

Environmental Assessment Certificate Application

LNG Canada Export Terminal

Section 15 – Statutory Requirements Under CEAA 2012

October 2014



LNG CANADA
Opportunity for British Columbia. Energy for the world

Joint venture companies



15 STATUTORY REQUIREMENTS UNDER CEAA 2012

15.1 Introduction

Section 5(1)(c) of *CEAA, 2012* requires, with respect to Aboriginal people, an assessment of effects occurring in Canada from any change that may be caused to the environment from:

- health and socio-economic conditions
- physical and cultural heritage
- the current use of lands and resources for traditional purposes, and
- any structure, site or thing that is of historical, archaeological, paleontological, or architectural significance.

CEAA, 2012 refers to these categories as “factors,” and for the purposes of this section, they are termed the “*CEAA, 2012* section 5(1)(c) factors.”

To meet the requirements set out in Section 15 of the AIR, this section:

- provides an overarching description of the potential effects on the “environment” (as that term is defined in *CEAA, 2012*) that may in turn affect the following *CEAA, 2012*, section 5(1)(c) factors:
 - Aboriginal health
 - Aboriginal socio-economic conditions (including discussion of both social and economic effects)
 - Aboriginal physical and cultural heritage (including effects on any structure, site or thing of Aboriginal historical, archaeological, paleontological or architectural significance), and
 - the current use of lands and resources for traditional purposes.
- considers each of the *CEAA, 2012* section 5(1)(c) factors, with descriptions of potential effects and Project mechanisms
- summarizes relevant mitigation measures (see Section 20) and predicted residual adverse effects and cumulative effects (drawing on material found in Part B or elsewhere in the Application)
- provides LNG Canada’s view on the adequacy of the mitigation measures, and
- summarizes the views of potentially affected Aboriginal Groups (as provided to LNG Canada).

It should be noted that, through consultation with Aboriginal groups, through both the Working Group process and LNG Canada's consultation activities, the Application has been broadened to include an assessment of the potential residual effects on the following Aboriginal Interests:

- changes in harvesting-related Aboriginal Interests
- changes in the use of sacred and culturally important sites and landscape features
- changes in aspects of traditional Aboriginal governance
- changes in aspects of Aboriginal cultural identity, and
- changes in Aboriginal spiritual places.

As contained in Part B and Part C (Section 14 and Section 16), LNG Canada has engaged in a full assessment of: these Aboriginal Interests, the various biophysical resources relied upon by Aboriginal Groups, the Project's potential effects on these resources, the interaction of these potential effects with the Aboriginal Interests, and an assessment of the Project's potential effects on the human health and social and economic conditions of Aboriginal Groups. This includes the current use of lands and resources for traditional purposes and it extends this analysis to past and reasonably anticipated future use, which are not considered under section 5(1)(c) factors. In these cases, the assessment conducted in other sections of Part C can be considered to be inclusive of the section 5(1)(c) factors. This set of assessments provides a complete assessment of the CEEA, 2012 section 5(1)(c) factors.

All of the CEEA, 2012 section 5(1)(c) factors have been assessed in Part B and Part C; this section of the Application is not intended to serve as a stand-alone assessment of those factors. Consequently, the following information primarily provides summary and concordance information regarding the set of assessments identified above.

15.2 Spatial Boundaries

Each of the relevant referenced sections uses its own set of spatial boundaries. Information on those spatial boundaries can be found in the referenced sections and are summarized in each subsection below.

15.3 Identification of Potential Environmental Effects on Section 5(1)(c) Factors

Table 15.3-1 lists the potential effects that the Project may have on the “environment” (as that term is defined in *CEAA, 2012*). Project-related effects that are not “effects on the environment” (e.g., potential effects related to increased local employment or potential effects on local infrastructure) are not included in the table.

Potential effects on the “environment” that may interact with one or more of the *CEAA, 2012* section 5(1)(c) factors are marked with a check mark (✓) and are discussed.

Table 15.3-1: Potential Project Environmental Effects on Section 5(1)(c) Factors

Valued Component	Potential Effects	Aboriginal Health	Aboriginal Socio-Economic Conditions	Physical and Cultural Heritage (including Structures,)	Current Use of Land and Resources for Traditional Purposes
Health VCs					
Human Health	Change in human health risk from degraded air quality	✓	✓		✓
	Change in human health resulting from degraded drinking water quality	✓	✓		✓
	Change in human health risk from ingestion of contaminated country foods	✓	✓		✓
Environment VCs					
Air Quality	Change in ambient air quality in the Kitimat region or along the marine access route	✓	✓	✓	✓
Greenhouse Gas Management	Emission of GHG from LNG facility and marine shipping				
Acoustic Environment	Change (increase) in overall noise levels	✓		✓	✓
	Increase in low frequency noise during LNG facility construction and operation	✓		✓	✓
Vegetation Resources	Change in abundance of plant species of interest (e.g., traditional use [TU] plant species)	✓	✓	✓	✓
	Change in abundance or condition of ecological communities of interest	✓	✓	✓	✓
	Change in native vegetation health and diversity because of air emissions	✓	✓	✓	✓
Wildlife Resources (Terrestrial Wildlife, Marine Birds)	Loss or change in habitat for species of interest (e.g., species at risk, TU species)	✓	✓	✓	✓
	Risk of injury or mortality	✓	✓	✓	✓
	Sensory disturbance or behavioural alterations	✓	✓	✓	✓

Valued Component	Potential Effects	Aboriginal Health	Aboriginal Socio-Economic Conditions	Physical and Cultural Heritage (including Structures,)	Current Use of Land and Resources for Traditional Purposes
Freshwater and Estuarine Fish and Fish Habitat	Changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity)	✓	✓	✓	✓
	Change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species)	✓	✓	✓	✓
	Change in fish health	✓	✓	✓	✓
Marine Resources (Fish and Fish Habitat, Marine Mammals)	Change in fish habitat	✓	✓	✓	✓
	Harm (physical injury or mortality) to fish and marine mammals	✓	✓	✓	✓
	Change in fish health as a result of toxicity	✓	✓	✓	✓
	Change in behaviour of fish and marine mammals due to pressure waves or underwater noise	✓	✓	✓	✓
Surface Water Quality	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions)	✓	✓	✓	✓
	Eutrophication potential of lakes and streams (related to N emissions)	✓	✓	✓	✓
Socio-Economic VCs					
Visual Quality	Reduction in visual quality (LNG facility)		✓	✓	✓
	Reduction in visual quality (marine access route)		✓	✓	✓
Marine Transportation & Use	Interference with marine fisheries and shoreline harvesting		✓		✓
	Interference with marine recreation and tourism		✓		✓
Community Health and Wellbeing	Change in diet and nutrition	✓	✓	✓	✓
Physical Heritage VCs					
Archaeological and Heritage Resources	Damage to or removal of culturally modified trees (CMTs)			✓	
	Alteration or removal of terrestrial archaeological or heritage sites			✓	
	Alteration or removal of intertidal archaeological or heritage sites			✓	

15.4 Aboriginal Health

15.4.1 Potential Effects, Project Effect Mechanisms and Mitigation Measures

As presented in Table 15.4-1, the VCs and the potential Project-related effects on the environment that may affect Aboriginal health are:

- air quality (Section 5.2)
- acoustics (Section 5.4)
- surface water quality (Section 5.9), and
- country foods and Aboriginal diet and nutrition (Section 7.5 and Section 9.2).

Potential effects relating to human health are included in the bulleted list above (specifically, air quality, drinking water quality, and the risk from ingestion of contaminated country foods).

Potential effects relating to the community health and well-being VC are also provided in the list and include Project effects on country foods and changes to diet and nutrition as described in the wildlife, marine resources, and vegetation VCs.

A complete list of potential effects, effect mechanisms and cross-references to descriptions of detailed mitigation measures for each of the relevant potential effects on the environment are summarized in Table 15.4-1. Residual effects and cumulative effects are described in Section 15.4.2.

Table 15.4-1: Potential Effects, Effect Mechanisms, and Mitigation Measures

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Air Quality-Related Project Effects			
Human health	Change in human health risk from degraded air quality	Potential changes in air quality could expose Aboriginal people to higher concentrations of harmful substances	Facility: See Section 9.2.5.2.2 Shipping: n/a
Air quality	Change in ambient air quality in the Kitimat region or along the marine access route	Potential change in ambient air quality in the Kitimat region or along the marine access route could expose Aboriginal people to higher levels of harmful substances (i.e., PM _{2.5} , CO, and NO ₂)	Facility: See Section 5.2.5.2.2 Shipping: See Section 5.2.6.2.2
Acoustics Effects			
Acoustic environment	Change (increase) in overall noise levels	Potential changes in overall noise levels could adversely affect the health of Aboriginal people	Facility: See Section 5.4.5.2.2
	Increase in low frequency noise during LNG facility construction and operation	Increases in low frequency noise during LNG facility construction and operations could potentially adversely affect the health of Aboriginal people	Shipping: See Section 5.4.6.2.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Water Quality Effects			
Human health	Change in human health resulting from degraded drinking water quality	Potential changes in drinking water quality could expose Aboriginal people to increased levels of harmful materials	Non required See:9.2.5.2.2
Effects on Country Foods and Aboriginal Diet and Nutrition			
Human health	Change in human health risk from ingestion of contaminated country foods	Contamination of country foods could adversely affect the health of Aboriginal people who consume them and could potentially result in avoidance of country foods and increased consumption of less nutritious market foods	Facility: See Section 9.2.5.2.2 Shipping: n/a
Vegetation resources	Change in abundance of plant species of interest (e.g., TU plant species)	Potential changes in the abundance of TU plant species could reduce the amount consumed by Aboriginal people and increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.5.5.1.3
	Change in abundance or condition of ecological communities of interest	Potential changes in the abundance or condition of ecological communities of interest (e.g. old forest, wetlands) could potentially reduce the consumption of country foods harvested within those communities of interest and increased consumption of less nutritious market foods by Aboriginal people	See Section 5.5.5.2.3
	Change in native vegetation health and diversity because of air emissions	Potential changes in native vegetation health and diversity due to Project air emissions could adversely affect the harvesting and consumption of country foods and increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.5.5.3.3
Wildlife resources (terrestrial wildlife, marine birds)	Loss or change in habitat for species of interest (e.g., species at risk, TU species)	Loss of, or change in, wildlife habitat could potentially adversely affect the harvesting and consumption of country foods and lead to increased consumption of less nutritious market foods by Aboriginal people	See Section 5.6.5.2.2
	Risk of injury or mortality	Project-related injury or mortality of wildlife could potentially reduce the availability of those species, adversely affecting the harvesting and consumption of country foods in Aboriginal communities and increasing the consumption of less nutritious market foods by Aboriginal people	Facility: See Section 5.6.5.3.2 Shipping: See Section 5.6.6.2.1
	Sensory disturbance or behavioural alterations	Project-related disturbance of wildlife or changes in wildlife behaviour could potentially adversely affect the harvesting and consumption of country foods in Aboriginal communities and potentially increase the consumption of less nutritious market foods by Aboriginal people	Facility: See Section 5.6.5.4.2 Shipping: See Section 5.6.6.3.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Freshwater and estuarine fish and fish habitat	Changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity)	Changes in fish habitat (i.e. permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity) could potentially adversely affect the harvesting and consumption of fish in Aboriginal communities and potentially increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.7.5.2.2
	Change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species)	Changes in the risk of physical injury to fish or fish mortality (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species) could potentially adversely affect the harvesting and consumption of fish in Aboriginal communities and potentially increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.7.5.3.2
	Change in fish health	Change in fish health could potentially adversely affect the harvesting and consumption of fish in Aboriginal communities and potentially increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.7.5.4.2
Marine resources (fish and fish habitat, marine mammals)	Change in fish habitat	Change in marine fish habitat could potentially adversely affect the harvesting and consumption of fish in Aboriginal communities and potentially increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.8.5.2.3
	Harm (physical injury or mortality) to fish and marine mammals	Harm (physical injury or mortality) to marine fish or marine mammals could potentially adversely affect the harvesting and consumption of fish and marine mammals in Aboriginal communities and potentially increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.8.5.4.3
	Change in fish health as a result of toxicity	Potential change in marine fish health as a result of toxicity could adversely affect the health of Aboriginal people who consume those contaminated fish, could potentially adversely affect the harvesting and consumption of fish in Aboriginal communities, and could potentially increase the consumption of less nutritious market foods by Aboriginal people	See Section 5.8.5.3.3
	Change in behaviour of fish and marine mammals due to pressure waves or underwater noise	Potential change in marine fish or marine mammal behaviour due to underwater noise or pressure waves could adversely affect harvested species, potentially resulting in a reduction in harvesting and consumption of fish in Aboriginal communities, and could potentially increase the consumption of less nutritious market foods by Aboriginal people	Facility: See Section 5.8.5.5.3 Shipping: See Section 5.8.6.2.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Surface water quality	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions)	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide and nitrogen oxide emissions) may affect the abundance and quality of harvested species. This could potentially adversely affect the health of Aboriginal people who consume harvested species, and could also reduce harvesting and consumption of traditionally harvested species, resulting in an increase in the consumption of less nutritious market foods by Aboriginal people	See Section 5.9.5.2.2 and Section 5.9.5.3.2
	Eutrophication potential of lakes and streams (related to N emissions)	Eutrophication potential of lakes and streams (related to nitrogen emissions) may potentially affect the abundance and quality of harvested species. This could adversely affect the harvesting and consumption of traditionally harvested species, resulting in an increase in the consumption of less nutritious market foods by Aboriginal people	
Community health and wellbeing	Change in diet and nutrition	<p>Project-related changes in the diet and nutrition in Aboriginal communities could potentially adversely affect the health of Aboriginal people. The Project could affect the consumption of country foods through the following pathways:</p> <ul style="list-style-type: none"> ▪ potential change in accessibility to marine country foods because of constructed marine facilities and required Project-related safety zones ▪ potential change in accessibility to terrestrial country foods (includes vegetation and wildlife) in the Project footprint ▪ potential change in the viability of country foods, based on residual effects from Project activities and physical works (assessed in Sections 5.5, 5.6, 5.7, and 5.8), thereby affecting availability ▪ potential change in the viability of terrestrial country foods (includes vegetation and wildlife), based on residual effects from Project activities and physical works (assessed in Sections 5.5, 5.6, and 5.7), thereby affecting availability ▪ perceived decreased quality of country foods, leading to conscious decisions by some people to forego consumption of country foods 	Facility: See Section 7.5.5.3.2 Shipping: See Section 7.5.6.2.2

15.4.2 Project Residual Effects and Cumulative Effects on Aboriginal Health

15.4.2.1 Air Quality-Related Effects

Change in ambient air quality in the Kitimat region or along the marine access route could expose Aboriginal people to higher levels of harmful substances (i.e., PM_{2.5}, CO, and NO₂), and subsequently effect their health.

15.4.2.1.1 Project Residual Effects

As described in Section 9.2, Project residual effects on air quality are not predicted to result in a change in human health. The potential effects of concern are changes in SO₂ or changes in combined SO₂ and NO₂. Residual effects from the facility will be negligible, of long-term duration, limited to the human health LSA and reversible. In addition, emissions from the facility will not affect the quality of terrestrial or aquatic country foods (chemical residues in tissues will not change).

Based on the results of the air quality assessment (see Section 5.2), Section 9.2.5 of the Human Health VC indicates there is no potential interaction between shipping and human health (i.e. through contaminated country foods), beyond what has already been incorporated into the assessment of air quality.

15.4.2.1.2 Cumulative Effects

Changes in air contaminant concentration criteria in the Kitimat region that occur between the base and cumulative effects cases do not represent potential human health concerns for PM_{2.5}, CO, and NO₂ (see Section 9.2.8.4). Changes in human health (including the health of Aboriginal people) associated with changes in SO₂ exposures in the cumulative case, beyond what would exist under the base case, will be negligible, and the effects will be reversible. Project residual effects from the Project and cumulative effects from other projects are assessed as not significant (Section 9.2.8.4).

15.4.2.2 Acoustics-Related Effects

15.4.2.2.1 Project Residual Effects

Changes in both low frequency and overall noise levels could adversely affect the health of aboriginal people. As described in Section 5.4, during the operations and construction phases for the LNG facility, sound levels within the acoustics LSA (an area 3.5 km wide surrounding the LNG facility) are expected to increase when compared to the existing acoustic environment. However, the magnitude of those changes for all receptors (including Aboriginal people) within the acoustics LSA is rated as low. During construction, noise effects will be lower or equal to Health Canada criteria. During operation, noise effects resulting from the LNG facility are predicted to be barely perceptible at all receptors (including Aboriginal

receptors) and will not exceed the baseline sound level by more than 3 dB. For receptors greater than 5 km away from the LNG processing facility and marine terminal, noise effects from construction and operation activities will attenuate to a level well below the threshold of human hearing perception.

Noise effects from marine shipping activities will comply with federal and provincial noise guidelines and levels will not exceed limits prescribed by the BC Oil and Gas Commission Noise Control Guidelines and the American National Standard ANSI 12.9 *Quantities and Procedures for Description and Measurement of Environmental Sound - Part 4: Noise Assessment and Prediction of Long-term Community Response*. See Section 5.4.6 for a discussion and analysis.

15.4.2.2.2 Cumulative Effects

As described in detail in Section 5.4.8.4, the past and present regulated projects and activities within the acoustics RSA, in combination with the residual effects of the Project, will not exceed regulatory thresholds on a persistent basis. The reasonably foreseeable regulated projects and activities in the RSA, in combination with the residual noise effects from the Project, are expected to comply with regulatory guidelines. Cumulative acoustic effects (including those that may affect Aboriginal health) are, therefore, not significant.

15.4.2.3 Water Quality-Related Effects

15.4.2.3.1 Project Residual Effects

Criteria air contaminants released to the environment by the Project will not directly contribute to changes in surface water quality that would affect its suitability as a source of potable water. The surface water quality assessment (Section 5.9) concludes that the change in acidification potential between base and application cases is not significant (see Section 5.9.5.2). These results suggest that potential changes in acidification related to the Project are not expected to alter the metal concentrations in surface water from what exists under base case conditions. Therefore, occasional or infrequent use of surface waters, such as untreated drinking water, will be a very limited exposure that will not pose a risk to human health.

In areas where municipal drinking water is provided, the municipal supply is required to meet the established drinking water quality standards; therefore, raw water is processed to meet the drinking water standards. Drinking water sourced from groundwater likewise will not be a concern for human health. Potential acidification of water resulting from Project activities will be limited to residual effects on surface water and will not alter the quality of groundwater-sourced drinking water.

15.4.2.3.2 Cumulative Effects

Residual adverse effects will be eliminated or reduced to negligible levels by existing codified practices, proven mitigation measures, or best management practices. Project-specific residual effects on surface water quality will not interact with the effects of other projects and activities. No cumulative effects will occur.

15.4.2.4 Effects on Country Food Consumption and Aboriginal Diet and Nutrition

The Project could affect the consumption of country foods through changes in accessibility, availability, viability or perceived decreased quality of country foods. This may lead to a conscious decision to forego consumption of country foods.

15.4.2.4.1 Project Residual Effects

Residual effects on diet and nutrition associated with the LNG facility are moderate in magnitude because Project design (see Section 2) and mitigation measures (see Sections 5.5, 5.6, and 5.7) will reduce adverse effects on vegetation, wildlife, and fish, thereby reducing residual adverse effects on the availability of country foods. The largest magnitude of change in access and availability will occur in the Project footprint, although affected species of interest will remain abundant and will continue to be found extensively throughout Haisla Nation territory. Residual effects will be long term in duration but reversible following decommissioning.

Residual effects on diet and nutrition from shipping activities during Project construction, operation, and decommissioning are low in magnitude because Project design (see Section 2) and mitigation measures (see Sections 5.8 and 7.4) will reduce adverse effects on marine resources and use of marine areas. See Section 7.5 for information on these residual effects.

15.4.2.4.2 Cumulative Effects

As described in Section 7.5.8.3, cumulative residual effects from 23 overlapping projects are not expected to restrict access to or the availability of country foods in the community health and wellbeing RSA (a large area that includes all three Aboriginal Interests LSAs) to an extent that diets or nutrition will be adversely affected. Based on the conclusions in the environment VCs (Section 5) regarding cumulative effects, cumulative changes in vegetation and wildlife are assessed as not significant and will not affect the availability of country foods. Although there is the potential for Aboriginal individuals to forego consumption of country foods based on quality concerns, similar awareness and engagement programs, as those proposed by LNG Canada and identified in Sections 7.5.5.3 and 7.5.6.2, have been, are, or are anticipated to be developed, by proponents of other projects. Therefore, cumulative effects on diet and nutrition are not significant.

15.4.3 Conclusions on Aboriginal Health

Project residual effects on air quality, acoustics, water quality, country food consumption and Aboriginal diet and nutrition, caused by Project changes to the environment, are all predicted to be not significant. Consequently, based on the analysis above and that all the residual effects range from negligible to low in magnitude, LNG Canada predicts that resulting residual effects either individually or in combination on Aboriginal health are not significant.

The cumulative residual effects on air quality, acoustics, water quality, country food consumption and Aboriginal diet and nutrition are predicted to be not significant. Based on the analysis above, and that the anticipated cumulative effects will be negligible and will not exceed regulatory thresholds on a persistent basis the resulting cumulative effects either individually or in combination on Aboriginal health are also predicted to be not significant.

15.4.4 LNG Canada's Conclusions Regarding the Adequacy of Mitigation Measures

Through consultation, LNG Canada has sought to develop effective mitigation measures to address potential effects that the Project may have on the environment that may affect Aboriginal health. Mitigation measures are a combination of measures to address the potential effects on specific VCs assessed in Part B, and additional mitigation measures developed to respond directly to the specific section 5(1)(c) factor. Based on the mitigation, LNG Canada considers the potential effects on section 5(1)(c) factors to be adequately addressed. However, LNG Canada will continue to consult Aboriginal Groups on the potential adverse effects of the Project, including potential effects on Aboriginal health, and on measures to mitigate potential adverse effects. Throughout the Application review phase, this section will be updated to reflect views heard through that process.

15.5 Aboriginal Socio-Economic Conditions

15.5.1 Potential Effects, Project Effect Mechanisms and Mitigation Measures

As presented in Table 15.5-1, the potential effects of the Project on the environment that may affect Aboriginal socio-economic conditions are:

- air quality (section 5.4)
- surface water quality (section 5.9)
- traditional harvesting and diet and nutrition (Sections 14, 7.4, and 9.2)
- visual quality (Section 7.3), and
- marine transportation and use (Section 7.4).

Potential effects relating to Aboriginal socio-economic conditions are included in the bulleted list above (specifically, air quality, drinking water quality, and the risk from ingestion of contaminated country foods). Potential effects relating to community health and well-being are also provided in the list and include those relating to changes in diet and nutrition.

The complete list of potential effects, effect mechanisms and cross-references to descriptions of detailed mitigation measures for each of the relevant potential effects on the environment are summarized in Table 15.5-1. Residual effects and cumulative effects are described in Section 15.5.2.

Table 15.5-1: Potential Effects, Effect Mechanisms, and Mitigation Measures

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Air Quality Related Effects			
Human health	Change in human health risk from degraded air quality	Potential changes in human health risk from degraded air quality could have socio-economic effects within the relevant Aboriginal communities and could contribute to increased demand on health care and emergency services and poorer health outcomes.	Facility: See Section 9.2.5.2 Shipping: n/a
Air quality	Change in ambient air quality in the Kitimat region or along the marine access route	Potential changes in ambient air quality in Kitimat region and along marine access route could have socio-economic effects within the relevant Aboriginal communities. These could result in effects on human health might contribute to increased demand on health care and emergency services and poorer health outcomes. In addition, changes in ambient air quality in the Kitimat region and along the marine access route could affect Aboriginal socio-economic conditions through changes in diet and nutrition (due to decreased health and safety of country foods that are eaten and avoidance of country foods).	Facility: See Section 5.2.5.2 Shipping: See Section 5.2.6.2
Water Quality Effects			
Human health	Change in human health resulting from degraded drinking water quality	Potential changes in human health risk from degraded drinking water quality could have socio-economic effects within the relevant Aboriginal communities. This could contribute to increased demand on health care and emergency services and poorer health outcomes.	n/a
Traditional Harvesting and Diet and Nutrition-Related Effects			
Human health	Change in human health risk from ingestion of contaminated country foods	Potential changes in human health risk from the ingestion of contaminated country foods could affect Aboriginal socio-economic conditions through changes to both community health and wellbeing (increased demand on health care and emergency services and poorer health outcomes) and changes in diet and nutrition (due to decreased health and safety of country foods that are eaten and avoidance of country foods).	Facility: See Section 9.2.5.2 Shipping: n/a

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Vegetation resources	Change in abundance of plant species of interest (e.g., TU plant species)	Potential changes in the abundance of TU plant species could: (a) adversely affect traditional harvesting activities that depend on those species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce consumption of country foods among Aboriginal people, resulting in increased consumption of less nutritious market food alternatives and changes in diet and nutrition within Aboriginal communities.	See Section 5.5.5.1
	Change in abundance or condition of ecological communities of interest	Potential changes in the abundance or condition of ecological communities of interest (e.g., old forest, wetlands) could: (a) adversely affect traditional harvesting activities that take place within those vegetation communities of interest and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods harvested within those communities of interest, resulting in increased consumption of less nutritious market food alternatives and changes in diet and nutrition within Aboriginal communities.	See Section 5.5.5.2
	Change in native vegetation health and diversity because of air emissions	Potential changes in native vegetation health and diversity due to Project air emissions could: (a) adversely affect traditional harvesting activities that depend on native vegetation species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	See Section 5.5.5.3
Wildlife resources (terrestrial wildlife, marine birds)	Loss or change in habitat for species of interest (e.g., species at risk, TU species)	A potential loss or change in habitat for TU wildlife species could: (a) adversely affect traditional harvesting activities that depend on affected terrestrial wildlife species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	See Section 5.6.5.2
	Risk of injury or mortality	Project-related injury or mortality of TU wildlife has the potential to: (a) adversely affect traditional harvesting activities that depend on affected terrestrial wildlife species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	Facility: See Section 5.6.5.3 Shipping: See Section 5.6.6.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
	Sensory disturbance or behavioural alterations	Project-related disturbance of TU wildlife or changes in their behaviour has the potential to: <ul style="list-style-type: none"> (a) adversely affect traditional harvesting activities that depend on affected terrestrial wildlife species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities 	Facility: See Section 5.6.5.4 Shipping: See Section 5.6.6.3
Freshwater and estuarine fish and fish habitat	Changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity)	Potential changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity) could: <ul style="list-style-type: none"> (a) adversely affect traditional harvesting activities that depend on affected freshwater and estuarine fish species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities 	See Section 5.7.5.2
	Change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species)	Potential changes in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species) could: <ul style="list-style-type: none"> (a) adversely affect traditional harvesting activities that depend on affected fish species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities 	See Section 5.7.5.3
	Change in fish health	Change in fish health could: <ul style="list-style-type: none"> (a) adversely affect traditional harvesting activities that depend on affected fish species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities 	See Section 5.7.5.4
Marine resources (fish and fish habitat, marine mammals)	Change in fish habitat	Potential changes in marine fish habitat could: <ul style="list-style-type: none"> (a) adversely affect traditional harvesting activities that depend on affected fish species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities (c) affect commercial fishing activity carried out by Aboriginal harvesters 	See Section 5.8.5.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
	Harm (physical injury or mortality) to fish and marine mammals	Harm (physical injury or mortality) to marine fish or marine mammals has the potential to: (a) adversely affect traditional harvesting activities that depend on affected fish and marine mammal species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities (c) affect commercial fishing activity carried out by Aboriginal harvesters	See Section 5.8.5.4
	Change in fish health as a result of toxicity	Potential changes in marine fish health as a result of toxicity could: (a) adversely affect traditional harvesting activities that depend on affected fish species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	See Section 5.8.5.3
	Change in behaviour of fish and marine mammals due to pressure waves or underwater noise	Potential changes in marine fish or marine mammal behaviour due to underwater noise or pressure waves could: (a) adversely affect traditional harvesting activities that depend on affected wildlife species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	Facility: See Section 5.8.5.5.Shipping: See Section 5.8.6.2
Surface water quality	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions)	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide and nitrogen oxide emissions) may affect the abundance and quality of harvested species. This could potentially: (a) adversely affect traditional harvesting activities that depend on affected wildlife species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	See Section 5.9.5.2 and Section 5.9.5.3

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
	Eutrophication potential of lakes and streams (related to N emissions)	Eutrophication potential of lakes and streams (related to nitrogen emissions) may affect the abundance and quality of harvested species. This could potentially: (a) adversely affect traditional harvesting activities that depend on affected wildlife species and the Aboriginal social and economic systems that are based on that traditional harvesting activity (b) reduce the consumption of country foods and increase the consumption of less nutritious market food alternatives, leading to changes in diet and nutrition in Aboriginal communities	
Community health and wellbeing	Change in diet and nutrition	Project-related environmental effects could reduce the quality or availability of country foods, resulting in a reduction in food surplus within Aboriginal communities and changes in Aboriginal diet and nutrition. The Project has the potential to reduce the consumption of country foods by Aboriginal people through: <ul style="list-style-type: none"> ▪ changes in accessibility to marine country foods due to the constructed marine terminal ▪ changes in accessibility of terrestrial country foods (including vegetation and wildlife) in the Project footprint ▪ changes in the viability of marine country foods, based on residual effects from Project activities and physical works ▪ changes in the viability of terrestrial country foods, based on residual effects from Project activities and physical works Perceived decreases in quality of country food could lead Aboriginal people to reduce consumption of country foods.	Facility: See Section 7.5.5.3 Shipping: See Section 7.5.6.2
Visual Quality-Related Effects			
Visual quality	Reduction in visual quality (LNG facility)	The Project may alter visual quality from a number of important terrestrial and marine viewpoints with views of the LNG facility and LNG carriers travelling along the marine access route. Aboriginal Groups are concerned about the effects of the LNG facility and related shipping activities on visual quality from marine- and shore-based viewpoints, which may potentially affect tourism, recreation, quality of life and cultural identity.	Facility See Section 7.3.5.2 Shipping See Section 7.3.6.2
	Reduction in visual quality (marine access route)		
Marine Transportation and Use-Related Effects			
Marine transportation and use	Interference with marine fisheries and shoreline harvesting	Interference with marine fisheries and shoreline harvesting conducted by Aboriginal people could potentially adversely affect the Aboriginal social and economic systems that are based on that harvesting activity	See Section 7.4.6.2
	Interference with marine recreation and tourism	Interference with marine recreation and tourism could adversely affect Aboriginal businesses involved in those activities, leading to adverse economic effects in Aboriginal communities.	See Section 7.4.6.3

15.5.2 Project Residual Effects and Cumulative Effects on Aboriginal Socio-Economic Conditions

15.5.2.1 Human Health and Air Quality-Related Residual and Cumulative Effects

Changes in human health, either directly through inhalation or through diet and nutrition, resulting from changes in air quality could have socio-economic effects within the relevant Aboriginal communities. This could contribute to an increased demand on health care and emergency services and poorer health outcomes.

15.5.2.1.1 Project Residual Effects

As described in Section 9.2, Project residual effects are not anticipated to result in a change in human health as a result of changes in SO₂ and NO₂ emissions. There is no potential interaction between shipping and human health beyond what has already been incorporated into the assessment of air quality. Because there is no change in human health as a result of Project emissions, there is no effect on health care, emergency services, poorer health outcomes or diet and nutrition.

15.5.2.1.2 Cumulative Effects

As described in Section 9.2.8.4, changes in CAC concentrations in the Kitimat region that occur between the base and cumulative effects cases do not represent potential human health concerns for PM_{2.5}, CO, and NO₂. Cumulative effects from existing projects, including the expected increases from the RTA facility, will cause an incremental increase in SO₂ concentrations from the base case to the cumulative cases. The increase in potential respiratory events from the base case to the cumulative case is estimated to be less than 0.01%. Therefore, changes in human health associated with changes in SO₂ exposures are negligible, and the effects will be reversible. Therefore, the Project contribution to cumulative effects on human health resulting from changes in air quality is assessed as not significant.

15.5.2.2 Project Residual and Cumulative Effects on Traditional Harvesting

15.5.2.2.1 Project Residual Effects

Effects on vegetation and wildlife resources could potentially affect traditional harvesting and, thus, Aboriginal Groups' socio-economic conditions by:

- adversely affecting traditional harvesting activities that depend on those species and the Aboriginal social and economic systems that are based on that traditional harvesting activity, and
- reducing consumption of country foods among Aboriginal people, resulting in increased consumption of less nutritious market food alternatives and changes in diet and nutrition within Aboriginal communities.

Specific pathways for relevant VCs are listed in Table 15.5-1. Relevant mitigation measures are described in Sections 14.13.3, 14.14.3, and 14.15.3.

As described in Section 14.13.4, residual effects on Aboriginal consumptive harvesting activity due to construction, operation, and decommissioning of the LNG facility are predicted to be low to moderate in magnitude and localized. The majority of residual effects will take place within Aboriginal Interests LSA #1 (see Figure 14.2-1) and residual effects on most TU plants and harvesting locations will be limited to the Project footprint. Certain residual effects on marine species will extend into the marine resources RSA. Residual effects will range from short-term (residual effects on marine harvested species) to long-term or permanent (residual effects on harvesting locations). Residual effects on wildlife and marine species will be reversible. Residual effects on TU vegetation will be irreversible within the Project footprint.

As described in Section 14.13.5, overall residual effects on consumptive harvesting activity due to Project shipping activities are predicted to be low in magnitude. The majority of residual effects will occur within Aboriginal Interests LSA #3 (see Figure 14.2-3), with certain residual effects on harvested marine species extending into the marine resources RSA. The majority of residual effects will be long-term, but reversible.

15.5.2.2.2 Cumulative Effects

Cumulative effects for VCs relating to traditional harvesting are described in Section 14.30. Relevant cumulative effects for Aboriginal traditional harvesting are assessed in the following V.C sections:

- wildlife resources (Section 5.6)
- surface water quality (Section 5.9)
- freshwater and estuarine fish and fish habitat (Section 5.7)
- marine resources (Section 5.8)
- vegetation resources (Section 5.5)
- air quality (Section 5.2)
- human health (Section 9.2)

The cumulative effects on each VC are summarized in Section 14.30 and are not significant after mitigation measures. The summaries for the VCs suggest that the contribution of the Project's residual effects is unlikely to cause a change in cumulative environmental effects that could affect the viability or sustainability of Aboriginal traditional harvesting within the respective RSAs.

15.5.2.3 Residual Effects and Cumulative Effects on Aboriginal Diet and Nutrition

The Project could affect the consumption of country foods through changes in accessibility, availability, viability or perceived decreased quality of country foods. This may lead to conscious decisions to forego consumption of country foods. This may lead to 1) a decrease in food surplus within Aboriginal

communities and changes in Aboriginal diet and nutrition and 2) a decrease in Aboriginal health, which would increase the demand for health services.

15.5.2.3.1 Project Residual Effects

Residual effects on diet and nutrition associated with the LNG facility are moderate in magnitude because Project design (see Section 2) and mitigation measures (see Sections 5.5, 5.6, and 5.7) will reduce adverse effects on the viability of vegetation, wildlife, and fish, thereby reducing adverse effects on the availability of country foods. The largest magnitude of change in access and availability is expected to occur in the Project footprint; therefore, residual effects will be restricted to the community health and wellbeing LSA. Effects on diet and nutrition will be long term in duration but reversible following Project decommissioning.

Residual effects from shipping activities on diet and nutrition during Project construction, operation, and decommissioning will be low in magnitude because Project design (see Section 2) and mitigation measures (see Sections 5.8 and 7.4) will reduce adverse effects on the viability of marine resources and use of marine areas. See Section 7.5 for information on these residual effects.

15.5.2.3.2 Cumulative Effects

As described in Section 7.5.8.3, cumulative residual effects from 23 overlapping projects are not expected to restrict access to or affect the availability of country foods to an extent that diets or nutrition will be adversely affected in the community health and wellbeing RSA, which is a large area that includes all three Aboriginal Interests LSAs. Based on the outcomes of the cumulative effects assessment for the environment VCs (Section 5), cumulative changes in viability of vegetation and wildlife are not expected and will, therefore, not affect the availability of country foods. Although there is the potential for Aboriginal individuals to forego consumption of country foods based on quality concerns, similar awareness and engagement programs to those proposed by LNG Canada and identified in Sections 7.5.5.3 and 7.5.6.2. Therefore, cumulative residual effects will restrict access to or affect the availability of country foods in the RSA to the extent that diets or nutrition will be adversely affected

15.5.2.4 Visual Quality-Related Residual Effects and Cumulative Effects

The Project may alter visual quality from a number of important terrestrial and marine viewpoints with views of the LNG facility and LNG carriers travelling along the marine access route. This may affect tourism, recreation, quality of life and cultural identity.

15.5.2.4.1 Project Residual Effects

On average, a low magnitude reduction in visual quality compared to baseline conditions is predicted. Given the extent of existing visible industrial development, the LNG facility is expected to remain consistent with the scale and character of the current landscape. Residual effects on visual quality are assessed as not significant.

The reduction in visual quality along the marine access route will be, on average, of moderate magnitude. During operation, there will be a high probability of viewing an LNG carrier, on any given day, at a low to moderate visual prominence. The average increase in visual duration is 1.4 hours per day. Because the visual prominence will be at a low to moderate level for LNG carriers at sensitive viewpoints, the residual effect on visual quality is assessed as not significant.

See Sections 7.3.5 and 7.3.6 in the visual quality assessment for information on these conclusions.

15.5.2.4.2 Cumulative Effects

There are approximately 25 other projects in the RSA at various stages of development—operating, approved, proposed, or reasonably foreseeable (see Table 7.3-16). These projects, where they intersect the Project's viewshed, have the potential to result in cumulative effects on visual quality in the facility RSA and the shipping RSA. Proposed or reasonably foreseeable projects in the RSA may contribute to additional changes in vegetation patterns and topography, as viewed from identified viewpoints. The Project contribution to cumulative effects on visual quality in the facility RSA is assessed as not significant because of 1) the maximally modified nature of the LSA and 2) the combined visual effect from the projects will not exceed any established thresholds (see Section 7.3.8).

The shipping requirements of the Project and other operating, approved, proposed and reasonably foreseeable projects within the visual quality shipping RSA could result in a fundamental reduction in visual quality due to increased frequency and duration of large vessels that are visible from viewpoints of importance in the visual quality shipping RSA. Various land and marine management plans are currently under development as a result of collaborative efforts between provincial and federal governments and Aboriginal Groups that may provide future management direction relating to the future large vessel use and activities within the Visual Quality shipping RSA, including effects on visual quality. The Project cumulative effects on visual quality in the shipping RSA are assessed as not significant because of 1) the low to moderate prominence of LNG carriers and 2) effective communications can help Aboriginal Groups and stakeholders to adjust their schedules or routing in order to reduce unwanted views of large vessels, including LNG carriers.

15.5.2.5 Marine Transportation and Use-Related Residual Effects and Cumulative Effects

Marine transportation has the potential to produce interference with marine fisheries and shoreline harvesting conducted by Aboriginal people, which could adversely affect the Aboriginal social and economic systems that are based on that harvesting activity or Aboriginal businesses involved in those activities, leading to adverse economic effects in Aboriginal communities.

15.5.2.5.1 Project Residual Effects

Shipping activities will have low magnitude residual effects on marine fisheries and shoreline harvesting. Overall, while Project shipping activities are predicted to increase traffic by two transits per day, the majority of fishing grounds do not overlap with the marine access route and fishers use gear that precludes interference (e.g., where scuba divers are used). Consequently, the likelihood of adverse effects is low. The Project will not cause persistent interference to marine navigation. Project residual effects related to interference with marine navigation are, therefore, assessed as not significant (see Section 7.4)

Project residual effects of shipping on recreation and tourism are expected to be of negligible magnitude. Residual effects will occur multiple times, twice per day during the operation phase, and on set schedules along a corridor used for shipping since the 1950s. Potential effects will last for a medium duration in an area that has moderate resilience to increased shipping traffic and of low reliance for recreationalists and the eco-tourism industry. Mitigation measures such as the safe-shipping workshops, among others (see Sections 7.4.6.3.2, 7.4.5.3.2, and 7.4.6.2.2), will be important for clarifying expectations regarding navigation around the marine terminal and in close proximity to LNG carriers. Collectively, these mitigation measures will eliminate or reduce potential effects on recreation and tourism to negligible levels.

15.5.2.5.2 Cumulative Effects

As described in Section 7.4.8.4, at full build-out, the Project could increase shipping traffic by up to approximately 350 vessel visits per year along the marine access route from Triple Island to the port of Kitimat. If this Project and all reasonably foreseeable projects are approved, a total of approximately 940 vessel visits per year are expected to use the marine access route. LNG Canada could, therefore, contribute up to approximately one third to the overall projected marine traffic levels. Despite a large relative increase in shipping traffic compared with current levels, cumulative effects on marine transportation and use are assessed as not significant. The increased level of shipping is not expected to result in a persistent decrease in fishing and shoreline harvesting activities because there will be limited spatial overlap and limited interactions between large vessel shipping and fishing/harvesting activities

(see Section 7.4.6.2.3 and Section 7.4.6.2.4). As well, the cumulative change in shipping is not anticipated to result in a persistent decrease in recreation or tourism activities, or quality of experience.

As discussed in Section 7.4.8.2 other west coast BC ports currently accommodate over three times the volume of shipping estimated in the cumulative effects case for the Project, yet support viable fisheries, and recreation and tourism opportunities in their surrounding waters. This also supports the conclusion that the number of large vessel shipping in the cumulative effects case the threshold for when significant adverse effects can occur.

LNG Canada's contribution to cumulative effects will be eliminated or reduced to negligible levels through the implementation of the mitigation measures listed in Sections 7.4.5.2.2, 7.4.5.3.2, 7.4.6.2.2, 7.4.6.3.2. These measures will promote the sustainability of the VC. As such, cumulative effects on marine transportation and use are assessed as not significant.

15.5.3 Conclusions on Aboriginal Socio-economic Conditions

Project residual effects from human health, air quality, marine transportation and use, visual, quality traditional harvesting, and Aboriginal diet and nutrition caused by Project changes to the environment, are all predicted to be not significant. Consequently, based on the analysis above and that all the residual effects range from negligible to moderate in magnitude, LNG Canada predicts that resulting residual effects either individually or in combination on Aboriginal socio-economic conditions are not significant.

The cumulative residual effects on human health, air quality, marine transportation and use, visual quality traditional harvesting, and Aboriginal diet and nutrition are predicted to be not. Based on the analysis above, and that the anticipated cumulative effects will be negligible or will not exceed regulatory thresholds on a persistent basis the resulting cumulative effects either individually or in combination on Aboriginal socio-economic conditions are also predicted to be not significant.

15.5.4 LNG Canada's Conclusions Regarding Adequacy of Mitigation Measures

LNG Canada has, through consultation, sought to develop effective mitigation measures to address potential adverse effects that the Project may have on the environment and, subsequently, may affect Aboriginal Socio-economic conditions. Mitigation measures described in this section are a combination of measures to address the potential effects on specific VCs assessed in Part B and additional mitigation measures developed to respond directly to the specific section 5(1)(c) factor. Based on the mitigation, LNG Canada considers the potential effects on section 5(1)(c) factors to be adequately addressed. However, LNG Canada will continue to consult Aboriginal Groups on the potential adverse effects of the Project, including potential effects on Aboriginal socio-economic conditions, and measures to mitigate

potential adverse effects throughout the Application review phase. This section will be updated to reflect views heard through that process.

15.6 Environmental Effects on Aboriginal Physical and Cultural Heritage

15.6.1 Introduction

In May of 2014, the CEA Agency released a guidance document that defines the value of heritage or any structure, site or thing as originating from its:

- association with one or more important aspects of human history or culture;
- historical, archaeological, paleontological or architectural significance; and
- association with a particular group's practices, traditions or customs.

With respect to Aboriginal people, LNG Canada understands that physical and cultural heritage can include objects, sites, or things, that provide evidence of the distinctive culture and legacy of an Aboriginal Group and has historic, cultural or spiritual value.

15.6.2 Potential Effects, Project Effect Mechanisms and Mitigation Measures

As described in Table 15.6-1, the potential effects of the Project on the environment that may, in turn, affect Aboriginal physical and cultural heritage are relate to potential effects on:

- archaeological and heritage resources (Section 8), and
- traditional harvesting and country food consumption (Sections 7.4, 9.2, and 14).

Additional assessment of cultural and spiritual sites is undertaken in Sections 14.16, 14.17, and 14.18.

The complete list of potential effects, effect mechanisms and cross-references to descriptions of detailed mitigation measures for each of the relevant potential effects on the environment are summarized in Table 15.6-1. Residual effects and cumulative effects are described in Section 15.6.2.

Table 15.6-1: Potential Effects, Effect Mechanisms, and Mitigation Measures

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Physical Heritage-Related Effects			
Archaeological and Heritage Resources	Potential damage to or removal of culturally modified trees (CMTs)	The Project could potentially affect Aboriginal physical and cultural heritage through damage to or removal of culturally modified trees (CMTs)	See Section 8.2.5.2.2
	Alteration or removal of terrestrial archaeological or heritage sites	The Project could potentially affect Aboriginal physical and cultural heritage through alteration or removal of terrestrial archaeological or heritage sites	See Section 8.2.5.3.2
	Alteration or removal of intertidal archaeological or heritage sites	The Project could potentially affect Aboriginal physical and cultural heritage through alteration or removal of intertidal archaeological or heritage sites	n/a
Traditional Harvesting and Country Food Consumption-Related Effects			
Air Quality	Change in ambient air quality in the Kitimat region or along the marine access route	Potential change in acidic deposition patterns in the Kitimat region could affect Aboriginal cultural heritage (through adverse effects on harvested species and associated traditional harvesting activity and consumption of country foods)	Facility: See Section 5.2.5.2.2 Shipping: See Section 5.2.6.2.2
Acoustic Environment	Change (increase) in overall noise levels	Potential change (increase) in overall noise levels could affect Aboriginal cultural heritage by interfering with traditional harvesting activities	<u>Facility:</u> See Section 5.4.5.2.2 <u>Shipping:</u> See Section 5.4.6.2.2
	Increase in low frequency noise during LNG facility construction and operation	Increase in low frequency noise during LNG facility construction and operation could potentially affect Aboriginal cultural heritage by interfering with traditional harvesting activities	
Vegetation Resources	Change in abundance of plant species of interest (e.g., TU plant species)	Potential change in abundance of plant species of interest (e.g., TU plant species) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and consumption of country foods)	See Section 5.5.5.1.3
	Change in abundance or condition of ecological communities of interest	Potential change in abundance or condition of ecological communities of interest could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.5.5.2.3
	Change in native vegetation health and diversity because of air emissions	Potential change in native vegetation health and diversity because of air emissions could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.5.5.3.3
Wildlife Resources (Terrestrial Wildlife, Marine Birds)	Loss or change in habitat for species of interest (e.g., species at risk, TU species)	Loss or change in habitat for species of interest (e.g., species at risk, TU species) could potential affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.6.5.2.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
	Risk of injury or mortality	Risk of injury or mortality could potentially affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.6.5.3.2 Shipping: See Section 5.6.6.2.1
	Sensory disturbance or behavioural alterations	Sensory disturbance or behavioural alterations could potentially affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.6.5.4.2 Shipping: See Section 5.6.6.3.2
Freshwater and Estuarine Fish and Fish Habitat	Changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity)	Potential changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.7.5.2.2
	Change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species)	Potential change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.7.5.3.2
	Change in fish health	Potential changes in fish health could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.7.5.4.2
Marine Resources (Fish and Fish Habitat, Marine Mammals)	Change in fish habitat	Potential changes in fish habitat could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.8.5.2.3
	Harm (physical injury or mortality) to fish and marine mammals	Harm (physical injury or mortality) to fish and marine mammals could potentially affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.8.5.4.3
	Change in fish health as a result of toxicity	A potential change in fish health as a result of toxicity could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.8.5.3.3
	Change in behaviour of fish and marine mammals due to pressure waves or underwater noise	A potential change in behaviour of fish and marine mammals due to pressure waves or underwater noise could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.8.5.5.3 Shipping: See Section 5.8.6.2.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Surface Water Quality	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions)	Acidification of streams and lakes within the LSA and RSA (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.9.5.2.2
	Eutrophication potential of lakes and streams (related to N emissions)	Eutrophication potential of lakes and streams (related to N emissions) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.9.5.3.2
Visual Quality	Reduction in visual quality (LNG facility)	The Project may alter visual quality from a number of important terrestrial and marine viewpoints with views of the LNG facility and LNG carriers travelling along the marine access route. First Nations are concerned about the effects of the LNG facility and related shipping activities on visual quality from marine- and shore-based viewpoints, which may affect the experience of using culturally important sites, and in turn, affect cultural identity.	See Section 7.3.5.2.2
	Reduction in visual quality (marine access route)		See Section 7.3.6.2.2
Community Health and Wellbeing	Change in diet and nutrition	<p>Project-related environmental effects could potentially result in changes in Aboriginal diet and nutrition (through a reduction in consumption of country foods). Given the clear importance of harvesting, sharing and eating of country foods to the cultures of the potentially affected Aboriginal Groups, it is likely that Project-related changes to Aboriginal diet and nutrition could, in turn, adversely affect Aboriginal cultural heritage. The Project has the potential to reduce the consumption of country foods by Aboriginal people through:</p> <ul style="list-style-type: none"> ▪ potential changes in the viability of marine country foods, based on residual effects from Project activities, shipping and physical works ▪ potential changes in the viability of terrestrial country foods, based on residual effects from Project activities and physical works ▪ perceived decrease in quality of country foods leading Aboriginal people to reduce consumption of country foods. 	<p>Facility: See Section 7.5.5.3.2</p> <p>Shipping: See Section 7.5.6.2.2</p>

15.6.3 Residual Effects and Cumulative Effects on Aboriginal Physical and Cultural Heritage

15.6.3.1 Physical Heritage

15.6.3.1.1 Project Residual Effects

Three physical and cultural heritage resources that have the potential to be of concern are CMTs, terrestrial archaeological sites, and intertidal archaeological sites. No CMT sites are identified in the archaeology and heritage resources LSA. The potential for development to conflict with unidentified CMTs in the archaeology and heritage resources LSA is low. With the implementation of the mitigation measures, information regarding traditional CMT harvesting and use will not be lost. Therefore, residual effects on CMTs are assessed as not significant.

One terrestrial archaeological site (TSN 2013-STL-9) cannot be avoided and will be affected during LNG facility construction. Because much of the archaeology and heritage resources LSA has been substantially disturbed, residual effects could occur in a disturbed or an undisturbed archaeological context. The potential for development to conflict with unidentified archaeology and heritage resources is low. With the implementation of the mitigation measures, information regarding archaeology and heritage resources will not be lost. While the residual effects on terrestrial archaeological and heritage resources will occur only once, the residual effects will be permanent and irreversible.

The AIA completed for the Project did not identify any intertidal archaeological or heritage sites.

If new sites are identified in the intertidal component of the archaeology and heritage LSA during ground altering activities, work affecting these sites will cease until they can be properly assessed by a professional archaeologist. If the sites are in conflict with Project works, the preferred mitigation measure will be to avoid these sites through Project redesign. Where site avoidance is not feasible or practical, residual effects on intertidal archaeological and heritage resources will be mitigated through systematic data recovery and detailed documentation of exposed features, as appropriate, to standards defined by the Archaeology Branch.

15.6.3.1.2 Cumulative Effects

The residual effects of the Project on archaeological and heritage resources will be mitigated by the collection of archaeological and historical data to provincial standards, as overseen by the provincial Archaeology Branch. As a result, there will be no loss of archaeological or heritage resources and, therefore, there will be no residual effects. Though other projects may have affected this resource in the past, the lack of residual effects associated with the Project means there is no potential for Project contribution to cumulative effects.

15.6.3.2 Cultural Heritage

15.6.3.2.1 Traditional Harvesting

Project Residual Effects

Project residual effects on traditional harvesting may affect aspects of Aboriginal Groups' cultural heritage by interfering with traditional harvesting activities. Specific pathways for all relevant VCs are detailed in Table 15.6-1. Relevant mitigation measures are described in detail in Sections 14.13.3, 14.14.3, and 14.15.3.

As described in Section 14.13.5, residual effects on Aboriginal consumptive harvesting activity due to construction, operation, and decommissioning of the LNG facility will be low to moderate in magnitude and localized.

As described in Section 14.15.5, overall residual effects on consumptive harvesting activity due to Project shipping activities will be low in magnitude. The majority of residual effects will occur within Aboriginal Interests LSA #3 (see Figure 14.2-3), with certain residual effects on harvested marine species extending into the marine resources RSA. The majority of residual effects will be long-term, but reversible.

Cumulative Effects

Cumulative effects for VCs relating to traditional harvesting are described in Section 14.30. Relevant cumulative effects for Aboriginal traditional harvesting are assessed in the following V.C sections:

- wildlife resources (Section 5.6)
- surface water quality (Section 5.9)
- freshwater and estuarine fish and fish habitat (Section 5.7)
- marine resources (Section 5.8)
- vegetation resources (Section 5.5)
- air quality (Section 5.2)
- human health (Section 9.2)

The cumulative effects on each VC are summarized in Section 14.30 and are not significant after mitigation measures. The summaries for the VCs suggest that the contribution of the Project's residual effects is unlikely to cause a change in cumulative environmental effects that could affect the viability or sustainability of Aboriginal traditional harvesting within the respective RSAs.

15.6.3.2.2 Consumption of Country Foods

Project Residual Effects

As described in Section 15.4, Project-related environmental effects could result in changes in consumption of country foods. Given the clear importance of harvesting, sharing and eating of country foods to the cultures of the potentially affected Aboriginal Groups, it is likely that Project-related changes to Aboriginal diet and nutrition could, in turn, adversely affect Aboriginal cultural heritage.

In general, many aspects of Aboriginal culture are intimately linked to the harvesting, preparation, sharing and consumption of traditional (country) foods.

Residual effects on diet and nutrition associated with the LNG facility will be moderate in magnitude because Project design (see Section 2) and mitigation measures (see Sections 5.5, 5.6, and 5.7) will reduce adverse effects on the viability of vegetation, wildlife, and fish, thereby reducing adverse effects on the availability of country foods. The largest magnitude of change in access and availability is expected to occur in the Project footprint. Effects will be long term in duration but reversible following Project decommissioning.

Residual effects from shipping activities on diet and nutrition during Project construction, operation, and decommissioning will be low in magnitude because Project design (see Section 2) and mitigation measures (see Sections 5.8 and 7.4) will reduce adverse effects on the viability of marine resources and use of marine areas.

Cumulative Effects

As described in Section 7.5.8.3, cumulative residual effects from 23 overlapping projects are not expected to restrict access to or affect the availability of country foods in the community health and wellbeing RSA. Although there is the potential for Aboriginal individuals to forego consumption of country foods based on quality concerns, similar awareness and engagement programs to those proposed by LNG Canada and identified in Section 7.5.5.3 and Section 7.5.6.2 have been developed, are being developed, or are anticipated to be developed by other proponents of projects. Therefore, no cumulative effects on diet and nutrition will occur.

15.6.3.2.3 Visual Quality

Project Residual Effects

The Project may alter visual quality around the facility and along the marine access route. Consequently, there may be effects on visual quality from marine and shore-based viewpoints, which may affect the experience of using culturally important sites, and in turn, affect cultural identity.

Given the extent of existing visible industrial development, the LNG facility is expected to remain consistent with the scale and character of the current landscape. Residual effects on visual quality are assessed as not significant.

The reduction in visual quality along the marine access route will be of moderate magnitude. During operation, there will be a high probability of viewing an LNG carrier, on any given day, at a low to moderate visual prominence. The average increase in visual duration is 1.4 hours per day. Because the visual prominence is estimated at a low to moderate level for LNG carriers at sensitive viewpoints, the residual effect on visual quality is assessed as not significant.

See Section 7.3.5 and Section 7.3.6 for information on these conclusions and Sections 14.16.5.1.2 and 14.18.4.1.2 for potential effects on visual quality as it relates to qualitative changes in the experience of using sites and landscapes features for ritual or spiritually important purposes.

Cumulative Effects

The many other projects within the visual quality RSA that are proposed or reasonably foreseeable have the potential to contribute to cumulative effects to vegetation patterns and topography, as viewed from identified viewpoints. The shipping requirements of the Project and other operating, approved, proposed and reasonably foreseeable projects within the visual quality shipping RSA could result in a fundamental reduction in visual quality due to increased frequency and duration of large vessels that are visible from viewpoints of importance in the visual quality shipping RSA. Various land and marine management plans are currently under development as a result of collaborative efforts between provincial and federal governments and Aboriginal Groups that may provide future management direction relating to the future large vessel use and activities within the visual quality shipping RSA, including effects on visual quality.

15.6.4 Conclusions on Aboriginal Physical and Cultural Heritage

Project residual effects from physical and cultural heritage, the consumption of country foods, and visual quality caused by Project changes to the environment, are all predicted to be not significant. Consequently, based on the analysis above and that all the residual effects range from negligible to moderate in magnitude, LNG Canada predicts that resulting residual effects either individually or in combination on Aboriginal physical and cultural heritage are not significant.

The cumulative residual effects on physical and cultural heritage, the consumption of country foods, and visual quality are predicted to be not significant. Based on the analysis above, and that the anticipated cumulative effects will be negligible or will not exceed regulatory thresholds on a persistent basis the resulting cumulative effects either individually or in combination on Aboriginal physical and cultural heritage are also predicted to be not significant.

15.6.5 LNG Canada’s Conclusions Regarding Adequacy of Mitigation Measures

LNG Canada has, through consultation, sought to develop effective mitigation measures to address potential effects that the Project may have on the environment that may affect Aboriginal physical and cultural heritage. Mitigation measures described in this section are a combination of measures to address the potential effects on specific VCs assessed in Part B and additional mitigation measures developed to respond directly to the specific section 5(1)(c) factor. Based on the mitigation, LNG Canada considers the potential effects on section 5(1)(c) factors to be adequately addressed. However, LNG Canada will continue to consult Aboriginal Groups on the potential adverse effects of the Project, including potential effects on Aboriginal physical and cultural heritage conditions, and measures to mitigate potential adverse effects throughout the Application review phase and this section will be updated to reflect views heard through that process.

15.7 Environmental Effects on the Current Use of Lands and Resources for Traditional Purposes

15.7.1 Potential Effects, Project Effect Mechanisms and Mitigation Measures

As described in Section 14, Project-related effects could adversely affect the current use of land and resources for traditional purposes by Aboriginal people through effects on preferred harvested species, effects on the aesthetic experience of land and marine use, and effects on sites, landforms and natural features associated with ritual or spiritual use. These potential effects are assessed in Section 14.

The VCs listed in Table 15.7-1 have the potential to affect the environment and, in turn, affect the current use of lands and resources for traditional purposes.

Table 15.7-1: Potential Effects, Effect Mechanisms, and Mitigation Measures

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Traditional Harvesting and Country Food Consumption-Related Effects			
Air Quality	Change in ambient air quality in the Kitimat region or along the marine access route	Potential change in acidic deposition patterns in the Kitimat region could affect Aboriginal cultural heritage (through adverse effects on harvested species and associated traditional harvesting activity and consumption of country foods)	Facility: See Section 5.2.5.2.2 Shipping: See Section 5.2.6.2.2
Acoustic Environment	Change (increase) in overall noise levels	Potential change (increase) in overall noise levels could affect Aboriginal cultural heritage by interfering with traditional harvesting activities	Facility: See Section 5.4.5.2.2 Shipping: See Section 5.4.6.2.2
	Increase in low frequency noise during LNG facility construction and operation	Increase in low frequency noise during LNG facility construction and operation could potentially affect Aboriginal cultural heritage by interfering with traditional harvesting activities	

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Vegetation Resources	Change in abundance of plant species of interest (e.g., TU plant species)	Potential change in abundance of plant species of interest (e.g., TU plant species) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and consumption of country foods)	See Section 5.5.5.1.3
	Change in abundance or condition of ecological communities of interest	Potential change in abundance or condition of ecological communities of interest could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.5.5.2.3
	Change in native vegetation health and diversity because of air emissions	Potential change in native vegetation health and diversity because of air emissions could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.5.5.3.3
Wildlife Resources (Terrestrial Wildlife, Marine Birds)	Loss or change in habitat for species of interest (e.g., species at risk, TU species)	Loss or change in habitat for species of interest (e.g., species at risk, TU species) could potential affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.6.5.2.2
	Risk of injury or mortality	Risk of injury or mortality could potentially affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.6.5.3.2 Shipping: See Section 5.6.6.2.1
	Sensory disturbance or behavioural alterations	Sensory disturbance or behavioural alterations could potentially affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.6.5.4.2 Shipping: See Section 5.6.6.3.2
Freshwater and Estuarine Fish and Fish Habitat	Changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity)	Potential changes in fish habitat (i.e., permanent alteration to or destruction of freshwater or estuarine fish habitat, including changes in habitat quality and quantity) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.7.5.2.2
	Change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species)	Potential change in risk of physical injury or mortality to fish (i.e., harm to fish by way of physical injury or mortality to freshwater or estuarine species) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.7.5.3.2
	Change in fish health	Potential changes in fish health could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.7.5.4.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Marine Resources (Fish and Fish Habitat, Marine Mammals)	Change in fish habitat	Potential changes in fish habitat could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.8.5.2.3
	Harm (physical injury or mortality) to fish and marine mammals	Harm (physical injury or mortality) to fish and marine mammals could potentially affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.8.5.4.3
	Change in fish health as a result of toxicity	A potential change in fish health as a result of toxicity could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.8.5.3.3
	Change in behaviour of fish and marine mammals due to pressure waves or underwater noise	A potential change in behaviour of fish and marine mammals due to pressure waves or underwater noise could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	Facility: See Section 5.8.5.5.3 Shipping: See Section 5.8.6.2.2
Surface Water Quality	Acidification of streams and lakes within the Aboriginal Interests LSAs (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions)	Acidification of streams and lakes within the LSA and RSA (related to sulphur dioxide (SO ₂) and nitrogen oxide (NO _x) emissions) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.9.5.2.2
	Eutrophication potential of lakes and streams (related to N emissions)	Eutrophication potential of lakes and streams (related to N emissions) could affect Aboriginal cultural heritage (through adverse effects on traditional harvesting activity and a reduction the consumption of country foods)	See Section 5.9.5.3.2
Visual Quality	Reduction in visual quality (LNG facility)	The Project may alter visual quality from a number of important terrestrial and marine viewpoints with views of the LNG facility and LNG carriers travelling along the marine access route. First Nations are concerned about the effects of the LNG facility and related shipping activities on visual quality from marine- and shore-based viewpoints, which may affect the experience of using culturally important sites, and in turn, affect cultural identity.	See Section 7.3.5.2.2
	Reduction in visual quality (marine access route)		See Section 7.3.6.2.2

Part B Valued Component	Potential Effects	Effect Mechanisms	Mitigation
Community Health and Wellbeing	Change in diet and nutrition	Project-related environmental effects could potentially result in changes in Aboriginal diet and nutrition (through a reduction in consumption of country foods). Given the clear importance of harvesting, sharing and eating of country foods to the cultures of the potentially affected Aboriginal Groups, it is likely that Project-related changes to Aboriginal diet and nutrition could, in turn, adversely affect Aboriginal cultural heritage. The Project has the potential to reduce the consumption of country foods by Aboriginal people through: <ul style="list-style-type: none"> ▪ potential changes in the viability of marine country foods, based on residual effects from Project activities, shipping and physical works ▪ potential changes in the viability of terrestrial country foods, based on residual effects from Project activities and physical works ▪ perceived decrease in quality of country foods leading Aboriginal people to reduce consumption of country foods. 	Facility: See Section 7.5.5.3.2 Shipping: See Section 7.5.6.2.2

The potential effects and effect mechanisms for each of these VCs are included in Section 14 which details the predicted level of interference with Aboriginal Interests. Consistent with the AIR for Section 14, a determination of significance of residual adverse effects is not required. This is in recognition of the unique nature of Aboriginal Interests and the potential inappropriateness of determining whether any effects on a protected Aboriginal Interest is “significant” or “not significant.” Instead, conclusions are provided regarding whether the predicted residual effects may interfere with the exercise of Aboriginal Interests and the predicted level of seriousness of that interference.

Relevant mitigation measures are described in Sections 14. For potential effects on harvesting, see 14.13.3, 14.14.3 and 14.15.3. For potential effects on changes in use of ritual sites, sacred and culturally important sites and landscape features see 14.7.4, 14.18.4 and 14.19.4

The LSAs on potential environmental effects on current use of land and resources for traditional purposes are the same as those for Section 14 (Aboriginal Interests LSA #1, Aboriginal Interests LSA #2, Aboriginal Interests LSA #3). Aboriginal Interests LSA #1 is used for assessing the potential effects of the Project facility on Haisla Nation’s Aboriginal Interests except for those related to emissions from the facility. It is the maximum combined extent of the LSAs for the following VCs assessed in the Application:

- acoustic environment
- vegetation (excluding consideration of effects caused by Project emissions)

- wildlife
- freshwater and estuarine fish
- marine resources (facility), and
- visual quality (facility).

Aboriginal Interests LSA #2 captures potential adverse effects of Project air emissions, including the resulting potential effects on surface water quality and vegetation. Aboriginal Interests LSA #3 is the same area as the LSA used for the Visual Quality VC for the marine access route. It captures relevant potential adverse effects of Project marine traffic on a broad range of relevant VCs examined in Part B, including:

- wildlife resources
- marine resources
- marine transportation and use
- human health effects, and
- community health and wellbeing.

For more information on the LSAs, see Section 14.2.6.1.

The LSAs are the same as those for Section 14 (Aboriginal Interests LSA #1, Aboriginal Interests LSA #2, Aboriginal Interests LSA #3). For more information on the LSAs, see Section 14.2.6.1.

15.7.2 Residual Effects and Cumulative Effects on the Current Use of Lands and Resources for Traditional Purposes

15.7.2.1 Residual Effects

Section 14 contains information regarding the current use of lands and resources for traditional purposes, and assess potential project effects on Aboriginal interests. The topic covered include harvesting resources, use of ritual sites, sacred and culturally important sites and landscape features.

Section 14.13.4 concludes that the construction, operation and decommissioning of the Project will have a low to moderate level of interference with harvesting-related Aboriginal Interests in LSA #1; however, there would be a high level of interference with potential Haisla Nation harvesting-related Aboriginal Interests within the Project footprint during operations as a result of restricted access. Project-related limitations on Haisla Nation harvesting activities may impose some added burden on Haisla Nation members because certain traditional use areas will no longer be available, but it is unlikely that it would result in undue hardship given the existing industrial nature and current level of human activity and disturbance in the Project footprint ,and areas that would be most affected by the LNG facility, and the remaining availability of other largely unaffected potential harvesting areas immediately surrounding the

Project footprint. Consequently, LNG Canada expects that residual effects of the LNG facility would not deny Haisla Nation members their preferred means of exercising their harvesting rights.

The Project will have a low to moderate level of interference with harvesting-related Aboriginal Interests in Aboriginal Interests LSA #2.

with respect to Haisla Nation harvesting-related Aboriginal Interests within LSA #2 as a result of facility emissions, and a low level of interference for the other potentially affected Aboriginal groups who harvest within LSA #2. It is unlikely that residual effects associated with facility emissions will place added burden on Aboriginal traditional harvesters within LSA #2 or result in undue hardship. LNG Canada expects that facility emissions-related residual effects within Aboriginal Interests LSA #2 would not deny Aboriginal Group members their preferred means of exercising their harvesting rights.

For LSA # 3, overall residual effects on consumptive harvesting activities from Project shipping activities are assessed as having a low level of interference (see Section 14.15.4 for details). From the analysis of potential effects on harvested species and marine/intertidal harvesting activities and locations, LNG Canada has concluded that there would be a very small but measurable interference with harvesting-related Aboriginal Interests. Any resulting limitation would be negligible, would not impose added burden on Aboriginal traditional harvesters, and would not deny them their preferred means of exercising Aboriginal Interests.

Table 15.7-2: Degree of Interference with Current Use of Lands and Resources for Traditional Harvesting Practises¹:

	Limitation on Aboriginal Interest imposes “undue” hardship	Limitation would deny rights-holder preferred means of exercising Aboriginal Interest	Limitation interferes with Aboriginal Interest in “more than insignificant or trivial” way	Level of Interference
LSA # 1	No	No	Yes	Low to Moderate
LSA # 2	No	No	Yes	Low to moderate (Haisla Nation) Low (Non-Haisla Nation Aboriginal Groups)
LSA # 3	No	No	No	Low

NOTES:

1. Language adapted from *William v. British Columbia*, 2012 BCCA 285 (CanLII)

As presented in Section 14.16.4, residual effects on use of sacred and culturally important sites and landscapes features due to the construction, operation, or decommissioning of the Project will be negligible to low in magnitude. It is unlikely that any resulting limitation on the use of sacred and culturally important sites and landscape features would impose “undue” hardship or would deny Aboriginal people

their preferred means of using sacred and culturally important sites and landscape features. It is unlikely that any resulting limitation would interfere with that use in “more than insignificant or trivial” way (see table 15.7-3).

Section 14.17.5 presents the assessment of potential effects on the use of sacred and culturally important sites due to project related emissions. The conclusion is that Project emissions will result in no limitations on the use of sacred and culturally important sites and landscape features within LSA #2 . Project emissions will not impose “undue” hardship or deny Aboriginal people their preferred means of using sacred and culturally important sites and landscape features. No interference is predicted.

As described in Section 14.18.4, Project-related shipping activities will have a low magnitude residual effect on the use of sacred and culturally important sites.

With regard to visual quality, the lack of detail about the exact locations of landforms with respect to viewing passing LNG carriers makes prediction confidence moderate. However, assuming that at least some of the viewpoints occur along shorelines, the residual effect from the visual quality viewpoints is assumed to be accurate.

Table 15.7-3: Degree of Interference with Aboriginal Interests Associated with Use of Sacred and Culturally Important Sites and Landscape Features¹

	Limitation on Aboriginal Interest imposes “undue” hardship	Limitation will deny rights-holder preferred means of exercising Aboriginal Interest	Limitation interferes with Aboriginal Interest in “more than insignificant or trivial” way	Predicted Degree of Interference
LSA # 1	No	No	No	Low
LSA # 2	No	No	No	No interference
LSA # 3	No	No	No	Low

NOTES:

1. Language adapted from *William v. British Columbia*, 2012 BCCA 285 (CanLII)

15.7.2.2 Cumulative Effects

As per the requirements of the AIR, Section 14.30 describes the cumulative effects on those VCs assessed in Part B that are associated with Aboriginal Interests. See Section 14.30 for more information. Relevant cumulative effects for Aboriginal traditional harvesting are assessed in the following V.C sections:

- wildlife resources (Section 5.6)
- surface water quality (Section 5.9)
- freshwater and estuarine fish and fish habitat (Section 5.7)

- marine resources (Section 5.8)
- vegetation resources (Section 5.5)
- air quality (Section 5.2)
- human health (Section 9.2)

The cumulative effects on each VC are summarized in Section 14.30 and are not significant after mitigation measures. The summaries for the VCs suggest that the contribution of the Project's residual effects is unlikely to cause a change in cumulative environmental effects that could affect the viability or sustainability of Aboriginal traditional harvesting within the respective RSAs.

15.7.3 Conclusions on Current Use of Lands and Resources for Traditional Purposes

Project residual effects on traditional harvesting, changes in use of ritual sites, sacred and culturally important sites and landscape features caused by Project changes to the environment, are all predicted to be not significant. Consequently, based on the analysis above and that all the residual effects range from negligible to low in magnitude, LNG Canada predicts that resulting residual effects either individually or in combination on current use of lands and resources for traditional purposes are not significant.

The cumulative residual effects on traditional harvesting, changes in use of ritual sites, sacred and culturally important sites and landscape features are predicted to be not significant. Based on the analysis above, and that the anticipated cumulative effects will be negligible or will not exceed regulatory thresholds on a persistent basis the resulting cumulative effects either individually or in combination on the current use of lands and resources for traditional purposes are also predicted to be not significant.

15.7.4 LNG Canada's Conclusions Regarding Adequacy of Mitigation Measures

LNG Canada has, through consultation, sought to develop effective mitigation measures to address potential effects that the Project might have on the environment that could affect Aboriginal current use of lands and resources for traditional purposes. Mitigation measures described in this section are a combination of measures to address the potential effects on specific VCs assessed in Part B and additional mitigation measures developed to respond directly to the specific section 5(1)(c) factor. Based on the mitigation, LNG Canada considers the potential effects on section 5(1)(c) factors to be adequately addressed. However, LNG Canada will continue to consult Aboriginal Groups on the potential adverse effects of the Project, including potential effects on Aboriginal current use of lands and resources for traditional purposes and measures to mitigate potential adverse effects. Throughout the Application review phase, this section will be updated to reflect views heard through that process.

15.8 Summary of Potential Effects on Section 5(1)(c) Factors

The potential residual effects that the Project may have on the “environment” as that term is defined in CEEA, 2012, range from negligible to moderate in magnitude, depending on the section 5(1)(c) factor.

For residual effects and cumulative effects on Aboriginal health, LNG Canada has assessed negligible to low magnitude effects on three of the four potential Project effects listed in Table 15.3-1. LNG Canada has assessed a low to moderate effect on country food consumption and Aboriginal diet and nutrition, with the largest effect being localized in or immediately surrounding the Project footprint.

For residual effects and cumulative effects on Aboriginal socio-economic conditions, there will be low to negligible magnitude effects on two of the five potential Project effects listed in Table 15.3-1. LNG Canada has assessed a moderate effect on effect on traditional harvesting and Aboriginal diet and nutrition in LSA #1 and LSA #2, with the largest effect being localized in the area in and immediately surrounding the Project footprint. Overall, residual effects on consumptive harvesting activity due to Project shipping activities will be low in magnitude. The reduction in visual quality along the marine access route is assessed to be, on average, of moderate magnitude

For residual effects on Aboriginal physical and cultural heritage, there will be low to moderate magnitude residual effects on both physical and cultural heritage, with residual effects taking place primarily in the Project footprint. There will be no cumulative effects on Aboriginal physical heritage.

For effects on the current use of lands and resources for traditional purposes, the LNG facility will have a low to moderate magnitude effect in Aboriginal Interest LSA # 1; a negligible to low magnitude residual effect in the Aboriginal Interests LSA #2; and low magnitude effects in the Aboriginal interest LSA # 3.

LNG Canada considers the potential effects on section 5(1)(c) factors to be adequately addressed. LNG Canada will continue to consult with potentially affected Aboriginal Groups on the potential adverse effects of the Project on section 5(1)(c) factors and measures to mitigate potential adverse effects throughout the Application review phase; this section will be updated to reflect views heard through that process.

15.9 Views of Aboriginal Groups

As described in Section 13.2, LNG Canada sought the views of Aboriginal Groups on this section of the EA Application

Gitxaala Nation expressed an interest in a cumulative effects assessment carried out with respect to harvesting activities currently undertaken by Aboriginal Groups. Gitxaala Nation also notes that in order to understand the mitigation being proposed by LNG Canada in relation to potential effects, as well as LNG

Canada's confidence predictions for the adequacy of these measures, Gitxaala Nation needs the opportunity to review the mitigation measures cited in this table.

No other views specific to this section were received from Aboriginal Groups.