21 CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

21.1 Introduction

Current Use of Lands and Resources for Traditional Purposes is a valued component (VC) because of the importance of the project area for use by Aboriginal people. This assessment is based on known or potential current use of Lelu Island and surrounding areas, including, but not limited to hunting, fishing, harvesting marine resources, gathering plants, tree-cutting and bark harvesting, taking part in culturally and spiritually important ceremonies, teaching and camping.

To assess potential effects, information was incorporated from several other sections in this EIS/Application related to potential project interactions with the current use of land and resources for traditional purposes:

- Section 6: Air Quality
- Section 8: Acoustic Environment
- Section 9: Ambient Light
- Section 10: Vegetation and Wetland Resources
- Section 11: Terrestrial Wildlife and Marine Birds
- Section 12: Freshwater Aquatic Resources
- Section 13: Marine Resources
- Section 17: Visual Quality
- Section 19: Human and Ecological Health
- Section 20: Archaeological and Heritage Resources
- Vegetation and Wetlands TDR (see Appendix E).

Additional information relating to Aboriginal issues is found in the following EIS/Application sections:

- Aboriginal Information Distribution and Consultation (Section 3.2)
- Effects of Changes to the Environment (Section 26.1)
- Aboriginal Rights (Section 27.1)
- Other Matters of Concern to Aboriginal People (Section 27.2).

Potential effects on current use of lands and resources for traditional purposes arising from accidents and malfunctions are addressed separately in the EIS/Application (Section 22).

21.2 Scope of Assessment

21.2.1 Regulatory and Policy Setting

As set out in *Schedule B – Aboriginal Groups* of the Section 11 Order issued by the British Columbia Environmental Assessment Office (BC EAO) on September 17, 2013, and Section 9.2 of the *Final Environmental Impact Statement Guidelines* issued by the Canadian Environmental Assessment Agency (CEA Agency) on June 7, 2013, five First Nations communities have potential or established Aboriginal rights and related interests on Lelu Island and the surrounding area:

- Metlakatla First Nation
- Lax Kw'alaams First Nation
- Gitxaala Nation
- Kitselas First Nation
- Kitsumkalum First Nation.

Gitga'at First Nation has also asserted that its members currently use lands and resources for traditional purposes within the Prince Rupert Harbour area. Information related to that assertion has been incorporated into the assessment for this VC.

21.2.2 Influence of Consultation on the Assessment

Traditional knowledge (TK) and traditional use (TU) information provided by the potentially affected Aboriginal groups informed the description of baseline conditions for this assessment, and influenced the assessment of potential effects on the VC and the development and refinement of mitigation measures as well. The Metlakatla First Nation has provided a project-specific study to PNW LNG titled "Metlakatla First Nation Traditional Land Use and Ecological Knowledge of the Proposed Pacific NorthWest LNG Project Interim Report" (the "Metlakatla Interim Report") (DM Cultural Services Limited and Metlakatla First Nations 2013). Information from that interim report was incorporated into this VC. At the time of writing, project-specific TK/TU studies from other Aboriginal groups were not available for use by PNW LNG; therefore, publicly available TK/TU information was used to inform the description of baseline conditions for this assessment, to characterize potential effects on the VC, and to develop mitigation measures.

During engagement activities, Aboriginal groups raised several key issues and concerns (see Section 27.1.3, Summary of Engagement Activities). These issues and concerns are summarized in Table 21-1.

Table 21-1: Aboriginal Group Issues or Concerns

Issue or Concern	Detailed Description	Influence on the Assessment
Effects on Fishing and Marine Harvesting	Aboriginal groups have expressed their concerns regarding the potential effect of the Project on their fishing and marine harvesting activities, with specific concern for potential effects on the traditional harvesting of seaweed, eulachon, salmon (e.g., Chinook, coho, chum), halibut, cod and crab.	Effects of the Project on Aboriginal fishing and marine harvesting activity are assessed in this section.
Location and Length of Trestle	Aboriginal groups have expressed their concerns about the length of the trestle and how it may affect Aboriginal fishing and marine navigation (e.g., local small vessel traffic).	Effects of the trestle on Aboriginal fishing and marine navigation are discussed in subsection 21.5.2.3, Characterization of Residual Effects.
Archaeology	Aboriginal groups have expressed an interest in collecting information on archeological sites and artifacts on Lelu Island and mitigating potential impacts on them.	Section 20, Archaeological and Heritage Resources, assesses potential effects of the Project on culturally modified trees and other archaeological or heritage sites protected under the *Heritage Conservation Act* and/or those that are important to Aboriginal groups.
Cumulative Effects	Aboriginal groups are concerned about cumulative effects of the Project and have stated that the scope of the cumulative effects assessment should include other LNG facilities and associated pipelines that are planned for the north coast.	Cumulative effects are assessed as appropriate in each VC.
Air Emissions from the Project	Aboriginal groups have expressed concern about how air emissions from the Project would affect vegetation, wildlife and human health. Aboriginal groups are also concerned about the generation of greenhouse gases from power sources for the Project.	Air quality is assessed in Section 6, and the assessment findings are referenced in the following other sections: ▪ Greenhouse Gas Management (Section 7) ▪ Vegetation and Wetland Resources (Section 10) ▪ Freshwater Aquatic Resources (Section 12) ▪ Human and Ecological Health (Section 19) ▪ Current use of Land and Resources for Traditional Purposes (Section 21). Potential effects on the Air Quality VC from Accidents and Malfunctions are addressed in Section 22. Potential environmental effects of GHG emissions associated with the Project are assessed in Section 7.
Risks of Shipping Accidents	Aboriginal groups have expressed concern about the effects and risks posed by project-related shipping activity.	Effects of Potential Accidents and Malfunctions (Section 22) evaluates potential effects of any project-related accident or malfunction that may be associated with an adverse environmental or human health effect.

In addition to the issues listed above, representatives of Aboriginal groups at Project Working Group meetings raised other issues:

- Potential effects of the Project on important fish habitat and juvenile salmon (especially those that gather in the area of the trestle)
- Ballast water management and the threat of invasive species carried in ballast water
- Perception of risk to health and safety from the Project and how that perception may affect current use of the LAA
- Safety concerns regarding use of alternative navigation routes (other than Lelu Slough and the channel west of Flora Bank) if the Project restricts navigation
- Potential effects on view-sheds and viewpoints (including ocean viewpoints)
- Potentially adverse environmental effects of marine blasting activities.

21.2.3 Selection of Potential Effects

The Project may adversely affect current use of lands and resources for traditional purposes by Aboriginal people. Therefore, the key potential effect addressed in this VC is the effect on Current Use of Lands and Resources for Traditional Purposes.

21.2.4 Selection of Measurable Parameters

The following sub-components are used to assess the change to the current use of land and resources for traditional purposes by Aboriginal people:

- Change in preferred harvested species
- Interference with use of, or access to, traditional use locations and marine harvesting areas
- Project-related light, acoustic, visual quality or air quality effects that may degrade the experience of those who take part in traditional use activities.

“Alteration or destruction of natural landforms and natural features that may play an important role in traditional use practices” was also considered as a measurable parameter for assessing this VC. However, as no specific landforms or natural features were identified as important for traditional use practices, and no concern about use of landforms was raised during consultation, this parameter has not been used for the assessment.

Table 21-2 lists these sub-components and the corresponding measurable parameters and units of measurement. The measurable parameters listed in 2 are based on results of engagement activities and similar assessments for other projects.

Table 21-2: Measurable Parameters for Current Use of Land and Resources for Traditional Purposes

Effect	Sub-component	Measurable Parameters and Units of Measurement
Changes to current use of lands and resources for traditional purposes by Aboriginal people	Harvested species	▪ Quantitative changes in preferred harvested species
	Traditional use locations, access routes, and marine harvesting areas	▪ Changes in, or restrictions on, preferred identified harvesting methods ▪ Quantity and quality of identified valued traditional use locations and access corridors where use or access to those locations is changed ▪ Quantity, quality, and accessibility of similar alternate locations where traditional use of the land and resources remains unaffected by the Project
	Experience of using lands and resources for traditional purposes	▪ Qualitative changes in the experience of using the land and resources for traditional purposes

21.2.5 Boundaries

21.2.5.1 Temporal Boundaries

Based on the current project schedule, the temporal boundaries for each project phase are:

- **Construction:** Q1 2015 – Q4 2018
- **Operations:** Q1 2019 – 2048+
- **Decommissioning:** 2048+

21.2.5.2 Spatial Boundaries

Figure 21-1 illustrates the spatial boundaries for this VC.

Project Development Area

The project development area (PDA) is approximately 261 ha, including approximately 160 ha on Lelu Island and 100 ha of marine infrastructure. The project components on the mainland are limited to infrastructure connecting the bridge and road from Lelu Island to the mainland, with a disturbance area of less than 1 ha.

Local Assessment Area

The Local Assessment Area (LAA) includes Lelu Island, Stapledon Island, Ridley Island, Kitson Island, the Kinahan Islands, adjacent marine areas including Porpoise Channel, Flora Bank, Porpoise Harbour, Inverness Passage and Chatham Sound, and the proposed shipping route between the marine terminal and the pilot boarding station at Triple Island. The majority of the project-related effects on this VC will occur within the boundaries of the PDA and surrounding marine areas.

To capture potential effects from a broader range of related VCs the LAA also includes the wider area of all of Prince Rupert Harbour, the two communities of Prince Rupert and Port Edward, Kaien Island, most of Digby Island, and Smith Island. These boundaries include the respective LAAs for marine resources, air quality, and human and ecological health and reflect concerns raised during Aboriginal engagement.

Regional Assessment Area

The Regional Assessment Area (RAA) (see Figure 21-1) includes the RAAs for marine resources, air quality, and human and ecological health. The RAA includes the Project's contribution to potential cumulative effects, in combination with other projects and activities.

21.2.5.3 Administrative and Technical Boundaries

Metlakatla First Nation, Lax Kw'alaams First Nation, Gitxaala Nation, Kitselas First Nation and Kitsumkalum First Nation have each signed strategic land use planning agreements with the Province of BC. Table 21-3 provides details on those agreements.

Table 21-3: Land Use Planning Agreements

First Nation	Title and Date	Details
Metlakatla First Nation	*Strategic Land Use Planning Agreement* (2006)	▪ Management intent for Kinahan Islands is to maintain traditional and recreational use, cultural heritage features and values. ▪ Management intent for Kennedy Island and Stephens Island is to maintain their ecological integrity, traditional activities and opportunities for nature-based tourism by establishing a Protection Area.
Lax Kw'alaams First Nation	*Strategic Land Use Planning Agreement* (2008)	▪ The agreement includes a map produced by the Lax Kw'alaams First Nation as part of the development of their own land use plan showing designated land use areas. ▪ Lelu Island and waters to the south and southwest are designated as stewardship areas by the Lax Kw'alaams First Nation, and Kennedy Island, Melville Island, Stephens Island and the northern coastline of Porcher Island are designated as cultural and natural areas.
Gitxaala Nation	*Strategic Land Use Planning Agreement* (2006)	▪ Management intent for Kennedy Island, Stephens Island, and West Porcher Island is to maintain ecological integrity and traditional activities. ▪ Contains a number of management objectives for Gitxaala cultural heritage and traditional resources, cedar and culturally modified trees (CMT), freshwater ecosystems and habitats, landscape level and stand level biodiversity, and grizzly bear habitat.
Kitselas First Nation	*North Coast Strategic Land Use Planning Agreement* (2006)	▪ Sets out land use zones, designations and allowable uses, and management objectives for the designated Land and Resource Management Plan boundary, which includes Lelu Island and Prince Rupert Harbour; however, specific Management plans for Lelu Island are not detailed.
Kitsumkalum First Nation	*North Coast Strategic Land Use Planning Agreement* (2006)	▪ Sets out land use zones, designations and allowable uses, and management objectives for the designated Land and Resource Management Plan boundary, which includes Lelu Island and Prince Rupert Harbour; however, . Specific Management plans for Lelu Island are not detailed.

Sources: Lax Kw'alaams First Nation and the Province of British Columbia 2008; Metlakatla First Nation and the Province of British Columbia 2006; Province of BC and Gitxaala Nation 2006; Kitselas First Nation and the Province of British Columbia 2006; Kitsumkalum First Nation and the Province of British Columbia 2006.

A bivalve shellfish closure for Paralytic Shellfish Poisoning (red tide) and other marine toxins exists for all sub areas of the Pacific fishery management areas (PFMA) 4. This applies to oysters, clams, scallops, mussels, and geoducks (DFO 2013). The majority of PFMAs 1 through 10 are closed to the harvesting of bivalve shellfish due to the inconsistent and incomplete biotoxin monitoring program and water quality testing program on the North Coast of BC (see Section 13, Marine Resources). There are specific openings in well-defined areas that have fisheries with established management programs. These fisheries have all necessary components in place (biotoxin monitoring, water quality testing) to be classified as "approved" for shellfish harvesting and meet all of the requirements set out under the Canadian Shellfish Sanitation Program (see Section 13, Marine Resources).

There is a Sanitary Shellfish Closure (number 4.3), "Prince Rupert Harbour" that encompasses most of the LAA (except the MOF and pioneer dock sites). Shellfish harvesting is prohibited within this area, which is one of many sanitary closures related to release of untreated domestic sewage on the North Coast (DFO 2013).

The bivalve closure area affects all of Lelu Island except on the northwest coast, through Porpoise Channel and Porpoise Harbour (DFO 2012).

21.2.6 Residual Effects Description Criteria

See Table 21-4 for the criteria used to assess the residual effects from the Project.

Table 21-4: Characterization of Residual Environmental Effects Criteria

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
Characterization of Residual Effects		
Context	Refers primarily to the current and future sensitivity and resilience of the VC to change caused by the Project. Consideration of context draws heavily on the description of existing conditions of the VC, which reflect cumulative effects of other projects and activities that have been carried out, the degree of current disturbance or interference with Aboriginal traditional activities, culture and communities, and especially information about the impact of natural and human-caused trends in the condition of the VC.	**L**—Low resilience, Aboriginal rights not widely exercised (less than 29%); minimal disturbance of traditional community structures; minimal interference with traditional land use; minimal use of Aboriginal languages; level of community dysfunction and level of baseline disturbance may be a contributing factor. **M**—Moderate resilience, Aboriginal rights exercised by approximately 30-60% of community members and there is moderate interference with those rights; traditional community structures in place (although possibly in modified form); some use of Aboriginal languages by community members; level of baseline disturbance may be a contributing factor. **H**—High resilience, Aboriginal rights exercised by 61% or more of community members; little interference with Aboriginal rights; robust traditions and traditional community structures; majority use of Aboriginal languages; baseline disturbance unlikely to be a contributing factor.

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
Magnitude	Refers to the expected size or severity of the residual effect. When evaluating magnitude of residual effects, consider the proportion of the VC affected within the spatial boundaries and the relative effect.	**N**—Negligible, no measurable change. **L**—Low, very small detectable change from baseline; no exacerbation of existing conditions. **M**—Moderate, varies from baseline and may result in noticeable changes to traditional practices, traditional knowledge or community perceptions of traditional territory, practises or knowledge; moderate exacerbation of existing conditions. **H**—High, varies from baseline to a high degree, has serious implication for the continuance of traditional practices and traditional knowledge; greatly exacerbates existing conditions.
Extent	Refers to the spatial scale over which the residual effect is expected to occur.	**PDA**—Effect is restricted to the project development area. **LAA**—Effect is prevalent in the LAA. **RAA**—Effect is prevalent in the RAA.
Duration	Refers to the length of time the residual effect persists—which may be longer than the duration of the physical work or activity that gave rise to the residual effect.	**ST**—Short-term, effect restricted to construction phase. **MT**—Medium-term, effect extends through the duration of construction, operations and decommissioning. **LT**—Long-term, effects extend beyond decommissioning and after closure. **P**—Permanent, measurable parameter unlikely to recover to baseline; with regard to cultural knowledge and practices; any duration longer than a generation can be considered permanent.
Reversibility	Pertains to whether or not the residual effect on the VC can be reversed once the physical work or activity causing the disturbance ceases.	**R**—Reversible, will recover after project decommissioning. **I**—Irreversible, permanent.
Frequency	Refers to how often the residual effect occurs and is usually closely related to the frequency of the physical work or activity causing the residual effect.	**S**—Single event, happens one time. **MIR**—Multiple irregular event, will happen more than one time but not in a predictable way. **MRE**—Multiple regular event, will happen more than one time but in a predictable way. **C**—Continuous, effect occurs continuously.
Likelihood of Residual Effects		
Likelihood	Refers to whether or not a residual effect is likely to occur.	**L**—Low probability of occurrence. **M**—Medium probability of occurrence. **H**—High probability of occurrence.

21.2.7 Significance Threshold for Residual Effects

Significance thresholds for residual effects reflect the limits of an acceptable state for an environmental component based on resource management objectives, community standards, scientific literature, or ecological processes (e.g., desired states for wildlife habitats or populations).

A residual adverse effect on the current use of land and resources for traditional purposes would be considered significant if it is likely to result in high degree of change in a traditional land use practice or traditional resource use, is prevalent within the LAA, has serious implication for the continuance of traditional practices and traditional knowledge, and will last longer than a generation.

21.3 Baseline Conditions

21.3.1 Baseline Methods and Data Sources

Baseline data sources for this assessment include information from:

- Metlakatla Interim Report (DM Cultural Services Limited and Metlakatla First Nations 2013)
- Past research conducted in the region
- Publicly available TK/TU information
- Engagement with potentially affected Aboriginal groups
- Baseline data gathered for the assessments of other VCs.

In addition to the Metlakatla Interim Report, the following public sources were used:

- Academic Sources, including PhD theses and journal articles (i.e., Coupland 1985, Halpin and Seguin 1990, Matthews and Young 2005, McDonald 1985, 2006)
- Books and other reference materials (i.e., Berthiaume 2011, Boas 1916, Emmons 1912, Haggarty and Lutz. 2006, McDonald 2003, Miller 1997, Muckle 2007, Moerman 1998)
- Technical reports (i.e., Ference Weicker & Company Ltd. 2009, Gill and Ritchie 2011, Marsden 2011, 2012, Menzies 2011, Satterfield et al 2012, Seguin Anderson 2006).

In addition, for the purposes of this EIS/Application, PNW LNG commissioned a report that synthesized available information regarding current and past use of Lelu Island (Clark 2013).

21.3.2 Overview of Baseline Conditions

The land and waters in the LAA have been intensively used for thousands of years by Aboriginal people for hunting, fishing, marine harvesting and gathering of trees and plants for food, medicines and technological uses. Ancient village sites and seasonal resource-gathering sites are found throughout the LAA. Aboriginal people continue to use the LAA for traditional harvesting including food from the ocean and rivers. Fishing (especially for salmon) and harvesting of shellfish remains vitally important to the five Aboriginal groups.

Publicly available information identifies areas within the LAA as important and valued traditional use locations (Table 21-5). For example, in their submissions to the Enbridge Northern Gateway Project Joint Review Panel, Kitsumkalum First Nation emphasized the importance of Chatham Sound, Skeena River, the Ecstall River, and Port Essington (“Spokechute”) (Kitsumkalum Band 2012). Kitsumkalum First Nation members have also noted their harvesting of salmon, halibut and eulachon between Lelu Island and Inverness Passage and their use of Inverness Passage as an important travel route (Kitsumkalum Indian Band, pers. comm. 2013).

In a map submitted to the Enbridge Northern Gateway Project Joint Review Panel, Metlakatla First Nation identified that they fish for salmon in Inverness Passage, in Chatham Sound (including waters

immediately to the west of Ridley Island), in Brown Passage, and in the area surrounding the Tree Nob Group of islands. The Metlakatla First Nation also identified that they fish for other species in waters located directly to the south and west of Lelu Island, within Chatham Sound more generally, and out into Brown Passage. In addition, the maps show that they harvest marine plants throughout the Kinahan Islands, and harvest seaweed in both the Tree Nob Group of Islands and along the southern coast of Melville Island (Metlakatla First Nation 2011). The Metlakatla Interim Report does not include TLU site distribution in the PDA, LAA or RAA; however, site distribution in the PDA and shipping route is anticipated for the final report (DMCS 2013).

The Metlakatla Interim Report lists plant, fish and animal species used for food, trade, ceremonies, medicines and materials. Metlakatla First Nation members use several seabird hunting sites on Lelu Island, the Kinahan Islands and Kitson Island (DM Cultural Services Limited and Metlakatla First Nations 2013).

At the time of writing, project-specific TK/TU studies for Gitxaala, Lax Kw'alaams First Nation, Kitselas First Nation, and Kitsumkalum First Nation were not available. Therefore other sources of publicly available information were used (see Section 21.3.1 for more information on sources used).

PNW LNG has also been informed that Gitga'at First Nation members use lands and resources for traditional purposes within the Prince Rupert Harbour area.

Aboriginal traditional users that currently use Lelu Island would likely hear a mix of sounds generated by the natural environment (e.g., waves, wind, birdsong) and sounds caused by human activities (e.g., boat traffic, rail traffic, aircraft flyovers).

Thirty archaeological sites (e.g., shell middens, culturally modified trees) have been recorded within a five km radius of Lelu Island. Archaeological work on Lelu Island has identified over 430 culturally modified trees (see Section 20). Throughout Lelu Island, there is evidence of historic logging, more recently logged trees and the presence of an abandoned cabin (and refuse piles) of unknown date (see Section 20).

Table 21-5 provides examples of traditional use locations within the LAA.

Table 21-5: Examples of Traditional Use Locations within the LAA

Location	Sub-location	Traditional Activity	Target Species	Assessment Area
Porcher Island	North end at Island Point	Hunting	Marine mammals and seagull egg gathering	On the southern boundary of the LAA
	North end	Vegetation harvesting	Medicinal plants and marine plants	RAA but just south of the LAA boundary
	North end	Fishing	Salmon, herring, herring egg gathering	RAA but just south of LAA boundary

Location	Sub-location	Traditional Activity	Target Species	Assessment Area
Kaien Island	West coast	Fishing Hunting Vegetation harvesting	Cod, salmon, sea mammals, halibut Devil's club, hellebore, cedar planks and bark), and berries (salmonberries, blueberries, gooseberries	LAA
	Sandbar north of Casey Point	Shellfish harvesting Marine harvesting	Shellfish, clams, crabs, cockles, urchin, shrimp, sea cucumbers, and geoduck	LAA
	Southern sections of Kaien Island	Vegetation harvesting	Medicinal plants	LAA
Kinahan Islands	Entire area	Marine plant harvesting Hunting	Seaweed, seabirds, salmon	LAA
Kitson Island	Entire area	Hunting Fishing	Seabirds, ground-fish, salmon	LAA
Lucy Islands	Entire coastline	Fishing Marine harvesting	Salmon and other fish, sea birds and their eggs	LAA
Chatham Sound	Coastlines and islands	Hunting	Seabirds	LAA
Digby Island	N/A	Vegetation harvesting Marine harvesting Hunting	Medicinal Plants, seaweed, seabirds	LAA
Digby Island	Waters near Digby Island	Fishing	Salmon, ground-fish, other fish species	LAA
Port Edward	n/a	Hunting	Hunting	LAA
Stephens Island	Entire coastline	Fishing Marine harvesting Hunting	Salmon and other fish, sea bird eggs, seaweed and other marine plant harvesting	LAA
Ridley Island	N/A	Vegetation harvesting	Medicinal Plants	LAA
Waters to northwest of Lelu Island	N/A	Fishing	Salmon and other species	LAA
Waters to west of Lelu Island	N/A	Fishing	Salmon and other species	LAA
Inverness Passage	N/A	Fishing	Salmon and other species	LAA
Brown Passage	Confidential	Hunting	Confidential	LAA

Location	Sub-location	Traditional Activity	Target Species	Assessment Area
Tree Nob Group of Islands	Not applicable	Hunting Marine harvesting Harvesting marine plants		LAA
Triple Islands	Not applicable	Fishing Hunting Marine Harvesting	Salmon, other fish species, ground-fish, seabirds, seaweed	LAA
Telegraph Passage	Not applicable	Fishing Hunting	Salmon, other fish species, ground-fish, seabirds	LAA
Arthur Passage	Not applicable	Fishing Hunting	Salmon, other fish species, seabirds	LAA
Kennedy Island	Coastline, in particular northern coast	Hunting	Seabirds	LAA
Duncan Bay	Entire bay	Hunting	Seabirds	LAA
Metlakatla Pass	Throughout the passage and coastline	Multiple Uses	Seaweed, seabird eggs, many fish species	LAA
Melville Island	Southern coastlines and waters directly south	Fishing Hunting Marine harvesting	Salmon, other fish, ground-fish, marine mammals, seabirds, seaweed	LAA

Sources: BC Environmental Assessment Office. 2009; DM Cultural Services Limited and Metlakatla First Nations 2013, Kitsumkalum Band 2012; Marsden 2011; Seguin Anderson 2006.

21.3.2.1 Traditional Use Plants

Lelu Island is currently undeveloped, with the majority of the island covered by wetlands and old forest (defined as a structurally diverse forest that is older than 250 years). Wetlands serve as important habitat for valued fish, birds and wildlife (in particular, migratory birds). Old forest often provides productive habitat for hunted and trapped birds and wildlife, and is a source area for traditional use plants, mushrooms, bark and wood. The Vegetation and Wetland Resources Assessment (Section 10) provides a detailed description of the importance of wetlands and old forest ecosystems.

Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013) identified 50 plant species that are present in the Vegetation and Wetland Resources VC LAA and are used for food, material, ceremonial, commercial sale and material purposes. Six tree species, ten shrub species, and three herb species that are commonly used by Aboriginal groups in the region were found in field surveys. As described in detail in Section 10.3 of the EIS/Application, traditional use tree species found within the Vegetation and Wetland Resources VC LAA include:

- Hemlock
- Amabilis fir
- Pacific crabapple

- Sitka spruce
- Western red-cedar
- Yellow-cedar.

The following traditional use shrub species were found during field surveys on Lelu Island:

- Alaska blueberry
- Black crowberry
- Blueberries
- Bog cranberry
- Devil's club
- Juniper
- Labrador tea
- Red huckleberry
- Salal
- Salmonberry.

Three species of herbs and one fern species traditionally used by Aboriginal groups were found on Lelu Island:

- Bunchberry
- Hellebore
- Skunk cabbage
- Licorice fern.

21.3.2.2 **Terrestrial Wildlife and Marine Birds**

Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013) identified 13 terrestrial mammals listed in the Terrestrial Wildlife and Marine Bird LAA (see Section 11) that are used for food, material, ceremonial, and trade purposes. Of these species, the black-tailed deer, black bear, Pacific marten and grey wolf are traditionally hunted or trapped by Aboriginal people on the Pacific north coast in general and are present on Lelu Island.

One hundred and three species of birds (including marine birds, songbirds and raptors) have been recorded on Kaien Island, Ridley Island and surrounding waters, and the majority can occur in the vicinity of Lelu Island. Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013) identified nine species of birds that are present in the Terrestrial Wildlife and Marine Birds LAA and are used for food, material, and ceremonial purposes.

21.3.2.3 **Freshwater Aquatic Resources**

Only two watercourses on Lelu Island are classified as fish streams; the remainder were classified as Non-Classified Drainage (NCD) or No Visible Channel (NVC) because of channel width, lack of bank definition, lack of signs of flow, and lack of a permanent channel connection to near shore waters. The habitat quality for salmonids in the two watercourses classified as fish streams is rated marginal to poor. Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013)

identified a number of freshwater or anadromous species that are harvested for food within their traditional territory, but did not provide locations of harvest. These species are as follows:

- Bull Trout
- Chum Salmon (Dog Salmon)
- Coho Salmon
- Cutthroat Trout
- Dolly Varden Trout
- Freshwater Eel
- Large-scale Sucker
- Pink Salmon
- Prickly Sculpin
- Rainbow Trout
- Sockeye Salmon
- Spring Salmon (Chinook Salmon)
- Steelhead
- Sturgeon
- Threespine Stickleback
- Winter Spring Salmon.

The Freshwater Aquatic Resources assessment (Section 12) provides detailed information.

21.3.2.4 **Marine Resources**

The marine environment surrounding Lelu Island supports a diverse array of fish, invertebrates, marine plants and marine mammals. The rocky shorelines of Lelu Island and areas nearby provide habitat for a rich sub-tidal and intertidal seaweed community that includes attachment sites, food and shelter for numerous invertebrates and bivalves, and food and shelter for fish. Exposed rocky shorelines, such as those on the west side of Lelu Island, tend to have greater species richness than protected shores, like those within Porpoise Channel; however, the sunlit waters in Porpoise Channel support abundant kelp stands where numerous species of crab, echinoderms, and fish thrive. Soft mud and sand occurs within protected areas around Lelu Island as well, and those areas provide suitable habitat for sediment-dwelling invertebrates such as bivalves, polychaete worms and amphipods. Similar substrates in shallow sub-tidal waters of Agnew Bank contain large numbers of Dungeness crab, pricklebacks and flatfish. Eelgrass thrives in the shallow sub-tidal and low intertidal areas around the island (especially at Flora Bank), allows for a rich invertebrate community, and plays an important rearing role for seaward migrating Skeena River juvenile salmon.

Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013) identified four marine plant species that are harvested for food and medicinal purposes or have ceremonial/spiritual significance; however, these species are not located in the Marine Resources LAA (See Section 13).

Several species of marine mammals live in the waters around Prince Rupert and they increase in number during the summer when seasonally migrating fish are more abundant. Common species include humpback whales, northern resident killer whales, porpoises and dolphins, and harbour seals. Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013) also identified the following whale species that were traditionally used for food and raw materials:

- Blue Whale
- Fin Whale
- Humpback Whale.

As described in detail in Section 15.6.2, Interference with Navigation, approximately 14% of total marine traffic in Porpoise Harbour travels through Flora Bank, and approximately 6% of total marine traffic observed in Porpoise Harbour passes through Lelu Slough (the majority are recreational vessels that travel through at high tide only and it is unknown how many are Aboriginal vessels).

Marine areas surrounding Lelu Island, including Flora Bank, are known as particularly important areas for Aboriginal food, social and ceremonial fishing. The following marine or anadromous fish species harvested for food and trade were identified by Metlakatla First Nation (DM Cultural Services Limited and Metlakatla First Nations 2013); these species are present in the LAA (and are found elsewhere on the north coast) however, the exact harvesting locations were not provided by the Metlakatla First Nation:

- Black Cod
- Chum Salmon (Dog Salmon)
- Coho Salmon
- Dogfish
- Eulachon
- Flounder
- Grey Cod
- Halibut
- Herring
- Large Sculpin
- Ling Cod
- Northern Pikeminnow
- Peamouth Chub
- Pink Salmon
- Prickly Sculpin
- Redside Shiner
- Red Snapper
- Rockfish
- Sockeye Salmon
- Sole
- Spring Salmon (Chinook Salmon)
- Three-spine Stickleback
- Winter Spring Salmon
- Yelloweye Rockfish.

Metlakatla First Nation identified the following species of shellfish and invertebrates that are generally present on BC's north coast and are gathered for food and medicine within the LAA (the exact locations of this harvesting were not provided).

- Abalone
- Barnacles
- Butter Clam
- China Hats
- Chiton
- Clams
- Cockles
- Crab
- Geoduck
- Horse Clam
- Littleneck Clam
- Mussels
- Octopus
- Periwinkle
- Prawns
- Scallop
- Sea Cucumber
- Sea Prune
- Sea Urchin
- Shrimp.

Species known to be important in general for Aboriginal food, social and ceremonial harvesting on the north coast of BC include:

- Salmon (Chinook, sockeye, chum, coho, pink)
- Halibut
- Sablefish
- Ground-fish
- Herring and herring spawn
- Eulachon
- Shellfish
- Bivalves
- Marine mammals (seals and sea lions).

Several Aboriginal communities hold communal commercial licenses for waters at Flora Bank and around Lelu Island. Target fisheries include halibut, salmon, rockfish, herring, red sea urchin, crab, shrimp, and prawn.

21.4 Project Interactions with Current Use of Lands and Resources for Traditional Purposes

Table 21-6 provides a ranking of potential effects that could result from interactions between project activities and current traditional use activities. Data from baseline information on current traditional use by Aboriginal people, and predictions regarding potential effects set out in other VC chapters of this EIS/Application, were used to rank potential effects of concern related to this VC.

Table 21-6: Potential Effects on the Current Use of Lands and Resources for Traditional Purposes

Project Activities and Physical Works	Potential Effect: Changes to Current Use of Lands and Resources for Traditional Purposes by Aboriginal People
Construction	
Site Preparation (land-based)	2
Onshore Construction	2
Vehicle Traffic	1
Dredging	2
Marine Construction	2
Waste Management and Disposal	1
Disposal at Sea	2
Operational Testing and Commissioning	1
Site Clean-Up and Reclamation	2
Operations	
LNG Facility and Supporting Infrastructure on Lelu Island	2
Marine Terminal Use	2
Shipping	2
Waste Management and Disposal	1

Project Activities and Physical Works	Potential Effect: Changes to Current Use of Lands and Resources for Traditional Purposes by Aboriginal People
Fish Habitat Offsetting	1
Wetland Habitat Compensation	1
Decommissioning	
Dismantling Facility and Infrastructure	2
Dismantling of Marine Terminal and MOF	2
Waste Disposal	1
Site Clean-Up and Reclamation	2

KEY:

0 = No interaction.

1 = Potential adverse effect requiring mitigation, but further consideration determines that any residual adverse effects will be eliminated or reduced to negligible levels by existing codified practices, proven effective mitigation measures, or best management practices (BMPs).

2 = Interaction may occur and the resulting environmental effect may exceed acceptable levels without implementation of project-specific mitigation. Further assessment is warranted.

21.4.1 Justification of Interaction Rankings

No potential effects on current use of lands and resources for traditional purposes were ranked as 0. The following potential effects were ranked as 1.

21.4.1.1 **Construction**

Vehicle Traffic – Approximately 200 m of road will be built to connect Lelu Island to Skeena Drive. However, that road access will not intersect migration corridors of wildlife traditionally harvested by Aboriginal people. In addition, construction and operations personnel will use group transportation options to travel to and from the PDA, adhere to posted speed limits, and reduce speed when wildlife are detected. These practices are expected to result in a negligible increase in wildlife mortality due to vehicle collision.

Waste Management and Disposal (liquid, solid and hazardous) – Waste management and disposal for liquids, solids and hazardous materials are assigned a rank of 1 for construction because the majority of project wastewater will be treated and disposed of through the District of Port Edward municipal wastewater system. All wastewater disposed of through the Port Edward system will be pre-treated on-site to meet Port Edward standards. Total project wastewater, including the demand during construction, is not expected to exceed the District's treatment capacity (see Section 2.2.3.5). Storm water runoff from plant areas subject to oil contamination will be curbed or diked and collected by a segregated, underground oily-water sewer system. Clean runoff water will be collected by surface ditches for direct discharge to the ocean through shoreline outfalls (see Section 2.2.3.6).

In addition, activities associated with waste management and disposal are subject to federal and provincial regulations and monitoring. Waste management procedures will follow codified and best management practices and adhere to any relevant permit conditions.

Operational Testing and Commissioning – Liquid effluent from commissioning, including seawater used for facility hydro-testing, will be treated on-site and disposed at the marine terminal outfall. Treatment and disposal of that material will be subject to the same regulations, monitoring and permit conditions described above for waste management and disposal more generally.

21.4.1.2 Operations

Waste Management and Disposal – Waste management and disposal for liquids, solids and hazardous materials are assigned a rank of 1 for operations because activities are subject to federal and provincial regulations and monitoring. Waste management procedures will follow codified and best management practices and adhere to any relevant permit conditions.

Fish Habitat Compensation - Implementation of the conceptual fish habitat offsetting strategy (Appendix K) will offset the loss of freshwater and marine fish habitat from the Project to achieve no net loss of the productive capacity.

Wetland Habitat Compensation – The Project is required to implement wetland habitat compensation programs in accordance with Federal government policy. The Wetland Habitat Compensation Plan (see Appendix F) will provide compensation for wetland habitats removed as a result of terrestrial components of the Project, replacing habitat for wildlife altered or lost as a result of project construction. Wildlife that uses wetland areas will benefit from the recovery of lost wetland habitat through the implementation of the Wetland Habitat Compensation Plan.

21.4.1.3 Decommissioning

Waste Disposal

Waste management and disposal for liquids, solids and hazardous materials are assigned a rank of 1 for decommissioning because sea water used for hydro testing of various storage tanks and facility utilities during construction will be discharged to the ocean through an outfall at the end of the marine terminal at least 30 m from any sensitive environments. The testing water will be treated to remove the added sodium hypochlorite (used to mitigate biological growth during testing) before discharge through the outfall. These measures are expected to have little impact on the surrounding environment (see Section 2.2.3.5).

In addition, activities associated with waste disposal are subject to federal and provincial regulations and monitoring. Waste management procedures will follow codified and best management practices and adhere to any relevant permit conditions.

21.5 Effects Assessment

21.5.1 Analytical Methods

21.5.1.1 Analytical Assessment Techniques

The assessment of potential effects on current use of lands and resources by Aboriginal people relies on the assessments completed for each VC listed in Section 21.1. Additional TK/TU information, if received from the five Aboriginal groups, will enhance the assessment and help refine mitigation measures.

21.5.1.2 Assumptions and the Conservative Approach

PNW LNG has taken a conservative approach and has assumed that Aboriginal people currently use Lelu Island and the waters immediately surrounding it for traditional purposes including, but not limited to, activities such as fishing, intertidal harvesting, taking part in cultural and spiritual ceremonies, camping, tree cutting, and medicinal plant gathering. PNW LNG has also assumed that natural resources harvested at Lelu Island and in the surrounding waters are not unique to that area and can be harvested elsewhere within the traditional territories of the five Aboriginal groups.

A detailed review of publicly available information, discussions with Aboriginal groups into traditional Aboriginal use of the Prince Rupert Harbour area and analysis of the Metlakatla Interim Report (DM Cultural Services Limited and Metlakatla First Nations 2013) has revealed limited references to the use of the area covered by the PDA (the area where the majority of predicted effects on Aboriginal traditional use activities are likely to occur).

PNW LNG recognizes that a lack of public information on traditional use on Lelu Island does not necessarily mean that there are no traditional use activities or valued use sites at that location. TK/TU studies or other information provided by the interested Aboriginal groups after the time of writing may reveal additional detail on the current use of Lelu Island by Aboriginal people for hunting, fishing, vegetation harvesting or other traditional use activities.

21.5.2 Changes to Current Use of Lands and Resources for Traditional Purposes by Aboriginal People

21.5.2.1 Potential Effects

The presence of one or more of the following listed project-related effects likely indicates a potential effect on the current use of land and resources for traditional purposes by Aboriginal people. Relevant potential effects are summarized below based on information presented elsewhere in the EIS/Application relating to the assessment of ten other VCs (see Section 21.1 for a list of these VCs) and are grouped by appropriate sub-component:

1. Harvested species
2. Traditional use locations, access routes, and marine harvesting areas
3. Experience of using lands and resources for traditional purposes (e.g., from changes or perceived changes in ambient light, acoustic environment, visual quality, and air quality).

Potential Effects on Sub-component #1: Harvested Species

Construction, operation, and decommissioning of the Project have the potential to affect populations of harvested species. Onshore construction will remove vegetation (including traditional use plants) and result in loss of habitat for terrestrial wildlife species. Site preparation and construction activities will also affect watercourses on Lelu Island, resulting in potential effects on freshwater fish and fish habitat. In addition, construction and operation of the offshore (marine) components of the Project also have the potential to affect populations of marine birds, mammals, and fish and fish habitat.

The potential effects on each of these harvested species are discussed in detail in their respective EIS/Application assessment sections (Section 10: Vegetation and Wetland Resources, Section 11:

Terrestrial Wildlife and Marine Birds, Section 12: Freshwater Aquatic Resources, and Section 13: Marine Resources).

Potential Effects on Sub-component #2: Traditional Use Locations, Access Routes, and Marine Harvesting Areas

Project-related construction, operations and decommissioning activities may reduce the number, quality and accessibility of terrestrial Aboriginal traditional use locations and access routes.

Construction and operations may conflict with traditional use of the marine environment within the LAA, particularly in waters immediately surrounding Lelu Island. Construction and operations will add to the number of vessels in the marine environment and there is potential that the added vessel traffic may affect navigation and marine use by Aboriginal people. Marine construction activities, marine terminal use and shipping, and the increased number and frequency of vessels during dismantling of berths and removal of material from Lelu Island may also affect traditional use. For more detail on potential effects on navigation and marine resource use, see Section 15.

Potential Effects on Sub-component #3: Experience of Using Lands and Resources for Traditional Purposes

Construction, operation, and decommissioning of the Project have the potential to affect the experience of Aboriginal people using lands and resources for traditional purposes. The Project will increase sound levels and ambient light, and change the quality of the visual landscape. The Project also has the potential to increase perceived safety risks for Aboriginal people who frequent areas near the PDA and shipping lanes. Aboriginal users may fear that project-related changes in air quality could affect their health or the safety of harvested country foods species, leading to an avoidance of use of the area.

Potential acoustics, ambient light, visual quality and air quality effects are discussed in their respective assessment sections (Section 8: Acoustic Environment, Section 9: Ambient Light, Section 17: Visual Quality, Section 6: Air Quality, and Section 19: Human and Ecological Health).

21.5.2.2 Mitigation

Mitigation measures have been developed in response to the potential impacts of the Project on the current use of lands and resources for traditional purposes by Aboriginal people. The mitigation measures are adapted from the assessment of relevant VCs and summarized for each Sub-component. In addition to the specific mitigation measures noted below, PNW LNG will make good faith efforts to negotiate impact benefit agreements with Aboriginal groups whose current use of the LAA for traditional purposes may be adversely affected by the Project. Those commitments to Aboriginal groups would either be publicly announced and become binding on the Project if it proceeds, or be part of confidential impact benefit agreements. PNW LNG is engaged in negotiations with Aboriginal groups in relation to those additional commitments. The status and details of those negotiations remains confidential.

Mitigation for Sub-component #1: Harvested Species

A complete list of mitigation measures for each relevant VC is provided in each respective assessment (Section 10: Vegetation and Wetland Resources, Section 11: Terrestrial Wildlife and Marine Birds, Section 12: Freshwater Aquatic Resources, Section 13: Marine Resources).

Mitigations for Sub-component #2: Traditional Use Locations, Access Routes, and Marine Harvesting Areas

A complete set of mitigation measures to reduce potential effect on navigation is provided in Section 15: Navigation and Marine Resource Use.

Mitigations for Sub-component #3: Experience of Using Lands and Resources for Traditional Purposes

A complete list of mitigation measures for each VC is provided in each respective EIS/Application assessment section (Section 6: Air Quality, Section 8: Acoustic Environment, Section 9: Ambient Light, Section 17: Visual Quality, Section 19: Human and Ecological Health).

In addition, PNW LNG will engage in ongoing communication and education efforts to ensure that Aboriginal users understand the lack of risk posed by project-related air quality changes and will work in partnership with the PRPA to ensure the safety of Aboriginal boaters who use the LAA.

21.5.2.3 Characterization of Residual Effects

The characterization of residual effects on the Current Use of Lands and Resources for Traditional Purposes VC is based, in part, on the residual effects conclusions for 11 other VCs presented in the EIS/Application (see Section 21.1 for a list of these VCs). These residual effects are grouped according to sub-components described above.

Residual Effects on Sub-component #1: Harvested Species

a. Marine Species

With mitigation and habitat compensation, the viability of local marine populations, or the marine species and community assemblages in the Marine Resources LAA are not expected to be compromised by project activities. Mitigation measures will reduce injury to fish and marine mammals, reduce behavioural effects from underwater noise, and reduce project changes to sediment and water quality. With the implementation of habitat compensation, the Project is expected to meet DFO's principle of no net-loss of productive capacity of habitat.

Project-related changes to fish habitat are expected to be of moderate magnitude, resulting in a measurable change outside of the range of natural variability, but will not pose a risk to population viability as habitat compensation features will benefit species potentially affected, including salmon. Regarding direct mortality or physical injury to fish or marine mammals, the magnitude of effects are expected to be moderate for burial, crushing, blasting and underwater noise, with changes outside the range of natural variability that are not expected to affect population viability for any species. Very few, if any marine mammals are expected to become injured and this is not expected to affect local populations.

The Project will result in changes in the behaviour of fish and marine mammal due to underwater noise. There is potential for fish to react to construction noise. If such reactions occur, they are likely to be spatially and temporally limited. Project-generated underwater noise is expected to result in potential residual effects on marine mammals over distances of up to 15 km over a 2.5-year period during construction and pile driving. Shipping and berthing during operations may also affect marine mammal species behavior. Based on the implementation of mitigation measures, it is expected that residual effects of change in behaviour of fish and marine mammals due to project-related underwater noise will be not significant because the viability of local populations will not be adversely affected.

The Project will also result in changes in sediment and water quality. However, the predicted residual effects will not result in toxicological risks to aquatic life.

Residual effects on marine species will be short to medium-term in duration, local in extent and either reversible or, in the case of irreversible habitat loss, addressed through compensation. As a result, overall residual effects on marine resources are expected to be not significant.

b. Freshwater Fish

Construction of the Project will result in infilling of two streams on Lelu Island that potentially provide freshwater fish habitat. This will result in a reduction in freshwater fish habitat availability. The habitat quality in these streams is rated as marginal and the loss of habitat will be compensated through implementation of a DFO-approved fish habitat offsetting plan. No net reduction in productive capacity is expected as a result of the Project.

Infilling of the streams on Lelu Island will remove their food and nutrient contribution to the near shore estuarine areas. Near-shore waters around Lelu Island are under heavy influence of Skeena and Nass rivers and the removal of freshwater streams on Lelu Island is not expected to cause any measurable reduction in food and nutrient content in near shore waters around the island.

Infilling of the freshwater streams on Lelu Island may cause an increase in fish mortality risk. Therefore, fish salvages will be conducted prior to infilling of the streams and any fish that are captured will be released in downstream reaches or nearby watercourses with similar habitat conditions.

Assessment of the potential for surface water acidification and eutrophication in Alwyn Lake showed that the eutrophication and/or acidification of Alwyn Lake as a result of nitrogen and sulfate contributions from the Project are not expected to occur.

Based on the assessment results, the Project is expected to have no significant adverse residual effects on Freshwater Aquatic Resources.

c. Terrestrial Wildlife and Marine Bird Species

Project effects on change in habitat, change in mortality, and alteration of movement on terrestrial wildlife and marine birds will, in general, be local in extent. Following mitigations, the Project will potentially affect only a small proportion of regional wildlife and marine bird populations and terrestrial wildlife and marine birds in high value use areas (and traditional harvesting of those species) such as on Porcher Island, Stephens Island, Melville Island and in Metlakatla Pass will

remain unaffected. Based on this assessment, the Project will be in compliance with applicable federal and provincial regulations. Considered in combination with the Wetland Habitat Compensation Plan and Conceptual Fish Habitat Offsetting Strategy, this Project will not have a significant effect on the sustainability of any terrestrial wildlife or marine bird species.

d. Traditional Use Plants

Vegetation clearing will lead to the loss of traditional use plants within the PDA. Detailed abundance and distribution of the traditional use plants within the vegetation and wetland resources RAA is unknown; however, all the species present within the PDA are common regionally and provincially. Traditional use plants on Lelu Island are common across the region and will remain available for harvesting outside of the PDA. Those species will be incorporated into the wetland compensation plan where feasible as well (see Vegetation and Wetland Resources VC). Residual effects on traditional use plants as a direct result of the Project are expected to be local in extent and reversible.

Summary of Residual Effects on Sub-component #1: Harvested Species

With mitigation measures applied, the Project is expected to have residual adverse effects on preferred harvested species that range from negligible to high in magnitude. Most effects will occur continuously during the construction and operations phases, with certain residual effects also taking place during decommissioning. Residual effects on harvested species will occur primarily on Lelu Island and the immediate waters surrounding it, and will not affect harvested species in other areas, including identified high value use areas such as Porcher Island, Stephens Island and Metlakatla Pass.

Residual effects on valued harvested species will be reversible in most cases. In the case of irreversible freshwater fish habitat loss, those effects will be addressed through habitat compensation. In the case of irreversible changes in the abundance or condition of provincially red-listed or provincially blue-listed vegetation communities or old forest, these effects will be reduced through drainage and erosion control with the objective of retaining the baseline hydrological regime. As well, ecological communities of interest located adjacent to construction limits will be clearly marked to ensure that they are protected, and the use of herbicides will be restricted near those communities. In the case of irreversible changes in marine fish habitat, habitat compensation will result in the creation of new high-value habitat for salmon and other valued harvested species.

With mitigation and habitat compensation, the viability of local populations, species and community assemblages of harvested species are not expected to be compromised by project activities and effects on harvested species are expected to be not significant.

Residual Effects on Sub-component #2: Traditional Use Locations, Access Routes and Marine Harvesting Areas

a. Terrestrial Locations and Access Routes

Lelu Island is approximately 192 ha, and the PDA (the area within project fencing) will take up approximately 160 ha on Lelu Island. Within that area, 115 ha will be subject to direct physical

disturbance from the Project. This area will be cleared of trees, plant material, soil and other surface materials, and will be graded. Once the facility and associated infrastructure are built, facilities on Lelu Island will be surrounded by security fences that will control access (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island).Only 32 ha (17%) of Lelu Island will remain outside of the fence line. Operation of the facility will also produce noise, light and air emissions, physical and chemical management will be used to control vegetation in and around the facility, and there will be continuous human activity at the site.

Given the nature of project activities, infrastructure and likely disturbances generated by construction and operations, it is assumed that Aboriginal groups will no longer be able to hunt, trap, gather plants, cut trees, fish, or use valued cultural or spiritual sites on Lelu Island during construction, operations and decommissioning phases. With the exception of one specific area used for hunting (which cannot be disclosed due to a confidentiality clause in a baseline data source), information on the extent, importance and frequency of actual current use on Lelu Island was not available at the time of writing.

b. Marine Harvesting Locations and Navigation Routes

Project-related vessel traffic (and operational safety buffers for this traffic) will, depending on routes normally taken, cause Aboriginal boaters to experience added vessel traffic, congestion, limited access to certain waters, and higher frequency of interactions with other vessels (especially in Porpoise Channel, Lelu Slough, and at the MOF berth face). During construction, use of the MOF by barges will increase vessel traffic in Porpoise Channel. Similarly, access through Lelu Slough may be limited periodically during construction of the bridge between Lelu Island and the mainland. Approximately 690,000 m^3 of material will be dredged at the MOF and changes in lighting at the terminal site may also interfere with nighttime navigational aids.

Construction and operation of the trestle will affect existing north-south navigation between Lelu Island and Flora Bank. The trestle will extend 2.4 km from Lelu Island and will run adjacent to Flora Bank for most of its length. It will have a clearance of approximately 11 m near to Lelu Island (between the high water mark and the bottom of the trestle) to allow access to the current channel. The height of most recreational vessels and gillnetters is expected to be well underneath 11 m and the trestle will have a passage zone of at least 22 m, which is sufficiently wide for gillnetters to pass through.

During operations (from 2019 to 2048), one LNG carrier per day (350 per year) will visit the terminal and each LNG carrier will be at the terminal approximately two to three days. It is assumed that a safety zone (see Section 15.5.2) for fishing activities will be applied to the infrastructure (100 m around the trestle and 50 m around the berth) and MOF that will have the practical effect of preventing Aboriginal fishing or marine harvesting. Mooring locations will be within the Prince Rupert Inner Harbour and Chatham Sound, with additional anchorages available outside harbor limits. Navigation will not be affected through Lelu Slough during operations since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. During decommissioning, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may affect Aboriginal marine users.

c. Summary of Residual Effects on Sub-component #2: Traditional Use Locations, Access Routes and Marine Harvesting Areas

With mitigation measures applied, the Project is anticipated to result in a moderate reduction in the number of available traditional use locations within the LAA and will cause some interference with access corridors and navigation routes within the LAA as well. There will be a variation from baseline and noticeable changes to certain traditional practices, traditional knowledge or community perceptions of their traditional territory, practices or knowledge. Adverse residual effects will be restricted to the LAA, with the majority of residual effects centered on Lelu Island and the waters immediately surrounding it. The majority of these residual effects will occur continuously from start of construction, during operations and into the decommissioning phases. Residual effects are predicted to last for the life of the Project, a period lasting longer than a generation and, therefore, are effectively permanent.

Residual Effects on Sub-component #3: Experience of Using Lands and Resources for Traditional Purposes

a. Ambient Light

It is expected that some observable light will be generated by the Project, but local topography, vegetation and project design will help reduce the amount of light that reaches surrounding areas. Residual environmental effects are predicted to be low in magnitude, restricted to the LAA, regular in terms of frequency, long term in duration, and reversible. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area.

b. Acoustics

While noise generated by the Project will travel beyond the acoustics LAA and into the acoustics RAA, the magnitude of the acoustics effects will range from negligible (imperceptible) to moderate (above baseline sound level but in compliance with all regulatory criteria).

c. Visual Quality

The Project's effects will be confined to the Visual Quality LAA; however, the Visual Quality LAA is expected to experience a high magnitude change in visual quality from baseline conditions. On average, the Visual Quality LAA is expected to experience low to moderate magnitude effects from the Project's shipping operations (see Section 17, Visual Quality). These changes are considered to be not significant due to the potential community support for heavy industrial expansion within the PRPA.

d. Air Quality

The effects of individual substances emitted by the Project vary in magnitude from low to moderate. Most of these effects occur in the immediate vicinity of the land facility adjacent to the property line or vessel loading area. Details on the air quality assessment and modelling are included in Section 6.5 of the Air Quality section. Modelled criteria air contaminant (CAC) concentrations at sensitive human receptor locations (including known traditional use areas) are in Appendix Q-2. As described in Section 19.5.2.5 of the Human and Ecological Health Section, predicted health risks associated with

human exposures to CACs in all project phases are not significant. The air model used very conservative air quality predictions to evaluate the worst case scenario during operations phase, which would have the highest emission rates.

Emission levels during the construction phase will be lower than those modelled for operations. Therefore, the construction air quality is expected to be negligible to project operations. There is a high degree of confidence in the assessment based on the quality of the emissions data and analytical techniques used. The residual effect of degraded air quality leading to human health risks during construction is considered to be not significant.

Summary of Residual Effects on Sub-component #4: Experience of Using Land and Resources

With mitigation measures applied, the Project will result in adverse residual effects on the qualitative experience of using land and resources for traditional purposes that are low to moderate in magnitude, except with regard to changes in visual quality, which will be high in magnitude. The majority of residual effects will be continuous and will take place during all phases of the Project. Adverse residual effects will be experienced most acutely by traditional users located very close to the PDA (on land or on water), or users located very close to the shipping route. Residual effects will take place during all phases of the Project and will largely be reversible.

21.5.2.4 Summary of Residual Effects on the Current Use of Lands and Resources for Traditional Purposes VC

Given the residual effects summaries provided above, PNW LNG predicts that, with mitigations applied, the Project will have residual adverse effects on the Current Use of Lands and Resources for Traditional Purposes VC that are moderate in magnitude. Adverse residual effects will occur most acutely on Lelu Island and in the waters immediately surrounding it, with certain effects (e.g., acoustic effects) extending out into the LAA. Most relevant effects will be for the medium term and will occur continuously during the construction and operations phases, with certain residual effects also taking place during decommissioning. Some effects are predicted to be permanent (lasting longer than a generation).

21.5.2.5 Likelihood

PNW LNG has concluded that there is medium to high probability that the residual effects on the VC will occur if the Project receives regulatory approval. Given known frequency, intensity and types of traditional use within the LAA, it is likely that Aboriginal users of the PDA, waters surrounding the PDA, and locations near the shipping route will experience the residual effects described above in Section 21.5.2.4.

21.5.2.6 Determination of Significance of Residual Effects

Given PNW LNG's conclusions with regard to residual effects on relevant sub-components as described in Section 21.5.2.3 and PNW LNG's resulting conclusions regarding residual effects on the Current Use of Land and Resources for Traditional Purposes VC (see Section 21.5.2.4), PNW LNG expects that, with mitigation measures applied, the residual effects of the Project on the Current Use of Lands and Resources for Traditional Purposes VC will be not significant.

21.5.3 Confidence and Risk

Based on the quality and quantity of available literature on traditional use and occupation by the five identified Aboriginal groups within the Prince Rupert Harbour area and within the LAA more generally, and PNW LNG's primary reliance on publicly-available published sources, the level of information provided by potentially-affected Aboriginal groups (lack of project-specific TK/TU information), the nature and extent of project-related residual effects and professional opinion, the confidence in this prediction is moderate.

The primary risk is that certain traditional uses of land and resources within the LAA may not have been identified by PNW LNG and that these traditional uses could potentially be adversely affected by project-related construction and activities. Since the confidence in this prediction is not low, no additional risk analysis has been conducted.

21.5.4 Summary of Residual Effects

See Table 21-7 for the summary of residual effects from the Project on current use of lands and resources for traditional purposes.

Table 21-7: Summary of Residual Effects on Current Use of Land and Resources for Traditional Purposes

Project Phase	Mitigation/Compensation Measures	Residual Effects Characteristics						Likelihood	Significance	Confidence	Follow-up and Monitoring
		Context	Magnitude	Extent	Duration	Reversibility	Frequency				
Changes to Current Use of Lands and Resources for Traditional Purposes by Aboriginal People											
Construction	▪ PNW LNG will make good faith efforts to negotiate impact benefit agreements. ▪ Other mitigation measures for effects on the Current Use of Land and Resources for Traditional Purposes are found in Sections 6, 8, 9, 10, 11, 12, 13, 15, 17, 19 and 20	M	M	PDA/ LAA	S	R	M/C	H	N	M	None
Operations		M	M	PDA/ LAA	L	R	M/C	M			
Decommissioning		M	M	PDA/ LAA	S	R	M	M			
Residual effects for all phases		M	M	PDA/ LAA	L	R	C	H			

KEY			
CONTEXT: Low resilience—Aboriginal rights not widely exercised (less than 29%); minimal disturbance of traditional community structures; minimal interference with traditional land use; minimal use of Aboriginal languages; level of community dysfunction and level of baseline disturbance may be a contributing factor. Moderate resilience—Aboriginal rights exercised by approximately 30-60% of community members and there is moderate interference with those rights; traditional community structures in place (although possibly in modified form); some use of Aboriginal languages by community members; level of baseline disturbance may be a contributing factor. High resilience—Aboriginal rights exercised by 61% or more of community members; little interference with Aboriginal rights; robust traditions and traditional community structures; majority use of Aboriginal languages; baseline disturbance unlikely to be a contributing factor.	**DURATION:** Short-term—effect restricted to construction phase. Medium-term—effect extends through the duration of construction, operations and decommissioning. Long-term—effects extend beyond decommissioning and after closure. Permanent—measurable parameter unlikely to recover to baseline; with regard to cultural knowledge and practices; any duration longer than a generation can be considered permanent. **MAGNITUDE:** Negligible—no measurable change. Low—very small detectable change from baseline; no exacerbation of existing conditions. Moderate— varies from baseline and may result in noticeable changes to traditional practices, traditional knowledge or community perceptions of traditional territory, practices or knowledge; moderate exacerbation of existing conditions. High— varies from baseline to a high degree, has serious implication for the continuance of traditional practices and traditional knowledge; greatly exacerbates existing conditions. **REVERSIBILITY:** R - reversible and will recover after project decommissioning. I - irreversible, permanent.	**EXTENT:** PDA—effect is restricted to the project development area. LAA—effect is prevalent in the LAA. RAA—effect is prevalent in the RAA. **FREQUENCY:** Single event—happens one time. Multiple irregular event—will happen more than one time but not in a predictable way. Multiple regular event—will happen more than one time but in a predictable way. Continuous—effect occurs continuously.	**LIKELIHOOD:** Based on professional judgment L—low probability of occurrence M—medium probability of occurrence H—high probability of occurrence **SIGNIFICANCE**: S—significant N—not significant **CONFIDENCE AND RISK** Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation, and assumptions made L—low level of confidence M—moderate level of confidence H—high level of confidence

21.6 Cumulative Effects

21.6.1 Context for Cumulative Effects

Terrestrial areas within the RAA provide habitat for a variety of traditionally harvested and culturally important mammals, birds, and amphibians. Marine waters in the RAA are highly productive and support a diverse array of fish, marine mammals and other traditionally harvested and/or culturally important marine species. Current traditional use of the RAA by Aboriginal people includes hunting, fishing, harvesting of shellfish, vegetation and marine plants and taking part in cultural and spiritual practices.

The Prince Rupert Harbour area currently operates as a land, air and water transportation hub with a human population of 12,508 in Prince Rupert and 544 in Port Edward (Statistics Canada 2012). There is mixed industrial, commercial and recreational use of the land and waters within the RAA. Past, present and future industrial and commercial activities within the RAA include the development of shoreline infrastructure within the PRPA boundary, and shipping activity along shipping lanes that cut across the RAA. Lelu Island is designated in the PRPA 2020 Land Use Management Plan as a potential site for future industrial development (Prince Rupert Port Authority 2011). Neighboring Ridley Island is also designated for industrial use in that same land use management plan (Prince Rupert Port Authority 2011). The projects listed in Table 21-8 overlap spatially and temporally with the Project. Ten of those projects are in operation and the other listed projects are either in planning or construction stages.

As described in detail in the Terrestrial Wildlife and Marine Birds VC, development features occupy 1,944 ha within the Terrestrial Wildlife and Marine Birds RAA (1% of that RAA), and an additional 478 ha of development is planned in the reasonably foreseeable future. The Project's contribution to overall development within the Terrestrial Wildlife and Marine Birds RAA is 175 ha (or 0.1%).

21.6.2 Cumulative Effects Assessment

The cumulative effects assessment uses a two-step process to determine the potential for cumulative effects on the Current Use of Land and Resources for Traditional Purposes VC. In conducting the cumulative effects assessment, the residual effects arising from interactions that were ranked either a 1 or a 2 in Table 21-6: Potential Effects on the Current Use of Lands and Resources for Traditional Purposes are considered. The first step consists of two questions:

- Is there a project residual environmental effect?
- Does the project residual environmental effect overlap spatially and temporally with those of other past, present or reasonably foreseeable future projects?

Where the answers to both of these two questions are affirmative, a check in Table 21-8: Potential Cumulative Environmental Effects on the Current Use of Lands and Resources for Traditional Purposes indicates that there is potential for the Project to contribute to cumulative effects on the Current Use of Land and Resources for Traditional Purposes VC. Potential contribution of these project effects to cumulative effects is assessed below. The second step consists of one question:

- Is there a reasonable expectation that the contribution (i.e., addition) of the Project's residual effects would cause a change in cumulative environmental effects that could affect the viability or sustainability of the VC?

Where the answer to this question is affirmative, additional assessment of the potential cumulative effects is described below.

Table 21-8 lists those projects and activities whose residual effects may interact cumulatively with those of the PNW LNG Project. PNW LNG identified these potential interactions by synthesizing relevant interactions identified elsewhere in the EIS/Application relating to the assessment of ten other VCs (see Section 21.1 for a list of these relevant VCs).

Table 21-8: Potential Cumulative Environmental Effects on the Current Use of Lands and Resources for Traditional Purposes

Other Projects and Activities with Potential for Cumulative Environmental Effects	Potential Cumulative Environmental Effects
	Changes to Current Use of Lands and Resources for Traditional Purposes by Aboriginal People
Atlin Terminal	✓
Canpotex Potash Export Terminal	✓
CN Rail Line	✓
Douglas Channel LNG	✓
Enbridge Northern Gateway Project	✓
Fairview Container Terminal Phase I	✓
Fairview Container Terminal Phase II	✓
Kitimat LNG Terminal Project	✓
LNG Canada Project	✓
Mount McDonald Wind Power Project	✓
NaiKun Wind Energy Project	✓
Northland Cruise Terminal	✓
Odin Seafood	✓
Pinnacle Pellet Inc.	✓
Prince Rupert LNG Facility	✓
Prince Rupert Gas Transmission Project	✓
Prince Rupert Ferry Terminal	✓
Prince Rupert Industrial Park	✓
Prince Rupert Grain Limited	✓
Ridley Island Log Sort	✓
Ridley Terminals Inc.	✓
Rio Tinto Alcan Aluminum Smelter and Modernization Project	✓
WatCo Pulp Mill	✓
Westcoast Connector Gas Transmission Project	✓

NOTES:
✓ **=** Those 'other projects and activities' whose effects are likely to interact cumulatively with the Project's residual effects.

21.6.2.1 Cumulative Effects on Relevant Sub-components

As described in detail in Section 21.5.2.3 above, PNW LNG has concluded that the Project will likely result in residual environmental effects on the Current Use of Land and Resources for Traditional Purposes VC.

Consistent with the use of sub-components throughout the assessment of project effects for this VC, the description of relevant cumulative effects has been grouped by sub-component as follows:

1. Harvested species
2. Traditional use locations, access routes, and marine harvesting areas
3. Experience of using lands and resources for traditional purposes
    a) Ambient light
    b) Acoustics
    c) Visual quality
    d) Air Quality.

Cumulative Effects on Sub-component #1: Harvested Species

Cumulative Effects on Marine Species

Cumulative effects on direct mortality or physical injury are expected to be moderate in magnitude, due to potential increases in injury to marine mammals caused by overlap in pile driving schedules with other projects. This is not expected to have an effect on population viability or general availability of these species for traditional harvesting within the RAA.

Pile driving, shipping, and berthing will act cumulatively with other projects, increasing the spatial extent over which marine mammal behaviour could be affected. Marine mammals, namely harbour seals, harbour porpoise, and killer whales, could experience behavioural effects over larger areas and for longer periods of time as a result of concurrent construction and operational activities. These residual cumulative effects are not expected to affect population viability or general availability of these species for traditional harvesting within the RAA.

Cumulative effects on sediment quality are not anticipated due to compliance with the Disposal at Sea Regulations.

Cumulative effects on water quality are likely to occur if there is any spatial and temporal overlap of dredging and disposal of marine sediment for other proposed projects. These effects are short-term and appropriate scheduling of disposal at sea will mitigate cumulative effects.

Cumulative Effects on Freshwater Fish

The Project is not expected to result in a net loss of the productive capacity of freshwater fish habitat or a loss of nutrient contribution or fish mortality. PNW LNG expects that the Project will not result in cumulative effects on freshwater aquatic resources or adversely affect their availability for traditional harvesting within the RAA.

Cumulative Effects on Terrestrial Wildlife and Marine Bird Species

The Project's contribution to cumulative effects on change in habitat, mortality, and alteration of movement on terrestrial wildlife and marine birds will be local and will affect a small portion of the regional population that is available for traditional harvesting. The Project's contribution to cumulative effects will not influence the long-term sustainability of local or regional wildlife populations or the availability of those species for traditional harvesting within the RAA.

Cumulative Effects on Traditional Use Plants

While the Project will result in the loss of traditional use plants within the PDA and the loss of ecological communities of management concern (ecological communities at risk and old forest), these losses represent very small proportions of the total amount of these vegetation communities within the RAA. Neither the project-specific residual effects, nor the Project's residual effects acting cumulatively with other projects would threaten the regional sustainability of traditional use plants or other ecological communities, vegetation and wetlands resources identified in this assessment or their availability for traditional harvesting in areas outside of the PDA.

Cumulative Effects on Sub-component #2: Traditional Use Locations, Access Routes and Marine Harvesting Areas

It is anticipated that the Project will result in a moderate reduction in the number of available traditional use locations, access routes and marine harvesting areas. While there may be some spatial and temporal overlap with the residual effects of other projects and activities, the vast majority of residual effects on traditional use locations, access routes and marine harvesting areas will occur on Lelu Island and in the waters immediately surrounding it. While the cumulative effects of existing projects are currently reflected in existing patterns of local Aboriginal land and marine resource use, there is a high degree of uncertainty with regard to how proposed projects listed in Table 21-1 may cumulatively affect traditional use locations, access routes and marine harvesting. The degree that current and foreseeable projects may interfere with current traditional use of land and resources by Aboriginal people depends on a number of factors, including the timing of construction windows and scheduling of shipping traffic and its interference with marine use and navigation by Aboriginal people. The Prince Rupert LNG Project currently planned for Ridley Island may have additional effects on vessels that use Porpoise Channel. The Westcoast Connector and Prince Rupert Gas Transmission Projects could result in added barriers and inconvenience for Aboriginal people attempting to travel from Port Edward into Chatham Sound to fish and harvest marine resources. Despite these uncertainties, due to the highly localized nature of predicted residual effects on traditional use locations, access routes and marine harvesting areas, it is probable that the Project's contribution to cumulative residual effects will not be significant.

Cumulative Effects on Sub-component #3: Experience of Using Lands and Resources for Traditional Purposes

With mitigation measures applied, the Project is anticipated to result in adverse residual effects on the qualitative experience of using land and resources for traditional purposes. Adverse residual effects will be experienced most acutely by traditional users that use areas very close to the PDA (on land or on water), or users located very close to the shipping route. Residual effects will take place during all phases of the Project and these adverse residual effects may overlap spatially and temporally with similar residual effects of other projects and activities.

Ambient Light

With the mitigation and adherence to specific design standards, the resulting residual environment effect on a change in ambient light is considered to be low in magnitude, limited to the LAA in extent, and regular in terms of frequency and long term in duration. This residual environment effect will likely overlap both spatially and temporally with other existing, approved and proposed projects in the area and there is potential for cumulative ambient light effects.

Acoustics

Project-related residual noise effects may overlap with the past, present or reasonably foreseeable projects and activities in the RAA. However, these cumulative noise effects are not expected to exceed the regulatory guidelines. Hence, as described in Section 8 .6, cumulative noise effects are expected to be not significant.

Visual Quality

Eighteen of the twenty-three approved or potential projects occur within the area of potential visibility for the Project. Pending the design and dimensions of the projects, 20 of the 23 projects are expected to interact spatially and temporally with the Project. Of these 20, nine have shipping-only interactions; nine have facility-only interactions; and two have potential interactions with both. From certain viewpoints, the Project and other projects will be visible at the same time (e.g., views from Port Edward). From other viewpoints, only other projects will be visible.

The Project's facility, marine terminal and LNG carriers, together with the other operational, approved and reasonably foreseeable projects within the RAA will result in considerable alteration to the current visual quality of the RAA; however, these developments largely occur within the PRPA which has been identified for future industrial expansion. As described in Section 17.6.3, the cumulative effects on Visual Quality are considered to be not significant.

Air Quality

Cumulative effects on air quality include emissions of criteria air contaminants (CACs) from existing and industrial sources and reasonably foreseeable future projects in combination with the project emissions. The application case (baseline case + Project case) dispersion modelling results indicate that project residual effects do not substantially overlap the regional source effects. The cumulative effects case dispersion modelling results indicate that the overlap of effects from reasonably

foreseeable future projects in the assessment area do have an effect near the project site, but the cumulative effect is not significant.

Maximum predicted concentrations for SO_2, NO_2, CO, PM_{10} and $PM_{2.5}$ generally increase, but only incrementally when compared to existing conditions. The objective for 1-hour NO_2 is exceeded at two locations in the modelling domain. These exceedances occur west of Prince Rupert on the east side or Digby Island and are about 2.3 km apart. A time series analysis shows that the exceedances only occur at different times during one hour of the three-year period. Further analysis shows that areal extent of the exceedance is localized.

Additionally, most of the contributions for those events originate from existing regional sources and are located far from the project site. Therefore, the cumulative effects on air quality are not significant.

21.6.2.2 **Summary of Cumulative Effects**

The cumulative effects summaries for the relevant sub-components noted above suggests that the contribution (i.e., addition) of the Project's residual effects are unlikely to cause a change in cumulative environmental effects that could affect the viability or sustainability of traditional use by Aboriginal people of lands and resources within the RAA.

21.7 Follow-up and Monitoring

No follow-up and monitoring specific to Current Use of Land and Resources for Traditional Purposes is required.

21.8 Conclusion

Project residual effects on the Current Use of Land and Resources for Traditional Purposes are predicted to be not significant. PNW LNG predicts that, with planned mitigations applied, the Project will have residual adverse effects on the Current Use of Lands and Resources for Traditional Purposes VC that, in total, can be characterized as moderate in magnitude. Adverse residual effects will occur most acutely on Lelu Island and in the waters immediately surrounding it, with certain effects (e.g., acoustic effects) extending out into the LAA. Most relevant effects will be for the medium term and will occur continuously during the construction and operations phases, with certain residual effects also taking place during decommissioning. Some effects will be permanent (lasting longer than a generation). Cumulative effects are also expected to be not significant.

Confidence in this prediction is moderate. This rating is due to PNW LNG's primary reliance on publicly available published sources, the level of information provided by potentially affected Aboriginal groups (lack of project-specific TK/TU information), the nature and extent of project-related residual effects, and professional opinion. If the Metlakatla First Nation provides final TLU results and other Aboriginal groups submit project-specific TK/TU information to PNW LNG, the anticipated project residual effects may need to be amended.

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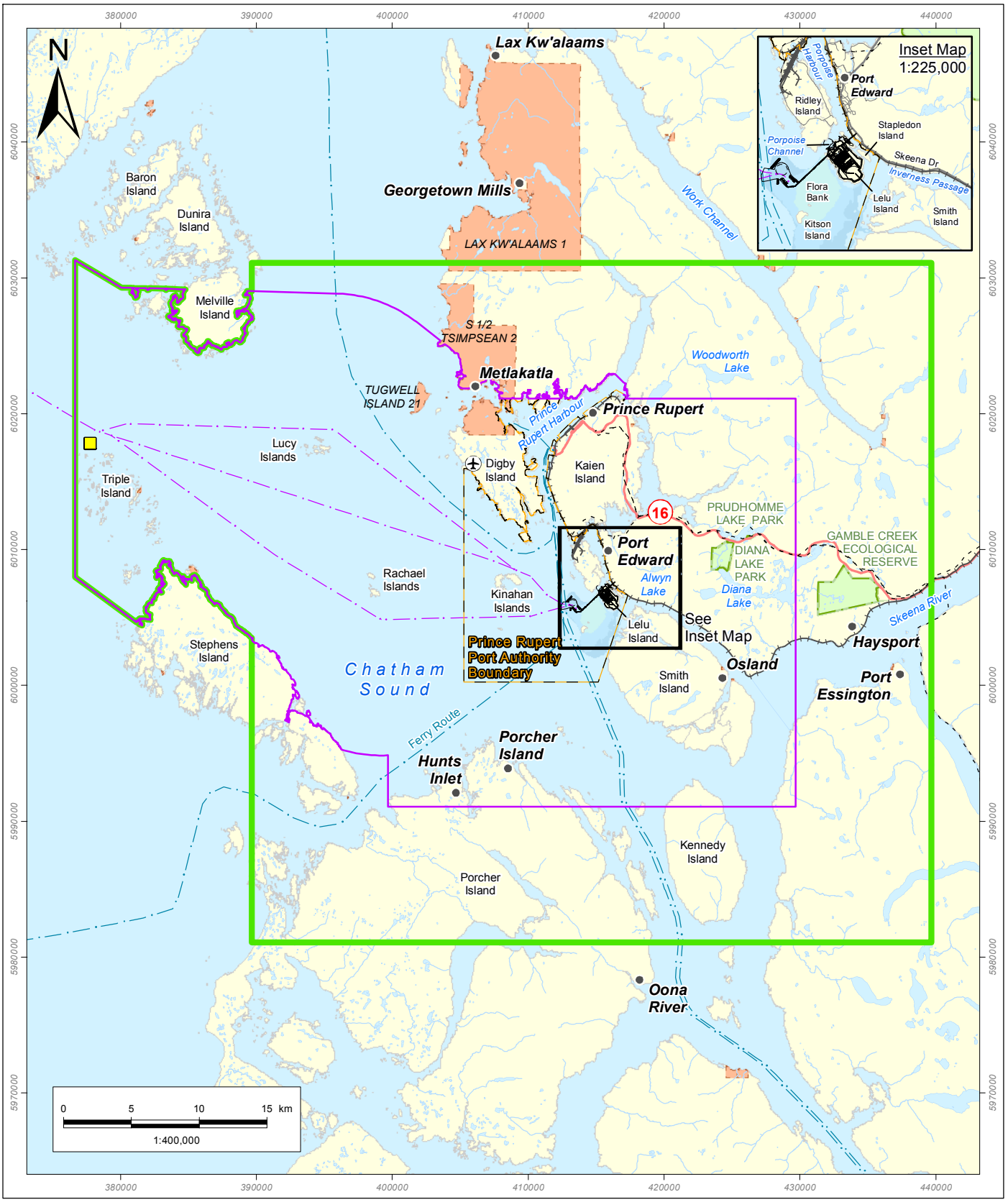
21.10 Figures

Please see the following pages.



Local Assessment Area
Regional Assessment Area
Potential Shipping Route
Project Component
Turning Basin
Airport
City or Town

Pilotage Station
Electrical Power Transmission Line
Ferry Route
Highway
Railway
Secondary Road
Watercourse

Indian Reserve
Prince Rupert Port Authority Boundary
Protected Area
Waterbody

Shoals
Agnew Bank
Flora Bank
Horsey Bank

Pacific NorthWest LNG

Current Use of Lands and Resources for Traditional Purposes Local Assessment Area and Regional Assessment Area

Sources: Government of British Columbia; Prince Rupert Port Authority; Government of Canada, Natural Resources Canada, Centre for Topographic Information; Progress Energy Canada Ltd.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

DATE: 18-FEB-14
FIGURE ID: 123110537-421
DRAWN BY: K. POLL
PROJECTION: UTM - ZONE 9
DATUM: NAD 83
CHECKED BY: S. BLACK

PREPARED BY: Stantec
PREPARED FOR: Pacific NorthWest LNG
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Project Component
Turning Basin
Railway
Road
Watercourse

Pacific NorthWest LNG

Project Layout

Sources: Government of British Columbia; Government of Canada, Natural Resources Canada, Centre for Topographic Information; Progress Energy Canada Ltd.; Millennia; WorldView-2 Imagery. Imagery date: 2011.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

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PREPARED BY: Stantec

PREPARED FOR: Pacific NorthWest LNG

FIGURE NO: **21-2**

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