal groups, public input  
23 and professional judgment. The key indicators include wildlife communities by  
24 habitat type, species groups, species at risk, and species of management concern or  
25 social or cultural importance, and are listed in Table E-7.

**Table E-9: Valued Component and Key Indicators for Wildlife and Wildlife Habitat**

Valued Component	Key Indicator
Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> <li>• <i>Grizzly bear</i></li> <li>• Woodland caribou</li> <li>• <i>Moose</i></li> <li>• Mountain goat</li> <li>• <i>Marten</i></li> <li>• <i>Fisher</i></li> <li>• Bats</li> <li>• <i>Pond-dwelling amphibians</i></li> <li>• <i>Western toad</i></li> <li>• <i>Coastal tailed frog</i></li> <li>• <i>Mature/old seral forest birds<sup>a)</sup></i></li> <li>• <i>Early seral forest birds<sup>b)</sup></i></li> <li>• <i>Wetland bird community</i></li> <li>• <i>Grass/shrub land birds</i></li> <li>• <i>Canada warbler</i></li> <li>• <i>Rusty blackbird</i></li> <li>• <i>Common nighthawk</i></li> <li>• <i>Marbled murrelet</i></li> <li>• <i>Northern goshawk (coastal and interior subspecies)</i></li> <li>• <i>Band-tailed pigeon</i></li> <li>• <i>Western screech-owl</i></li> </ul>
<p>Notes:            Italics denote KIs whose habitats were modelled for the effects assessment.            a) Old seral forests are defined as forested habitats in structural stages 6 and 7.            b) Early seral forests are defined as forested habitats in structural stages 4 and 5.</p>	

1 Mitigation for wildlife and wildlife habitat was developed in accordance with  
 2 TransCanada standards, industry-accepted best practices and regulatory guidelines.  
 3 The wildlife and wildlife habitat mitigation addresses the following general topics:  
 4 habitat loss/alteration, wetland habitat, riparian and aquatic habitat, sensory  
 5 disturbance, human/wildlife conflicts, barriers/filters to wildlife movement during  
 6 construction, changes in wildlife movement during operations, beaver dams/lodges,  
 7 access and line-of-sight management, caribou ranges, ungulate winter range (UWR),  
 8 wildlife habitat area, mountain goat UWR, mineral licks, raptor and owl nests, bear  
 9 dens, amphibian breeding wetlands, coastal tailed frog watercourses, bat maternity  
 10 roost/hibernation habitat, old growth management areas and wildlife tree patches,  
 11 discovery of species/habitat feature of concern, environmental inspection and  
 12 monitoring, and aerial surveys/monitoring.

1           Given the scope of the proposed Project, potential adverse effects on wildlife and  
2           wildlife habitat cannot be completely avoided or alleviated with mitigation.  
3           Consequently, potential residual adverse environmental effects are predicted to result  
4           from the proposed Project. Potential residual adverse effects include the combined  
5           effects on wildlife resulting from changes in habitat, movement and mortality risk.  
6           The proposed Project crosses a number of grizzly bear population units and areas  
7           with important caribou habitat, and the development of additional mitigation, such as  
8           compensation or offsets, in consultation with appropriate regulatory authorities, may  
9           be required. With the application of mitigation, potential residual adverse effects on  
10          wildlife and wildlife habitat are considered to be not significant.

11          The proposed Project is expected to contribute to cumulative adverse effects on  
12          wildlife and wildlife habitat (i.e., wildlife habitat, movement and mortality risk) in  
13          combination with existing and foreseeable future disturbances in the region. The  
14          proposed Project is expected to contribute to cumulative adverse effects on grizzly  
15          bear and mountain caribou, and mitigation beyond typical measures to address the  
16          magnitude of the proposed Project's potential residual adverse effects and  
17          contribution to cumulative adverse effects, such as compensation plans or offsets,  
18          may be required. Incremental potential cumulative adverse effects of the proposed  
19          Project are expected to be within applicable environmental and regulatory standards,  
20          and are not expected to cause a substantial increase in cumulative adverse effects  
21          beyond the existing levels of disturbance. The residual cumulative adverse effects on  
22          wildlife and wildlife habitat is considered to be not significant.

### **3.0    ASSESSMENT OF POTENTIAL ADVERSE ECONOMIC EFFECTS**

23          Sections 11 and 12 identify and assess the potential adverse effects of the proposed  
24          Project on the economic environment.

25          The assessments focus on key issues that are of particular interest to regulatory  
26          agencies, communities that may be affected by the proposed Project, Aboriginal  
27          groups or stakeholders.

28          An Economic Technical Report was prepared to support the effects assessment by  
29          providing detailed background information on existing conditions. It is provided as an  
30          appendix to the Application.

#### **3.1    Economy**

31          The assessment of the VC economy focused on the following three key indicators:  
32          government revenue, contracts and procurement expenditures, and community  
33          economic resilience. Construction and operations will result in the addition of tax and  
34          other revenues, and will provide employment, contracting and procurement  
35          opportunities. The additional revenue and opportunities are considered benefits. As  
36          directed by the BC EAO, the focus of the assessment is on potential adverse effects

1 and the economic benefits of the proposed Project are, therefore, discussed in the  
2 Project Benefits section (Section 1.5).

3 The potential economic effect on economy identified in the assessment is the  
4 temporary disruption of resource-based activities in the Project area. Mitigation  
5 includes implementing a procurement strategy that provides opportunities for  
6 qualified Aboriginal and local contractors, engagement of economic development  
7 representatives and adhering to the Traffic Management Plan. This mitigation is  
8 considered to be effective in addressing any potential adverse effects.

9 Given that there are no identified potential residual adverse effects related to the  
10 economy VC, a cumulative effects assessment is not deemed warranted.

### 3.1.1 Employment and Labour Force

11 The employment and labour force assessment focused on the following two key  
12 indicators: employment (direct, indirect and induced) and training opportunities. As  
13 directed by the BC EAO, the assessment of the employment and labour force VC  
14 only included analysis of potential adverse effects. Potential positive economic  
15 effects related to the employment and labour force of the proposed Project are  
16 discussed in Project Benefits (Section 1.5).

17 Potential adverse effects of the Project are related to a shortage in skilled labour  
18 availability. Mitigation includes implementing the Coastal GasLink training program  
19 to enable unemployed or underemployed individuals to develop Project-specific  
20 employment skills and to seek Project employment. The proposed Project schedules  
21 will be provided to economic development organizations and post-secondary  
22 institutions to inform them of peak workforce demands, and alternative sources of  
23 skilled workers will be in place to avoid disruption of the local employment market.

24 Given the scope of the proposed Project, potential adverse effects on employment and  
25 labour force cannot be completely avoided or alleviated with mitigation. The residual  
26 effect is related to a shortage of skilled labour and is considered to be reversible in the  
27 short-term because a skilled labour shortage would be confined to the construction  
28 phase. The proposed Project is likely to interact with future projects proposed in the  
29 region and may contribute to a cumulative skilled labour shortage. The Project's  
30 contribution to a cumulative skilled labour shortage is considered to be not significant.

#### 4.0 ASSESSMENT OF POTENTIAL ADVERSE SOCIAL EFFECTS

1 Sections 14 to 16 identify and assess the potential adverse effects of the proposed  
2 Project on the following social topics:

- 3 • land and resource use
- 4 • community and regional infrastructure and services
- 5 • traditional land and resource use

6 The assessments focus on key issues that are of particular interest to regulatory  
7 agencies, participating Aboriginal groups or stakeholders.

8 The social Technical Report supports the effects assessment by providing detailed  
9 background information on existing social conditions in the regional area. It is  
10 provided as an appendix to the Application.

#### 4.1 Land and Resource Use

11 The Land and Resource Use assessment is focused on two VCs: current use of land  
12 resources and domestic water supply.

##### 4.1.1 Current Use of Land and Resources

13 The assessment of current use of land and resources VC includes an examination of  
14 the potential adverse effects of the proposed Project on human habitation, recreational  
15 use, industrial activities, guide outfitting, hunting, fishing, trapping, agriculture,  
16 forestry, tourism, designated areas and scenic viewing.

17 The potential adverse social effects associated with current use of land and resources  
18 relate to privately-owned lands, environmentally sensitive areas, lands used for  
19 various resource-based industries, outdoor recreational activities and visually  
20 sensitive landscapes. The potential residual adverse social effects relate to the same  
21 aspects of land and resource use.

22 Mitigation to reduce the potential adverse social effects on land and resource uses  
23 includes:

- 24 • conducting a pre-construction survey and narrowing the construction ROW at  
25 specific locations
- 26 • providing landowners, residents and stakeholders with the construction locations  
27 and schedules
- 28 • implementing the Reclamation Plan
- 29 • developing agreements with private landowners and select tenure holders

- 1           • consulting with municipalities and authorities

2           With the implementation of mitigation, the potential adverse effects on current use of  
3           land and resources are considered to be not significant.

4           An assessment of cumulative adverse effects identifies how existing activities and  
5           reasonably foreseeable future developments may act in combination with the residual  
6           effect of the proposed Project to create cumulative adverse effects on current use of  
7           land and resources, patterns of human use or people’s experience on the land base.  
8           For current use of land and resources, the key indicators expected to have an overall  
9           adverse effect of the proposed Project are human habitation, recreational use, guide  
10          outfitting, hunting, fishing and gathering, trapping, agriculture, forestry, tourism,  
11          industrial activity, designated areas and scenic viewing. The residual cumulative  
12          adverse effects are considered to be not significant.

#### 4.1.2 Domestic Water Supply

13          The assessment of the potential adverse effects of the proposed Project on the  
14          domestic water supply VC focuses on two key indicators: domestic water supply  
15          quantity and domestic water supply quality. Domestic water in the Land and  
16          Resource Use LSA and RSA is available from groundwater or surface water sources  
17          and is extracted for domestic, industrial, agricultural and recreational purposes.  
18          Construction of the proposed Project near rivers, streams and lakes has the potential  
19          to affect water quality or quantity. Construction activities could also interact with  
20          water wells used for domestic purposes.

21          The potential adverse social effects associated with domestic water supply relate to  
22          domestic water supply quality, domestic water supply quantity, well water flow and  
23          well water quantity. Mitigation to reduce the potential adverse social effects on  
24          domestic water supply includes identifying the locations of registered and  
25          unregistered points of diversion, properly locating discharge areas, implementing  
26          water well monitoring programs and including domestic well owners in the  
27          monitoring process. Disruption of water well quality during construction was the only  
28          potential residual adverse effect after mitigation is applied and is considered to be not  
29          significant.

#### 4.2 Community and Regional Infrastructure and Services

30          The community and regional infrastructure and services assessment is focused on  
31          three VCs: community utilities and services, transportation infrastructure and services,  
32          and community quality of life.

##### 4.2.1 Community Utilities and Services

33          The assessment of community utilities and services includes an evaluation of the key  
34          indicators, emergency services, health care services, social services, waste

1 management facilities, recreational facilities, education and government services, and  
2 housing and commercial accommodation. Eight potential adverse social effects of the  
3 proposed Project on community utilities and services were identified, and pertained  
4 mostly to increased demand on infrastructure and services, such as increased demand  
5 on emergency services or health services or an increase in waste flow to regional  
6 landfill, transfer stations and wastewater treatment facilities.

7 Mitigation to reduce the potential adverse effects of the proposed Project on  
8 community utilities and services focuses on continuing to communicate with local or  
9 regional authorities and service providers, adhering to safety plans and emergency  
10 procedures, and consulting with municipal staff, community representatives and  
11 stakeholders about accommodations and services in the Project area.

12 Potential residual adverse social effects relate to the use of local and regional services,  
13 facilities and amenities, such as commercial accommodations.

14 The proposed Project may contribute to cumulative adverse effects on:

- 15 • increased demand on existing local emergency services
- 16 • increased demand on health care services
- 17 • increased demand on community social services
- 18 • reduced availability of rental housing and commercial accommodation

19 With the implementation of proposed mitigation during the construction phase, the  
20 Project's contribution to each of the cumulative adverse social effects is considered  
21 not significant. The residual cumulative adverse effects are considered to be not  
22 significant.

#### 4.2.2 Transportation Infrastructure and Services

23 The assessment of transportation infrastructure and services includes a consideration  
24 of the key indicators, traffic and navigability of waterways. Four potential adverse  
25 social effects of the proposed Project on transportation infrastructure and services  
26 were identified:

- 27 • increased traffic volumes from transportation of workers, supplies and equipment  
28 leading to decreased road safety
- 29 • increase in rail traffic resulting from the shipment of Project-related materials
- 30 • increased air passengers in local and regional airports
- 31 • disruption of movement on navigable waters

32 Mitigation for these potential adverse social effects focuses on notifying the public  
33 and authorities of the location and schedule of construction activities, implementing a  
34 Traffic Control Management Plan, and posting signage and other public safety

1 protocols. Despite the effective application of the mitigation, potential residual  
2 adverse effects could still remain. The potential residual adverse social effects  
3 identified are: increased Project-related traffic on highways and local roads, and  
4 disruption of movement on navigable waterways. The potential residual adverse  
5 social effects are considered to be not significant.

6 Two cumulative adverse social effects were identified and include an increase in  
7 traffic on highways and local roads from multiple projects and the disruption of  
8 movement on navigable waterways. Additional mitigation that the proposed Project  
9 will implement to manage the risk of cumulative adverse effects on transportation  
10 infrastructure and services may not eliminate all potential residual adverse effects.  
11 The residual cumulative adverse effects include an increase in traffic on highways  
12 and local roads. With the implementation of the proposed mitigation during the  
13 construction phase (e.g., using multi-passenger vehicles to transport construction  
14 personnel between the construction camps and the construction site), the Project's  
15 contribution to cumulative adverse effects on increase in traffic is not expected to  
16 result in a significant adverse cumulative effect.

#### 4.2.3 Community Quality of Life

17 The assessment of the community quality of life VC includes a consideration of the  
18 community quality of life key indicator. The assessment of the community quality of  
19 life for the proposed Project does not report on the potential adverse effects of the  
20 proposed Project on any one individual in any specific community, but rather broader  
21 project effects that could unbalance existing conditions in communities considered in  
22 the assessment. The planning, construction and operations phases of the proposed  
23 Project have the potential to affect the existing quality of life in communities, both  
24 positively and negatively.

25 Two potential adverse social effects were identified and include change in community  
26 quality of life during the construction phase and change in community quality of life  
27 during the operations phase. After implementing mitigation, such as adhering to  
28 health, safety and respectful conduct policies, both of these potential social effects  
29 have potential residual adverse social effects. With the implementation of mitigation  
30 during the construction and operations phases, a change in community quality of life  
31 during the construction phase is considered to be not significant.

32 The residual cumulative adverse effect of a change in community quality of life  
33 during the construction phase of the proposed Project will be managed by  
34 implementing mitigation. With the implementation of mitigation during the  
35 construction and operations phases (e.g., housing the Project workforce in  
36 construction camps, and implementing the Access Control Management Plan, the  
37 Emergency Response Plan (ERP), the EMP and the Traffic Control Management  
38 Plan), the Project's contribution to cumulative adverse effects on change in

1 community quality of life during the construction and operations phases is considered  
2 to be not significant.

#### 4.3 Traditional Land and Resource Use

3 Section 16 identifies and assesses the potential adverse effects of the proposed Project  
4 on Traditional Land and Resource Use and focuses on two VCs:

- 5 • current use of land and resources for traditional purposes
- 6 • cultural sites

7 The potential adverse effects for this VC include:

- 8 • disruption of subsistence hunting, trapping, fishing and plant gathering activities
- 9 • alteration of hunting, trapping, fishing and plant gathering sites
- 10 • disruption of use of trails, travelways and habitation sites

11 Key mitigation includes:

- 12 • providing Aboriginal groups with the proposed construction schedule and pipeline  
13 route maps
- 14 • reducing the amount of land disturbance by using previously disturbed areas, as  
15 much as practical, for stockpile and temporary construction camp sites
- 16 • completing pre-construction TLU studies with Aboriginal groups to identify sites  
17 that warrant mitigation

18 Mitigation has been recommended that is technically and economically feasible and  
19 takes into consideration that subsistence activities are potentially practiced throughout  
20 the Traditional Land and Resource Use RSA. Mitigation requirements will be  
21 confirmed during pre-construction TLU studies and through discussions with  
22 potentially affected Aboriginal groups to ensure that the potential for adverse effects  
23 on current use of land and resources for traditional purposes due to construction and  
24 operations activities is reduced or avoided. Potential residual adverse social effects  
25 include disruption of subsistence activities, alteration of subsistence resources, and  
26 disruption of trail, travelways and habitation site use. The potential residual adverse  
27 social effects are determined to be not significant.

28 A qualitative assessment of cumulative adverse effects on the current use of land and  
29 resources for traditional purposes was deemed to be the most appropriate approach  
30 for the cumulative effects assessment of subsistence activities, subsistence resources,  
31 and trails, travelways and habitation sites. Residual cumulative adverse effects  
32 include:

- 33 • Project contribution to cumulative adverse effects on disruption of subsistence  
34 activities

- 1           • Project contribution to cumulative alteration of subsistence resources  
2           • Project contribution to cumulative disruption of trail, travelways and habitation  
3           site use

4           The residual cumulative adverse effects are determined to be not significant.

#### 4.3.1 Cultural Sites

5           The potential adverse effects for the VC cultural sites include disturbance of  
6           gathering places and disturbance of sacred areas. Project development to date has  
7           included the consideration of information available about cultural sites. As Coastal  
8           GasLink progressed from a conceptual corridor to a study corridor, and then to a  
9           proposed route, additional information about cultural sites that became available  
10          through further studies and consultation informed the continued refinement of the  
11          Project Footprint. As Coastal GasLink progresses its detailed construction planning,  
12          the available information about cultural sites will be included. To reduce the potential  
13          adverse effects, key mitigation to be implemented includes:

- 14          • continuing to provide Aboriginal groups with the proposed construction schedule  
15          and pipeline route maps  
16          • reducing the amount of land disturbance by using previously disturbed areas, as  
17          much as practical, for stockpile and temporary construction camp sites  
18          • completing pre-construction TLU studies with Aboriginal groups to identify sites  
19          that warrant mitigation

20          Mitigation has been recommended that is technically and economically feasible and  
21          takes into consideration that Aboriginal groups continue to use Crown lands  
22          throughout the Traditional Land and Resource Use RSA for a variety of purposes,  
23          including spiritual and cultural pursuits. Mitigation requirements will be confirmed  
24          during pre-construction TLU studies and through discussions with potentially  
25          affected Aboriginal groups to ensure the potential for adverse effects on cultural sites  
26          due to construction and operations activities is reduced or avoided. Potential residual  
27          adverse social effects include disturbance of gathering places and disturbance of  
28          sacred areas. The potential residual adverse social effects are determined to be not  
29          significant.

30          A qualitative assessment of cumulative adverse effects on cultural sites was deemed  
31          to be the most appropriate approach for the cumulative adverse effects assessment of  
32          gathering places and sacred areas. Residual cumulative adverse effects include  
33          Project contribution to cumulative disturbance of gathering places and sacred areas.  
34          The residual cumulative adverse effects are determined to be not significant.

## 5.0 ASSESSMENT OF POTENTIAL ADVERSE HERITAGE EFFECTS

1 Section 18 identifies and assesses the potential adverse effects of the proposed Project  
2 on Heritage Resources.

3 The assessments focus on key issues that are of particular interest to regulatory  
4 agencies, participating Aboriginal groups or stakeholders.

5 A TDR is not filed with the Application; however, an Archaeological Impact  
6 Assessment (AIA) will be filed with the Archaeology Branch of the Ministry of  
7 Forests, Lands and Natural Resource Operations.

### 5.1 Heritage Resources

8 The construction of the proposed Project has the potential to disturb heritage  
9 resources. Heritage resources are the physical remains of past people and their  
10 cultures, and include the VCs archaeological sites, historic sites, architectural sites  
11 and palaeontological sites.

12 Potential adverse effects on the heritage resources VCs include the reduction or loss  
13 of heritage sites, including archaeological, historic and architectural sites, elements of  
14 the heritage site or heritage values associated with the site, increased access to the site,  
15 and considerations raised by Aboriginal groups and local communities.

16 To reduce potential adverse effects, where practical, Coastal GasLink has aligned the  
17 proposed route to be contiguous with existing disturbances. To mitigate any potential  
18 adverse effects on heritage resources, including archaeological, historic and  
19 architectural sites, qualified archaeologists started an AIA in May 2013 under  
20 Archaeological Research Permit 2013-0033. The AIA includes a review of the  
21 background data, ground reconnaissance of targeted areas for more intensive visual  
22 inspection and, where warranted, shovel testing. To date, a total of 3,170 shovel tests  
23 have been excavated under Archaeological Research Permit 2013-0033. Additional  
24 areas will be assessed in 2014.

25 If needed, appropriate mitigation will be taken in the event of the discovery of  
26 heritage resources. The primary mitigation in protecting archaeological resources is  
27 avoidance through careful routing and siting or, secondly, site-specific mitigation  
28 developed in consultation with the BC Archaeology Branch and approved by this  
29 authority in fulfillment of permit obligations. The work completed during the AIA for  
30 the proposed Project is considered to mitigate any potential adverse effects on  
31 archaeological sites. The ground reconnaissance and shovel testing programs focused  
32 on the areas along the proposed route that are of moderate to high potential for  
33 archaeological sites. All previously recorded archaeological sites, as well as newly  
34 recorded archaeological sites, will be mitigated in accordance with the direction of  
35 the provincial regulatory authority. In the unlikely event that an archaeological site is  
36 discovered during construction, the Heritage Resource Discovery Contingency Plan

1 will be implemented. Construction activities may resume only with the permission of  
2 the provincial regulatory authority on review and approval of any mitigation to  
3 compensate for the disturbance. With the application of mitigation, no potential  
4 residual adverse effects have been identified in the Application. Therefore, the effects  
5 of the proposed Project are considered to be not significant.

6 To identify potential palaeontological resources, the proposed route was reviewed by  
7 aerial reconnaissance between July 18 and 20, 2013. Emphasis was placed on areas  
8 containing sedimentary bedrock of the appropriate age to contain fossils, and  
9 investigating gravel pits, which expose glacial surficial cover that could contain  
10 ice-age fossils. All sites of concern were identified on the eastern extent of the  
11 proposed route. While a few small areas of bedrock with some potential could be  
12 potentially exposed on the west part of the proposed route, no exposures were  
13 observed, and potential was very low.

14 To mitigate any potential adverse effects on palaeontological resources, the  
15 environmental monitor and operators in charge of excavation are educated in basic  
16 fossil identification and the steps to be followed if fossils are encountered. In addition,  
17 trenching activities at specified watercourse crossings and areas identified as having  
18 high potential for palaeontological remains will be monitored. If a palaeontological  
19 site is discovered during construction, work will be suspended, if necessary, at that  
20 location until permission to resume is granted by the appropriate regulatory authority.  
21 These measures negate the potential residual adverse effects as the area will be  
22 completely mitigated.

## 6.0 ASSESSMENT OF POTENTIAL ADVERSE HEALTH EFFECTS

23 Section 20 identifies and assesses the potential adverse effects of the proposed Project  
24 on human and ecological health.

25 The assessments focus on key issues that are of particular interest to regulatory  
26 agencies, participating Aboriginal groups or stakeholders.

27 The effects assessment is supported by the TDRs of a number of disciplines and are  
28 referenced in the Application.

### 6.1 Human and Ecological Health

29 The human and ecological health topic considered two VCs, human health and  
30 ecological health.

31 Potential adverse effects on human health included changes in ambient air quality,  
32 changes in soil or sediment quality, changes in surface or groundwater quality,  
33 changes in quality of country foods and noise disturbance.

1 Potential adverse effects on ecological health included changes in ambient air quality,  
2 changes in soil or sediment quality, changes in surface or groundwater quality, noise  
3 disturbance and trophic transfer of contaminants through the food chain.

4 Typical mitigation and industry-accepted best practices are planned to control any  
5 changes in air quality and noise conditions and these measures reduce the potential  
6 adverse human health and ecological health effects. No mitigation is required that is  
7 specific to human health or ecological health.

8 The evaluation of the conceptual site model for the risk assessment indicated that  
9 there could be potential residual adverse effects of degraded air quality and potential  
10 noise disturbance on local residents, vegetation and wildlife. These residual human  
11 health and ecological health risk potential residual adverse effects are considered to  
12 be not significant.

13 There are no cumulative human health or ecological health risks associated with the  
14 proposed Project.

## 7.0 ACCIDENTS OR MALFUNCTIONS

15 Accidents or malfunctions are unplanned events that have the potential to result in  
16 adverse effects on human health, heritage sites, property or the environment, should  
17 they occur. Section 21 identifies and assesses the risk of potential accidents or  
18 malfunctions of the proposed Project on VCs of the environment, economic, social,  
19 heritage and health pillars, and identifies mitigation that will be implemented to  
20 reduce the risk.

21 Coastal GasLink is committed to designing, constructing and operating the proposed  
22 Project in a safe and environmentally responsible manner that respects the  
23 communities within which it operates. Coastal GasLink has adopted TransCanada  
24 PipeLines Limited's (TransCanada's) Health, Safety and Environment Commitment  
25 Statement. Coastal GasLink will implement a number of standard activities triggered  
26 by TransCanada Operating Procedures (TOPs) to monitor, safely operate and  
27 maintain the integrity of the pipeline, compressor station and meter station facilities.  
28 The facilities will include a cathodic protection system and will be constantly  
29 monitored through TransCanada's operations control centre. An Emergency  
30 Response Plan (ERP) and TransCanada's existing Public Awareness (PA) program  
31 will be in place to ensure effective response and to communicate information about  
32 the facilities to the public.

33 The proposed Project will be designed and constructed in accordance with all  
34 applicable Canadian Standard Association (CSA) standards, TransCanada  
35 specifications, and BC Oil and Gas Commission (BC OGC) requirements.

1 Mitigation has been developed in accordance with Coastal GasLink's standards of  
2 practice for environmental protection and commitment to reducing identified  
3 potential adverse effects, and are based on standards and regulatory guidelines,  
4 including BC OGC (2013), Canadian Association of Petroleum Producers (2001,  
5 2004) and CSA Z662-11 Oil and Gas Pipeline Systems (2011). The developed  
6 mitigation also considers the safety and protection of workers based on regulations,  
7 including the BC *Occupational Health and Safety Act*.

8 The assessment of potential accidents or malfunctions took a risk-based approach.  
9 Potential scenarios for categories of accidents or malfunctions were considered in  
10 relation to the valued components used for assessment of the proposed Project. For  
11 each scenario, the unmitigated likelihood and consequence were considered, and  
12 mitigation to address this risk was outlined. The implementation of measures, such as  
13 those contained in the Spill Contingency Plan and the ERP, will reduce the risk of  
14 potential residual adverse effects. Examples of additional mitigation include:

- 15 • ensuring that all contractor personnel take safety and environmental training
- 16 • locating valves along the pipeline to control gas flow in the pipeline
- 17 • coordinating with emergency response agencies
- 18 • marking the Coastal GasLink Pipeline and locating all foreign lines and cables  
19 using One Call services

20 After applying mitigation, the likelihood and consequence of the mitigated effect was  
21 then characterized to determine the risk of an accident or malfunction. The following  
22 potential accidents or malfunctions were considered in the risk assessment, and the  
23 level of risk of adverse effects resulting from such an event was determined:

- 24 • Spills (including from construction equipment fuel or hydrocarbon spills or  
25 other hazardous substances required for construction) were determined to  
26 have low to medium risks of residual adverse effects on instream and riparian  
27 habitats, fish, water and air quality, wetland function, vegetation, wildlife and  
28 wildlife habitat, soil, local emergency services and traffic, and heritage  
29 resources.
- 30 • Pipeline leakage or failure was considered using three scenarios, including a  
31 minor failure and major rupture of the natural gas pipeline that could lead to  
32 an explosion, as well as a strike to a third-party pipeline containing sour gas or  
33 crude oil. Potential residual adverse effects on fish and fish habitat, vegetation,  
34 wetlands, wildlife and wildlife habitat, and human health or property were  
35 considered. The risk of effects resulting from a natural gas pipeline failure or  
36 rupture was determined to be low, and the risk of effects related to an

- 1 accidental strike and release from a third-party pipeline with crude oil or sour  
2 gas is considered to be low to medium.
- 3 • Power outages were determined to have low risks of potential residual adverse  
4 effects on the economy, community utilities and services, and human health.
  - 5 • Fires or explosions were determined to have medium risks of potential  
6 residual adverse effects on riparian habitat, vegetation, wildlife and wildlife  
7 habitat, loss or damage of property and heritage resources.
  - 8 • Fly rock from blasting was determined to have low risks of potential residual  
9 adverse effects on aquatic ecosystems, wildlife and wildlife habitat, and  
10 human health.
  - 11 • Motor vehicle accidents were determined to have medium risks of potential  
12 residual adverse effects on human health and property.
  - 13 • Acid or metal leaching was determined to have low risks of potential residual  
14 adverse effects on ecosystems, wildlife and wildlife habitat, fish and fish  
15 habitat, as well as human health and land and resource use for traditional and  
16 non-traditional purposes.
  - 17 • Sediment releases into watercourses were determined to have a medium risk  
18 of potential residual adverse effects on fish and fish habitat, vegetation,  
19 wetlands and wildlife.

20 With the implementation of mitigation, none of the potential adverse effects of  
21 accidents or malfunctions are considered to be of high risk.

## 8.0 EFFECTS OF THE ENVIRONMENT ON THE PROPOSED PROJECT

22 The environment has the potential to adversely affect the proposed Project.  
23 Geohazards (e.g., natural seismic events, slope stability and mass wasting) in addition  
24 to water movement (e.g., erosion and flooding) represent the largest risk to the  
25 proposed Project. If unmitigated, geohazards and water movement have the potential  
26 to expose, load or damage the pipe, which could lead to a leak or failure. Geohazards  
27 and water movement also have the potential to damage supporting infrastructure and  
28 facilities.

29 Extensive studies have identified locations of environmental hazards and will  
30 continue to do so during detailed engineering and design of the proposed Project. The  
31 results of these studies have influenced pipeline routing and facility siting as the  
32 primary mitigation. Examples of additional mitigation include:

- 33 • slope grade reduction

- 1           • revegetation
- 2           • deep burial of pipe
- 3           • deflection berms
- 4           • protective ditch cover (concrete or steel plate)
- 5           • operational monitoring and maintenance

6           As a result of design of the proposed Project, and by the implementation of  
7           contingency plans, the risk of environmental effects on the construction or operations  
8           of the proposed Project is reduced. There are no potential residual adverse effects that  
9           are considered to be of high risk.

## 9.0    **SUMMARY OF PROPOSED ENVIRONMENTAL AND OPERATIONS MANAGEMENT PLANS**

10           The EMP identifies general and specific measures to be implemented by Coastal  
11           GasLink and its contractors during all phases of the proposed Project to avoid and  
12           reduce potential adverse effects during construction and operations. A conceptual  
13           EMP is included in the Application. The EMP was developed using TransCanada's  
14           experience gained over 60 years of natural gas pipeline design, construction and  
15           operations, and includes mitigation that has become industry-accepted best practice as  
16           a result of testing and effectiveness monitoring.

17           The EMP contains management and contingency plans, including:

- 18           • Spill Contingency Plan
- 19           • Adverse Weather Contingency Plan
- 20           • Flood and Excessive Flow Contingency Plan
- 21           • Wet Soils Contingency Plan
- 22           • Fire Suppression Contingency Plan
- 23           • Soil Handling Contingency Plan
- 24           • Soil Erosion Contingency Plan
- 25           • Directional Drilling Procedures and In Stream Drilling Mud Release Contingency  
26           Plan
- 27           • Ecological Community and Species of Concern Discovery Contingency Plan
- 28           • Wildlife Species of Concern and Discovery Contingency Plan
- 29           • Heritage Resource Discovery Contingency Plan
- 30           • Traditional Land Use Sites Discovery Contingency Plan
- 31           • Chemical and Waste Management Plan

- 1       • Traffic Control Management Plan
- 2       • Access Control Management Plan
- 3       • Hydrovac Cutting Handling Plan
- 4       • Contaminated Soils Management Plan

5       The final Reclamation Plan will be developed before clearing and construction and  
6       will include measures for effectively reclaiming the land disturbed by construction  
7       activity.

8       Monitoring is an integral part of the follow-up program for the proposed Project. In  
9       addition to construction monitoring, by means of construction and environmental  
10      inspection, a three to five-year post-construction monitoring program is proposed.  
11      This program will be one method for determining the effectiveness of the measures  
12      used to mitigate the potential adverse effects of the proposed Project.

## 10.0 CONCLUSIONS

13      This Application is informed by TransCanada’s experience gained over 60 years of  
14      natural gas pipeline design, construction and operation, and includes mitigation that  
15      has become industry-accepted best practice as a result of testing and effectiveness  
16      monitoring.

17      The following summarizes the key findings for the five pillars on which the  
18      environmental assessment is based.

### Environment

- 19      • The assessment considered potential adverse effects on the geophysical,  
20      atmospheric and aquatic environments, as well as vegetation, wetlands and  
21      wildlife, including species at risk.
- 22      • For the majority of valued components, the assessment concluded that there  
23      would not be significant adverse effects. The assessment relied heavily on  
24      industry accepted best practices that have been developed over many years and  
25      different regions and have been found to be effective mitigation.
- 26      • To reduce adverse effects of greenhouse gas emissions and adverse effects on  
27      species at risk, including caribou, grizzly bear, white sturgeon and white-bark  
28      pine, additional mitigation, such as compensation or offsets, may be required.  
29      Coastal GasLink’s conclusion of “not significant” for GHG emissions is based on  
30      an assessment in the global context. Coastal GasLink acknowledges that its  
31      estimated GHG emissions are notable and of concern in a provincial context.

### Economy

- 32      • The assessment considered potential effects on government revenue, contracts and  
33      procurement expenditures, and employment and labour force.

- 1           • Overall, this Project is expected to have a positive effect on the economy with  
2           total construction spending expected to exceed \$4 billion, and federal, provincial  
3           and property tax revenues in excess of \$700 million.
- 4           • Although the Project expects to create an equivalent of over 37,200 person-years  
5           of employment and \$1.4 billion in labour income in BC, there may still be a  
6           challenge in managing the expected strain on available labour resources. Coastal  
7           GasLink will support training and skills development programs to enable  
8           individuals to see Project and other employment opportunities.

### **Social**

- 9           • The assessment considered potential adverse effects on the current and planned  
10          uses of the land, as well as effects on communities and their infrastructure, and  
11          traditional land and resource use.
- 12          • The project crosses a landscape with a lot of resource development activity, and  
13          Coastal GasLink's assessment identified concerns that communities have about  
14          adding to that activity level.
- 15          • Proposed mitigation includes communication of detailed construction information,  
16          reduced land disturbance and planning construction, informed by available  
17          traditional land use information.
- 18          • Support to the development and expansion of education and training programs  
19          was identified as a primary pathway to reduce adverse effects.
- 20          • Coastal GasLink expects to work with a variety of agencies and programs to  
21          manage the potential for long-term adverse effects.

### **Heritage**

- 22          • The assessment has advanced the knowledge and understanding of heritage  
23          resources, including archaeological, historic, architectural and paleontological  
24          sites. Coastal GasLink expects this to continue through on-the-ground monitoring  
25          during construction.
- 26          • Because Project activities include disturbance of land, it has the potential to affect  
27          heritage resources. Through route selection and archaeological assessments,  
28          knowledge shared by Aboriginal groups and implementation of a Heritage  
29          Resource Discovery Contingency Plan, the potential for adverse effects on  
30          heritage resources is reduced.

### **Health**

- 31          • The assessment considered the potential adverse effects on air quality, soil, water  
32          and noise levels, and how changes to these may affect the health of people and the  
33          environment. Typical mitigation and industry accepted best practices are expected  
34          to avoid or reduce the potential adverse effects.

1 Coastal GasLink also considered the potential for unplanned events to potentially  
2 result in adverse effects to the five pillars listed above. The Application concludes  
3 that none of the potential adverse effects are considered high risk with  
4 implementation of mitigation, such as proper safety and environmental training, an  
5 established emergency response program and coordination with emergency response  
6 agencies, and facilities designed to meet or exceed all applicable safety and  
7 engineering requirements.

8 The environment has the potential to adversely affect the proposed Project through  
9 geohazards and water movement that, if unmitigated, could affect the pipeline. The  
10 Application concludes that implementation of contingency plans and adherence to  
11 pipeline and facility siting criteria and strict design requirements, will result in no  
12 potential residual adverse effects of the environment on the Project being considered  
13 high risk.

14 This Application concludes that the proposed Project has the potential to have  
15 potential adverse effects on environmental, social, health, heritage and economic  
16 values. The issues associated with the proposed Project are routinely encountered  
17 during pipeline and facility construction and operation. This Application concludes  
18 that the mitigation strategies, which include factors such as appropriate routing and  
19 siting, mitigation for potential residual and cumulative adverse effects, training and  
20 environmental inspection, will avoid, eliminate or reduce potential affects arising  
21 from the proposed Project. Therefore, this Application concludes that the potential  
22 residual and cumulative adverse environmental, economic, social, heritage and health  
23 effects of the proposed Project are considered to be not significant.