

Appendix B
Current Use of Land and Resources for
Traditional Purposes

**Pacific NorthWest LNG - Addendum to the
Environmental Impact Statement
Current Use of Lands and Resources for Traditional
Purposes**



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Abbreviations

AAROM	Aboriginal Aquatic Resources and Management Program
AFS	Aboriginal Fisheries Strategy
ATP	Allocation Transfer Program
BC	British Columbia
BC MOE	British Columbia Ministry of the Environment
CAC	Criteria Air Contaminant
CEA Agency	Canadian Environmental Assessment Agency
CEAA	<i>Canadian Environmental Assessment Act</i>
CFN	Coastal First Nations
CMT	culturally modified tree
CO	carbon monoxide
CULRTP	Current Use of Lands and Resources for Traditional Purposes
DFO	Fisheries and Oceans Canada
EAA	Environmental Assessment Agreements
EIS	Environmental Impact Statement
FSC	food, social and ceremonial [fishing]
%HA	percentage highly annoyed
ha	Hectares
km	Kilometres
LAA	local assessment area
LNG	liquefied natural gas
m ³	cubic metres

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MaPP	Marine Planning Partnership for the North Pacific Coast
MMO	marine mammal observer
MOF	materials off-loading facility
NC LRMP	North Coast Land and Resource Management Plan
NO ₂	nitrogen dioxide
PCDD/F	polychlorinated dibenzo-p-dioxin and furan
PDA	project development area
PM	particulate matter
PNW LNG	Pacific NorthWest LNG Limited Partnership
PRPA	Prince Rupert Port Authority
Q1	first quarter
Q4	fourth quarter
RAA	regional assessment area
SDR	Systematic Data Recovery
SO ₂	sulfur dioxide
TEK	Traditional Ecological Knowledge
TFN	Tsimshian First Nations
the Project	Pacific NorthWest LNG Project
TSS	total suspended solids
TUS	Traditional Use Study
VC	valued component
VSU	Visual Sensitivity Unit

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21 CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

21.1 INTRODUCTION

Section 21 assesses the potential effects of the Pacific NorthWest LNG Project (the Project) on Aboriginal groups' current use of lands and resources for traditional purposes (hereafter referred to as Current Aboriginal Use). Current Aboriginal Use refers to Aboriginal peoples' land and marine-based practices, including fishing practices, hunting and trapping practices, gathering practices, social and ceremonial practices, and traveling and habitation practices.

In accordance with Section 9.2 of the Final Environmental Impact Statement Guidelines issued by the Canadian Environmental Assessment Agency (CEA Agency) on June 7, 2013, and direction provided by the CEA Agency to the Pacific NorthWest LNG Limited Partnership (PNW LNG) by letter on November 6, 2013, the Aboriginal groups considered in the assessment include:

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

The assessment follows the general environmental assessment methods outlined by the BC Environmental Assessment Office (BC Environmental Assessment Office 2013) and Canadian Environmental Assessment Agency (Canadian Environmental Assessment Agency 1994), including: identification of Valued Components (VCs); description of the scope and methods of the assessment; description of baseline conditions; assessment of project-specific effects; description of the mitigation of potential effects; characterization of predicted residual effects; assessment of significance of residual effects; and assessment of cumulative effects.

This assessment is based on the project design described in the Addendum to the Environmental Impact Statement (EIS Section 2, EIS Addendum Section 2). It draws on conclusions related to assessments of air quality (EIS Section 6, EIS Addendum Section 6), acoustic environment (EIS Section 8, EIS Addendum Section 8), ambient light (EIS Section 9, EIS Addendum Section 9), vegetation and wetland resources (EIS Section 10, EIS Addendum Section 10), terrestrial wildlife and birds (EIS Section 11, EIS Addendum Section 11), freshwater aquatic resources (EIS Section 12, EIS Addendum Section 12), marine resources (EIS Section 13, EIS Addendum Section 13), navigation and marine resources (EIS Section 15, EIS Addendum Section 15), visual quality (EIS Section 17, EIS Addendum Section 17), human and ecological health (EIS Section 19, EIS Addendum Section 19), archaeological and heritage resources (EIS Section 20, EIS Addendum Section 20). Additional information relating to Aboriginal issues is located in in the following

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EIS sections: Aboriginal Information Distribution and Consultation (EIS Section 3.2), Effects of Changes to the Environment (EIS Section 26.1, EIS Addendum Section 26), Aboriginal Rights (EIS Addendum Section 27), and Other Matters of Concern to Aboriginal People (Section 27.2). Potential effects on Current Aboriginal Use arising from accidents and malfunctions are addressed separately in the EIS (Section 22, EIS Addendum Section 22).

21.2 REGULATORY AND POLICY SETTING

Aboriginal rights to hunt, trap, fish, gather resources, and other uses of lands and resources for traditional purposes are recognized and affirmed under Section 35(1) of the Constitution Act, 1982. Treaties have not been finalized with any of the Tsimshian First Nations considered in this assessment.

The Tsimshian Tribal Council, formed in 1988 through the B.C. Society Act, initially represented a number of the Tsimshian communities. However, in April 2004 the Council disbanded due to internal conflicts. A new Council of the Tsimshian First Nations (TFN) was formed in December 2004 without the Lax Kw'alaams First Nation and the Gitxaala Nation and to represent members in the BC Treaty Process. The Gitxaala Nation is, at present, the only Tsimshian First Nation not involved in the BC Treaty Process.

The Lax Kw'alaams Band is currently negotiating under the BC Treaty Process as the Allied Tribes of Lax Kw'alaams. They were previously affiliated with the other Tsimshian nations in treaty discussions, but left the (former) Tsimshian Tribal Council in 2004, and re-entered the treaty process independently in 2005. They are currently in the second stage of negotiations (Readiness to Negotiate).

The Metlakatla, Kitselas, Kitsumkalum, Kitasoo, and Gitga'at (Hartley Bay) are working through the BC Treaty Process under the TFN Treaty Society. Metlakatla and Gitga'at remain at Stage 4 of negotiations (Negotiation of an Agreement in Principle). On February 20, 2013 and April 10, 2013, respectively, the membership of the Kitselas First Nation and Kitsumkalum First Nation went to the polls to approve the continuation of treaty negotiations or not. Both votes were successful and have provided the formal mandate from membership to move into Stage 5 negotiations.

21.2.1 Land and Resource Management Plans

The Project is located within the provincial North Coast Land and Resource Management Plan (NC LRMP) area. The NC LRMP provides the following land and resource management objectives with respect to Current Aboriginal Use:

- Respect and Accommodate Aboriginal Rights and Title
- Establish meaningful partnerships with government and resource developers
- No resource development without First Nations' approval/ accommodation
- Application of First Nation Land Use Plans in other provincially-led land and resource planning
- Rationalization of First Nations strategic land use plans with NC LRMP
- First Nations' participation in resource management.

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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 21-1 provides details on those agreements.

Table 21-1 Land Use Planning Agreements

First Nation	Title and Date	Relevant Details
Metlakatla First Nation	Strategic Land Use Planning Agreement (2006) Consultation and Revenue Sharing Agreement (2011) Coastal First Nations Amended Reconciliation Protocol (2010)	<ul style="list-style-type: none"> Metlakatla are a member First Nation of the Coastal First Nations (CFN) 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 Agreement with the province to facilitate economic benefits returning to the community based on harvest activities in its traditional territory Coastal First Nations will also be part of a new shared decision making process and the creation of an Alternative Energy Action Plan for their traditional territories.
Lax Kw'alaams First Nation	Forestry Accommodation Agreement (2003) Strategic Land Use Planning Agreement (2008)	<ul style="list-style-type: none"> The forestry accommodation agreement with the province entitled Lax Kw'alaams to 650,000 m³ of timber, and over \$6 million in shared revenues over 5 years. In addition, in 2005, Coast Tsimshian Resources Ltd. (a Lax Kw'alaams business venture) received \$3.1 million from the province for the return of over 120,000 m³ of harvesting rights in Tree Farm License No. 1 in northwestern BC 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 Lax Kw'alaams 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	Sustainable Land Use Planning Agreement (2006)	<ul style="list-style-type: none"> Management intent for Kennedy Island, Stephens Island, and West Porcher Island is to maintain ecological integrity and traditional activities The agreement 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) Consultation and Revenue Sharing Agreement (2011)	<ul style="list-style-type: none"> 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 direction for Lelu Island is not provided Agreement with the province to facilitate economic benefits returning to the community based on harvest activities in its traditional territory.

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First Nation	Title and Date	Relevant Details
Kitsumkalum First Nation	North Coast Strategic Land Use Planning Agreement (2006)	<ul style="list-style-type: none"> • 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 or direction for Lelu Island is not incorporated.
Gitga’at First Nation	Strategic Land Use Planning Agreement (2006) Coastal First Nations Amended Reconciliation Protocol (2010)	<ul style="list-style-type: none"> • Gitga’at are also a member First Nation of Coastal First Nations • Contains land use zones, designations, and allowable uses within Gitga’at territory (Note: There is no overlap of Gitga’at asserted territory as defined in this agreement with the project land and water components or activities). Contains high value fisheries watershed management objectives. The management intent is to maintain the integrity of salmon habitat in watersheds that are of cultural importance to the Gitga’at. The management objective is to maintain water quality and quantity within the natural range of variability in identified anadromous fish bearing and/or sensitive watersheds • The agreement includes the building of a new ferry terminal at Klemtu, as well as sharing a portion of resource revenue and carbon offsets • Coastal First Nations will also be part of a new shared decision making process and the creation of an Alternative Energy Action Plan for their traditional territories.

21.2.2 Marine Use Management Plans

The Project is also located within the planning area of the Marine Planning Partnership for the North Pacific Coast (MaPP), a partnership between the Province of British Columbia and 18 member First Nations, including Metlakatla First Nation, Gitxaala Nation, Kitselas First Nation, Kitsumkalum First Nation, and Gitga’at First Nation. Lax Kw’alaams First Nation is not a member. MaPP’s draft North Coast Marine Plan (2014) identifies the following management objective with respect to marine Aboriginal use: “Objective 1: In accordance with section 35(1) of the Constitution Act 1982, protect First Nations use of territories and resources for community benefit.” Strategy 1.4. of Objective 1 reads “Identify existing provincial tenures that overlap First Nations use areas and cultural sites, and develop strategies to minimize or mitigate impacts on First Nations practices. Examples and/or potential actions - Develop general mitigation strategies for tenure types. Create site specific management plans in collaboration with First Nations” (emphasis in original).

Kitsumkalum First Nation has developed a Kitsumkalum Community Marine Use Plan (2014). The plan covers jurisdiction, resource management, economic development, and capacity needs across all sectors of the marine market and non-market economy. The overarching goal is to realize a sustainable balance between economic development, social and cultural well-being, and ecosystem health. To this end, the plan utilizes an ecosystem-based management approach to resource use.

21.2.3 Aboriginal Fisheries Strategy Agreements

Under the Aboriginal Fisheries Strategy (AFS), Fisheries and Oceans Canada (DFO) negotiates annual agreements with Aboriginal groups that provide communal food, social and ceremonial (FSC) fishing opportunities, cooperative management arrangements and economic development opportunities.

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Aboriginal FSC fishing is regulated under the Aboriginal Communal Fishing Licenses Regulations, SOR/93-332. Aboriginal Communal Fishing licenses may specify conditions relating to species, quantities, methods, gear, and designated individuals and vessels. Aboriginal fishing for FSC purposes is open coast-wide throughout the year with little restrictions for crab, shellfish, pacific oyster, sea cucumber, green sea urchin, and red sea urchin. Salmon allocations for FSC fisheries are determined under communal FSC licenses. FSC fisheries for prawn and shrimp by trap may occur where authorized by an aboriginal communal license. Gear and catch limits are planned for prawn and shrimp by trap for 2015. FSC fisheries for ground fish are regulated under the Aboriginal Communal Fishing Licenses Regulations and Ground fish Integrated Fisheries Management Plan. Aboriginal harvest of herring for FSC purposes may occur coast wide where authorized by a communal license. FSC allocations for each Major Stock Assessment Area are determined through bilateral discussions. Aboriginal harvest of eulachon for FSC purposes may occur coast wide where authorized by a communal license. FSC quotas may be determined through bilateral discussions.

Commercial communal licenses are issued to Aboriginal groups under the Allocation Transfer Program (ATP) of the AFS and through limited pilot sales opportunities. Commercial communal licenses were also issued to First Nations through voluntary commercial license eligibilities and/or quota retirement under DFO's six year Pacific Integrated Commercial Fisheries Initiative. Commercial communal licenses may specify fishing area, times, species, allocations, methods or other restrictions and are regulated under the Aboriginal Communal Fishing Licenses Regulations (SOR/93-332). Inland Tsimshian First Nations are allocated specific salmon fisheries, whereas Coastal Tsimshian are allocated more diverse fisheries to capture more species.

Agreements under the Aboriginal Aquatic Resources and Management Program (AAROM) supports the establishment of Aboriginal aquatic resource and oceans management organizations for the purpose of increasing Aboriginal involvement in integrated watershed/ecosystem based planning and management.

21.2.4 Hunting and Gathering Regulations

Aboriginal persons registered under the Indian Act who are residents of British Columbia are not required to obtain any type of provincial hunting license under the Wildlife Act. Aboriginal persons registered under the Indian Act who are residents of B.C. and are exercising an Aboriginal right to hunt for sustenance purposes within a traditionally-used area are required to comply with hunting regulations related to public health and public safety. Aboriginal persons registered under the Indian Act who are residents of B.C. and wish to hunt outside their traditionally-used areas must do so in accordance with the Hunting Regulations. This includes making application for a Limited Entry Hunting authorization. Any hunting of wildlife species for sale or barter, in whole or in part, is not legal, except as authorized by regulation or where there is a demonstrated aboriginal or treaty right to do so.

It should be noted that the primary lands occupied by the Project is Lot 501, Lelu Island. This land is federally administrated Crown land and within the boundaries of a Canadian Port as defined in the *Canada Marine Act*. The Prince Rupert Port Authority (PRPA) administrates and manages the lands and waters within the boundaries of the Port of Prince Rupert. PNW LNG has been advised by the PRPA that (a) hunting and (b) trapping are not permitted or authorized on Lelu Island (pers. comm., PRPA, 2012). Despite that assertion, several Tsimshian First Nations identified hunting and trapping on Lelu Island as a traditional use activity.

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Gathering practices are generally not regulated under gathering-specific pieces of legislation. Commercial and personal use harvesting of mushrooms, berries, fern fiddleheads, and greens is freely allowed in Provincial forest lands. Seaweed harvesting for personal, non-commercial use is freely allowed without a permit on Crown lands except specially managed areas such as Ecological Reserves, Marine Reserves, Provincial Parks, and Federal Parks. Commercial harvest is allowed with a permit and several special restrictions apply. Licenses to Harvest Aquatic Plants are issued for the purposes of the commercial Spawn-on-Kelp (or Roe-on-Kelp) fishery, and for other commercial purposes such as specialty food for the restaurant market, and fertilizer. The Department of Federal Fisheries and Oceans (DFO) issues a limited entry license (J-License) for the impoundment of herring and subsequent sale of herring spawn-on-kelp. A License to Harvest Aquatic Plants in British Columbia is required by J-License holders to authorize harvest of *Macrocystis* (giant kelp) to be used in this fishery.

21.3 CONSULTATION WITH POTENTIALLY AFFECTED ABORIGINAL GROUPS

PNW LNG initiated consultation efforts with Metlakatla First Nation, Lax Kw'alaams First Nation, Gitxaala Nation, Kitselas First Nation, and Kitsumkalum First Nation in 2012. PNW LNG initiated consultation with Gitga'at First Nation in 2013 after the CEA Agency directed PNW LNG to engage with Gitga'at First Nation based on section 5(1)(c) of CEA Act 2012. PNW LNG's engagement activities with the First Nations are documented in Section 3.2 and Section 27.1.3 and general included three broad components:

- Direct consultation with the First Nations through one-on-one meetings, telephone calls, emails, and community meetings
- Engagement through the federal and provincial EA processes including presentations and dialogue within working group meetings, responses to information requests, and open houses
- Commissioning of traditional use studies (TUS) to further inform PNW LNG and the EA processes.

As part of ongoing consultation efforts, PNW LNG entered into Environmental Assessment Agreements (EAA) with five of the six Tsimshian First Nations and provided capacity funds to these Aboriginal groups to complete Traditional Use Studies (TUS). The exception was Lax Kw'alaams. PNW LNG was unable to conclude EAA with Lax Kw'alaams.

TUS reports have been completed for Metlakatla First Nation, Gitxaala Nation, Kitselas First Nation, and Kitsumkalum First Nation and were submitted to both CEAA and BC EAO by the end of August 2014. Gitga'at First Nation have also submitted an interim TUS report (Calliou Group 2014b; Crossroads CRM 2014; DMCS 2014; Inglis 2014; Pulla 2014).

PNW LNG has met individually with Metlakatla First Nation, Gitxaala First Nation, Kitselas First Nation, and Kitsumkalum First Nation to review and discuss the TUS findings and to jointly determine approaches to further refine the broader TUS site specific information to the categories of uses outlined in the TUS and to discuss potential mitigation measures. Information contained in the TUS reports and collected during subsequent meetings and correspondence informed and updated the description of baseline conditions, assessment of effects, and presented mitigation measures.

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To date, a TUS has not been completed for Lax Kw'alaams First Nation. PNW LNG recognizes Lax Kw'alaams First Nation's strong claim to Aboriginal rights to hunt, fish and gather plants and cedar bark. PNW LNG provided Lax Kw'alaams First Nation with initial capacity funding in 2013 (e.g., \$20,000 paid twice in two installments, in January and in June 2013). On several occasions, PNW LNG corresponded with Lax Kw'alaams First Nation to offer capacity funding under an Environmental Assessment Agreement even going so far on June 4, 2014 to confirm, in writing, that it would reimburse Lax Kw'alaams for all documented and reasonable expenses associated with the EA Process. This offer included capacity funding to conduct a TUS.

PNW LNG has attempted (and documented these attempts, see Section 27.1.3.3) to engage with Lax Kw'alaams First Nation to collect direct information from them about their Current Aboriginal Uses, and their issues, concerns, and interests in relation to potential impacts of the Project on the Lax Kw'alaams First Nations' Current Aboriginal Use. Engagement was successful, at least in some aspects, with respect to an investigative land and marine geotechnical assessment conducted by PNW LNG in 2013. However, after a protracted consultation and a delay in the start of work, agreement was not reached on the need for the geotechnical work despite Lax Kw'alaams written support (e.g., September 7, 2012 Letter of Agreement) for investigative works to continue on Lelu Island and in the surrounding waters. In addition, the Nation was also invited to participate and/or review in a number and variety of environmental assessment investigations.¹

Since the studies undertaken in mid-2013, PNW LNG has extended 41 invitations to Lax Kw'alaams First Nation to meet with it to discuss the Project. Lax Kw'alaams First Nation accepted nine of those invitations, declined four and did not respond to 28.

In the absence of primary data and information provided directly to PNW LNG from Lax Kw'alaams, PNW LNG has made reasonable efforts to assemble information related to Lax Kw'alaams First Nation's Current Aboriginal Use from information gathered through its engagement within the EA process and from secondary sources. PNW LNG worked directly with Ethno-historian Adrian Clark in 2013 and compiled an Ethnological history with respect to aboriginal land, water and resource use in and around Lelu Island and Prince Rupert Harbour from publically available sources. Lax Kw'alaams and the nine Allied Tribes are referenced in that document. Lax Kw'alaams First Nation provided comments and raised concerns throughout the environmental assessment process and PNW LNG has used these concerns to help strengthen the assessment of current use with respect to identified concerns. Table 21-2 presents a number of secondary sources reviewed and used to interpolate the current land and resource use of Lax Kw'alaams.

¹ Studies include marine inter-tidal and foreshore biological surveys, marine sediment sampling programs, country foods baseline assessments, fresh water fisheries inventories, migratory bird surveys, archaeological investigations on the mainland, baseline soil and vegetation acidification surveys.

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Table 21-2 Secondary Sources Reviewed for Lax Kw'alaams Current Aboriginal Use

Title	Date	Relevant Information	Source
Recent and ongoing Environmental Assessments			
Canpotex Potash Terminal Project	2013	Lax Kw'alaams included as an Aboriginal Group. No detailed information on Current Aboriginal Use.	http://www.ceaa-acee.gc.ca/050/documents/p47632/81285E.pdf
Northwest Transmission Line Project	2010	The Lax Kw'alaams First Nation asserted territories include territories on the lower Skeena River, winter villages at Prince Rupert Harbour, coastal areas such as the outer islands around Prince Rupert such as the Dundas islands and Stephens Island, and areas north of the Skeena River to Portland Inlet, including Work Channel and the Khutzeymateen Inlet. No Current Aboriginal Use information provided.	http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_project_home_299.html
Prince Rupert Gas Transmission Project	Under review	Section 33.12.1.1 of Part C of the Application has some information on Land Use and Practices: "The Lax Kw'alaams Band Fishery, wholly owned by Lax Kw'alaams Band, is the leading canned food producer in Port Simpson. The company's products comprise canned fish, canned crab, canned seafood, fish roe, and fish-oil (omega 3) for natural food supplements industry. Lax Kw'alaams Band also has ownership of the Coast Tsimshian Fishery, which is certified by the Marine Stewardship Council (LKB 2010)."	http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_project_home_403.html
LNG Canada Export Terminal Project	In progress	Lax Kw'alaams included as an Aboriginal Group. Currently available information on this project does not include current use information.	http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=80038
Prince Rupert LNG Project	In progress	Lax Kw'alaams included as an Aboriginal Group. Currently available information on this project does not include current use information.	http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=80042
Aurora LNG Digby Island	In progress	Lax Kw'alaams included as an Aboriginal Group. Currently available information on this project does not include current use information.	http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=80075
Lax Kw'alaams First Nation's Public Information			
Lax Kw'alaams First Nation website	nd	References history of fishing, no mention of species or locations.	http://laxkwalaams.ca/
Legal Decisions			
Lax Kw'alaams Indian Band v. Canada (Attorney General), 2011 SCC 56, [2011] 3 S.C.R. 535	2011	References history of trade in eulachon grease and Lax Kw'alaams First Nation's current commercial fishing interests. No further details on Current Aboriginal Use provided.	https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/7972/index.do

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Title	Date	Relevant Information	Source
Scholarly and Grey Literature			
English, Schmidt, Ruggione, and Devitt. Surveillance Report British Columbia Commercial Sockeye Salmon Fisheries. Intertek Moody Marine: Dartmouth, NS	2012	Lax Kw'alaams FSC sockeye fishery in Area 5, Skeena River Watershed and approach waters.	http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/british-columbia-sockeye-salmon/assessment-downloads-1/20120828_SR_SAL19.pdf
Charles R. Menzies and Caroline F. Butler, "The Indigenous Foundation of the Resource Economy of BC's North Coast" Labour/Le Travail, 61 (Spring 2008), 131–149.	2008	Mention of industrial forestry. No other Current Aboriginal Use documented.	http://www.iltjournal.ca/index.php/ilt/article/view/5529/6393
Matthews and Young (2005). Development on the Margin-Development Orthodoxy and the Success of Lax Kw'alaams, British Columbia - Journal of Aboriginal Economic Development, 2005	2005	Acquisition of timber assets. No other Current Aboriginal Use documented.	http://portal.usask.ca/docs/Journal%20of%20Aboriginal%20Economic%20Development/JAED_v4no2/JAED_v4no2_Article_pg100-108.pdf
Cassidy and Dale After Native Claims?: The Implications of Comprehensive Claims Settlements for Natural Resources in British Columbia. Institute for Research on Public Policy: Halifax, NS.	1988	Discussion of Lax Kw'alaams First Nations' 1983 agreement with Dome Petroleum Ltd. with respect to its Grassy Point LNG Project. No details on Lax Kw'alaams First Nation's Current Aboriginal Use.	Institute for Research on Public Policy: Halifax, NS.
Kessel Community involvement in "mega-project" planning : a case study of the relationship between the Lax Kw'alaams Indian Band and Dome Petroleum	1984	Most community members work in the fishing industry (cannery or onboard trawlers and gillnetters).	http://circle.ubc.ca/handle/2429/25001

Interests, issues, and concerns raised by Aboriginal groups in the TUS reports and in other consultation efforts informed the assessment of effects on Current Aboriginal Use and presented mitigation measures. Key interests, issues, and concerns raised by Aboriginal groups during consultation efforts are summarized in Table 21-3.

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Table 21-3 Influence of Aboriginal Groups' Interests, Issues, and Concerns on the Assessment

Issue or Concern	Detailed Description	Influence on the Assessment
Effects on navigation and mobility	<ul style="list-style-type: none"> • Ability to continue to navigate traditional waters in the marine areas influenced by the Project and continued unimpeded access to traditional harvesting areas • Marine safety exclusion zones whereby aboriginal groups may be excluded from areas traditionally used • Willful avoidance of traditional harvesting locations due to increased marine traffic • Cumulative effects of increased marine traffic on aboriginal marine navigation. 	Assessment of effects of marine access to current Aboriginal use sites
Effects on marine and terrestrial resources	<ul style="list-style-type: none"> • Potential negative impacts to marine ecosystems and fish and fish habitat and marine vegetation, particularly the sensitive habitats on Flora Bank • Potential negative impacts on fish life cycles, migration and fish habitat utilization. Species of specific interest include salmon, eulachon, ground fish, Dungeness crab and others • Direct injury or mortality to fish and marine mammals • Adverse changes in behaviour of fish and marine mammals • Potential negative impacts on the health of marine species due to perceived unacceptable levels of dioxins and furans in disturbed sediments in Porpoise Harbour and Chatham Sound through dredging and disposal at sea • Cumulative effects on marine resources • Wildlife and marine bird avoidance of key habitat • Potential negative impacts of marine vessel traffic on seabirds and their movements • Effects of liquefied natural gas (LNG) plant lighting and emergency flaring on birds • Potential negative impacts on freshwater ecosystems and vegetation due to perceived decreases in air quality from future LNG plant emissions. 	Assessment of potential effects on quantity and quality of lands, waters, and resources used for traditional purposes
Effects on air, noise, light, and visual quality	<ul style="list-style-type: none"> • Perceived impacts to area air quality from future LNG plant air emissions • Potential effects of perceived impacts to air quality on human health and the environment • Visual impacts of increased industrial ships coming to Port in Prince Rupert Harbour and of land and water based project facilities • Impacts of ambient light from shipping and project facilities • Visual quality impacts and associated effects to human health and quality of life. 	Assessment of effects on the sensory environment for current Aboriginal use
Effects on specific current Aboriginal uses	<ul style="list-style-type: none"> • Perceived loss of traditional access to traditional marine harvest areas and the potential perceived negative impacts to the quality of marine harvests • Potential perceived impacts to food security and quality due to the dredging of sediments and the exposure of marine life to dioxins and furans and, if these impacts actually manifested in threshold exceedances, then the potential negative effects to human health • Effects on timing, methods and locations of trapping and hunting areas • Loss of culturally modified trees as an archaeological resource, teaching tool and territorial feature • Project effects on traditional culture and practices. 	Assessment of effects on the location, timing, methods, effort, success and satisfaction related to specific current Aboriginal uses

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21.4 SCOPE OF THE ASSESSMENT

Scoping is used to focus the EIS on those issues that have the greatest potential to cause significant adverse effects. Four steps guided the scoping process for the assessment of effects to Current Aboriginal Use:

- Step 1: selection of Current Aboriginal Use subcomponents on the basis of Aboriginal groups' interests and concerns as expressed through consultation activities
- Step 2: definition of spatial and temporal assessment boundaries for Current Aboriginal Use
- Step 3: identification of potential interactions between project components/activities and VCs
- Step 4: identification of key potential effects on Current Aboriginal Use.

Each of these steps is described below.

21.4.1 Selection of Valued Subcomponents

Current Use of Lands and Resources for Traditional Purposes (Current Aboriginal Use) was selected as a receptor VC based on issues raised during consultation on the EIS Guidelines with Aboriginal groups and government agencies and consultations related to the provincial environmental assessment. As described in Section 9.1.3 of the EIS Guidelines, Current Aboriginal Use includes activities related, but not limited, to hunting, fishing, trapping, cultural and other traditional uses of the land (e.g., collection of medicinal plants, use of sacred sites). Given that Current Aboriginal Use consists of a number of distinct uses, the Current Aboriginal Use VC is split into four subcomponents relating to each primary Current Aboriginal Use, including: fishing practices; hunting and trapping practices; gathering practices; spiritual and ceremonial practices. The rationale for selecting these Valued Subcomponents is identified in Table 21-4.

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Table 21-4 Valued Subcomponents Included in the Assessment

Valued Subcomponent	Rationale for Inclusion							
	Metlakatla First Nation	Lax Kw'alaams First Nation	Gitxaala Nation	Kitselas First Nation	Kitsumkalum First Nation	Gitga'at First Nation	EIS Guidelines	
Fishing practices	X	X	X	X	X	X	X	Fishing for traditional purposes is a highly valued practice by Aboriginal groups. Aboriginal groups have raised concerns about the potential of the Project to impact current Aboriginal fishing practices, including potential impacts on the quantity and quality of harvestable fish species, food security, access to preferred fishing locations, and quality of the fishing experience.
Hunting and trapping practices	X	X	X	X	X	X	X	Hunting for traditional purposes is a highly valued practice by Aboriginal groups. Aboriginal groups have raised concerns about the potential of the Project to impact current Aboriginal hunting practices, including the quantity and quality of harvestable marine game species, access to traditional resources, food security, and quality of the marine harvesting experience.
Gathering practices	X	X	X	X	X	X	X	Gathering of harvestable plants and marine resources is a highly valued practice by Aboriginal groups. Aboriginal groups have raised concerns about the potential of the Project to impact current gathering practices.
Use of spiritual sites and cultural landscapes	X	X	X	X	X	X	X	Use of spiritual sites and cultural landscapes is a highly valued practice by Aboriginal groups. Aboriginal groups have raised concerns about the potential of the Project to impact current spiritual sites and cultural landscapes, including removal of these sites and features.

Each Current Aboriginal Use VC is comprised of a number of activities related to the specific Current Aboriginal Use. Current Aboriginal Use activities typically include:

- Travelling: utilizing traditional and other travel routes to access Current Aboriginal Use sites
- Camping: temporarily dwelling in specific locations to access Current Aboriginal Use sites
- Harvesting: killing, catching, and collecting animal and plant resources
- Teaching: telling stories and demonstrating techniques in order to transmit cultural knowledge related to Current Aboriginal Use
- Observing: paying attention to environmental phenomena to confirm, correct, or add to traditional ecological knowledge
- Communing: engaging in intimate aesthetic and/or spiritual and ceremonial communication with features of the landscape
- Socializing: spending time with family and friends and strengthening social bonds.

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Transportation and habitation (camping) practices were considered but excluded as Valued Subcomponents. Scoping and archaeological field work did not identify any Lelu Island current habitation sites or practices that have the potential to directly or indirectly interact with project components and activities. Marine transportation routes and practices are considered under the access pathway VC (see below) and described in the baseline conditions section for each Aboriginal group considered in the assessment.

All Current Aboriginal Uses assessed in Section 21 may have cultural, spiritual, and ceremonial elements. The Current Use of Spiritual Sites and Cultural Landscapes Valued Subcomponent focuses on specific sites identified by Aboriginal groups that have spiritual significance. Cultural landscapes are defined by the UNESCO World Heritage Committee as "cultural properties [that] represent the combined works of nature and of man [*sic*]" (UNESCO 2012).

As noted in the rationale provided in Table 21.4-1, potential project-related effects on Valued Subcomponents are mediated by a number of pathway VCs. These pathway VCs are defined by key conditions that support Current Aboriginal Use activities. Key Current Aboriginal Use pathway VCs that have the potential to interact with project components and activities include:

- **Access to lands, waters, and resources for traditional purposes:** continued access to preferred Current Aboriginal Use locations
- **Quantity of lands, waters, and resources currently used for traditional purposes:** sufficient quantity of lands, waters and resources to support Current Aboriginal Use activities
- **Quality of lands, waters, and resources currently used for traditional purposes:** resources of sufficient quality to support Current Aboriginal Use activities
- **Sensory environment for current aboriginal uses:** acceptable sensory environment within which to undertake Current Aboriginal Use activities.

21.4.2 Selection of Assessment Boundaries

21.4.2.1 Temporal Boundaries

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

- **Construction:** Approximately 5 years from the *Canadian Environmental Assessment Act* approval
- **Operations:** Over 30 years from construction completion
- **Decommissioning:** After cessation of operations.

21.4.2.2 Spatial Boundaries

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

21.4.2.2.1 Project Development Area

The project development area (PDA) is approximately 261 ha, including approximately 160 ha on Lelu Island and approximately 100 ha of marine infrastructure in Lelu Slough, Porpoise Channel and out towards Chatham Sound. The project components on the mainland are limited to a road and right-of-way connecting

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a provincial mainland highway known as “Skeena Drive” through the mainland lot to the bridge connecting to Lelu Island. The total disturbance area on the privately owned land is approximately 1 ha.

21.4.2.2.2 Local Assessment Area

The local assessment area (LAA) includes Lelu Island, Stapledon Island, Kitson Island, the Kinahan Islands, adjacent marine areas including Porpoise Channel, Flora Bank, Porpoise Harbour, Inverness Passage and Chatham Sound, and the shipping route between the marine terminal in Chatham Sound 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.

21.4.2.2.3 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 contribution to potential cumulative effects, in combination with other projects and activities.

21.4.2.3 Administrative and Technical Boundaries

21.4.2.3.1 Administrative Boundaries

Administrative boundaries for the assessment include current DFO marine resource management measures that influence the potential for interaction between the Project and some Current Aboriginal Uses.

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 PFMA 1 through 10 are closed to the harvesting of bivalve shellfish due to the inconsistent and incomplete bio toxin 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 (bio toxin 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 the marine areas around Lelu Island except on the northwest coast, through Porpoise Channel and Porpoise Harbour (DFO 2013).

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21.4.2.4 Technical Boundaries

Technical boundaries for the assessment relate to data and information limitations, confidentiality, and the success of Aboriginal engagement efforts to date.

PNW LNG has been unable to obtain AFS agreements for the Aboriginal groups considered in this assessment. As of mid-2013, DFO removed AFS agreements from the public record due to concerns raised by the Privacy Commissioner about confidentiality (J. Chin, Pers. Comm., 2014).

PNW LNG has obtained TUS data from five of the six Aboriginal groups considered in this assessment. Information contained in these reports is of varying level of detail and completeness and may not accurately reflect current use. Some information provided by Aboriginal groups to PNW LNG is confidential and cannot be reproduced in this Section. PNW LNG's engagement efforts to date with Lax Kw'alaams First Nation have been unsuccessful in obtaining information from Lax Kw'alaams about their Current Aboriginal Use (see Section 21.3).

21.4.3 Identification of Potential Interactions

21.4.3.1 Key Project Components and Activities

Table 21-5 identifies project components and activities that may interact with Current Aboriginal Use due to their assessed potential to result in residual environmental effects, organized by VC. Project components and activities are further described in Section 2.

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Table 21-5 VCs and Potential Interactions with Current Aboriginal Use

Project components and activities	VCs with Predicted Residual Effects										
	Air quality	Acoustic environment	Ambient light	Vegetation and wetland resources	Terrestrial wildlife and marine birds	Freshwater aquatic resources	Marine resources	Navigation and Marine Use	Visual quality	Human ecological health	Heritage and archaeological resources
Construction											
Site Preparation (land-based)	✓	✓	✓	✓	✓	✓			✓		✓
Onshore Construction	✓	✓	✓		✓	✓			✓		✓
Vehicle Traffic	✓		✓								
Dredging	✓	✓			✓		✓	✓	✓	✓	✓
Marine Construction		✓			✓		✓	✓	✓		✓
Waste Management and Disposal											
Disposal at Sea							✓	✓			
Operational Testing and Commissioning			✓								
Operations											
LNG Facility	✓	✓	✓	✓	✓	✓			✓	✓	
Marine Terminal Use	✓	✓	✓		✓		✓	✓	✓	✓	
Shipping	✓	✓			✓		✓	✓	✓	✓	
Waste Management and Disposal											
Fish Habitat Offsetting											
Wetland Habitat Compensation											
Decommissioning (Note: Full decommissioning to a natural state highly unlikely on industrial Port lands.)											
Dismantling Facility and Infrastructure	✓				✓		✓	✓			

NOTES:

ⁱ See Table 4.4 in Section 4.1.4.1 for a full description of project components and activities.

21.4.3.2 Potential Interactions

Table 21-6 identifies and describes potential interactions between project components and activities and key Current Aboriginal Use conditions.

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Table 21-6 Potential Interactions between Project Components/Activities and Current Use of Lands and Resources for Traditional Purposes

Project Components and Activities	Potential Interaction with Current Aboriginal Use Sub-VCs					Description of Potential Interactions
	Fishing	Hunting & Trapping	Gathering	Spiritual & Ceremonial	Habitation	
Construction						
Site Preparation (land-based)	1	2	2	1	1	Changes in air quality, acoustic environment, ambient light, vegetation and wetland resources, terrestrial wildlife and marine birds, freshwater aquatic resources, visual quality, and heritage and archaeological resources have the potential to interact with the quantity of lands, waters, and resources for traditional use, the quality of lands and resources for traditional use, and the nature of the sensory environment for traditional uses.
Onshore Construction	0	2	2	1	1	Changes in air quality, acoustic environment, ambient light, terrestrial wildlife and marine birds, freshwater aquatic resources, visual quality, and heritage and archaeological resources have the potential to interact with the quantity of lands and resources for traditional use, the quality of lands, waters, and resources for traditional use, and the nature of the sensory environment for traditional uses.
Vehicle Traffic	0	0	0	0	0	Higher risk of vehicle-wildlife collisions on mainland roads have the potential to interact with the quantity of terrestrial wildlife.
Dredging	2	1	0	0	0	Changes in air quality, acoustic environment, terrestrial wildlife and marine birds, marine resources, navigation and marine resource use, visual quality, human and ecological health, and heritage and archaeological resources have the potential to interact with the quantity of waters and resources for traditional use, the quality of waters and resources for traditional use, and the nature of the sensory environment for traditional uses. Dredging activities also hold the potential to interact with access to waters and resources for traditional uses.

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Project Components and Activities	Potential Interaction with Current Aboriginal Use Sub-VCs					Description of Potential Interactions
	Fishing	Hunting & Trapping	Gathering	Spiritual & Ceremonial	Habitation	
Marine Construction	2	2	0	0	1	Changes in the acoustic environment, terrestrial wildlife and marine birds, marine resources, navigation and marine resource use, visual quality, and heritage and archaeological resources have the potential to interact with the quantity of lands, waters, and resources for traditional use, the quality of lands, waters, and resources for traditional use, and the nature of the sensory environment for traditional uses. Marine construction also holds the potential to interact with access to lands, waters, and resources for traditional uses.
Waste Management and Disposal	0	0	0	0	0	No expected interactions as liquid plant wastes are diverted to existing municipal treatment facilities, solid wastes are diverted to existing landfills or secure, permitted disposal sites.
Disposal at Sea	2	1	0	0	0	Changes in the marine environment and potential impacts to marine birds and marine resources hold the potential to interact with the quantity of waters and resources for traditional use and the quality of waters and resources for traditional use.
Operational Testing and Commissioning	0	0	0	0	0	Changes in ambient light hold the potential to interact with the nature of the sensory environment for traditional uses.
Site Clean-Up and Reclamation	0	0	0	0	0	No expected interactions. Reclamation of Port industrial lands to a natural state is unlikely.
Operations						
LNG Plant	1	2	2	1	1	Changes in air quality, acoustic environment, ambient light, vegetation and wetland resources, terrestrial wildlife and marine birds, freshwater aquatic resources, visual quality, and human and ecological health hold the potential to interact with the quantity of lands, waters, and resources for traditional use, the quality of lands, waters, and resources for traditional use, and the nature of the sensory environment for traditional uses.

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Project Components and Activities	Potential Interaction with Current Aboriginal Use Sub-VCs					Description of Potential Interactions
	Fishing	Hunting & Trapping	Gathering	Spiritual & Ceremonial	Habitation	
Marine Terminal Use	1	0	0	0	0	Changes in air quality, acoustic environment, ambient light, terrestrial wildlife and marine birds, marine resources, navigation and marine resource use, visual quality, and human and ecological health hold the potential to interact with the quantity of lands, waters, and resources for traditional use, the quality of lands, waters, and resources for traditional use, and the nature of the sensory environment for traditional uses. Marine terminal use also holds the potential to interact with access to lands, waters, and resources for traditional use.
LNG carriers	1	1	0	1	0	Changes in air quality, acoustic environment, terrestrial wildlife and marine birds, marine resources, navigation and marine use, visual quality, and human and ecological health hold the potential to interact with the quantity of lands, waters, and resources for traditional use, the quality of lands, waters, and resources for traditional use, the nature of the sensory environment for traditional uses, and access to lands, waters, and resources for traditional use.
Waste Management and Disposal	0	0	0	0	0	No expected interactions
Fish Habitat Offsetting	0	0	0	0	0	No expected interactions
Wetland Habitat Compensation	0	0	0	0	0	No expected interactions
Decommissioning (Note: Decommissioning of the LNG plant and terminal to a natural state is highly unlikely for industrial Port lands)						
Dismantling Facility and Infrastructure	1	1	0	0	0	Changes in acoustic environment, terrestrial wildlife and birds, marine resources, and navigation and marine resource use hold the potential to interact with the quantity of lands, waters, and resources for traditional use, the quality of lands and resources for traditional use, the nature of the sensory environment for traditional uses, and access to lands, waters, and resources for traditional use.

KEY:

0 = No interaction or negligible to minor adverse effect expected; implementation of best practices, standard mitigation and management measures; no monitoring required, no further consideration warranted.

1= Potential moderate adverse effect requiring unique active management/monitoring/mitigation; warrants further consideration.

2= Key interaction resulting in potential significant major adverse effect or significant concern; warrants further consideration.

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21.4.4 Identification of Potential Effects

Current Aboriginal Use activities are affected when key parameters associated with the activity change. Key parameters include:

- **Location:** the preferred location(s) where the activity is practiced
- **Timing:** the preferred time of day, week, month, and/or year when the activity is practiced
- **Effort:** the time (duration and frequency), distance, and expense required to engage in the activity
- **Success:** the degree to which the objectives of the activity are achieved
- **Satisfaction:** the extent to which the activity meets aesthetic, social, spiritual, material or other expectations.

The methods used by Aboriginal peoples when undertaking Current Aboriginal Use activities was considered but excluded as a potential effect. Aboriginal peoples use a variety of methods to fish, hunt, trap, gather, travel, camp, and engage in spiritual and ceremonial practices. To the extent possible, methods of Current Aboriginal Use are identified within the baseline conditions sections for each First Nation. Some fishing methods are prescribed by Aboriginal FSC agreements. Aboriginal peoples have not identified the methods of Current Aboriginal Use as an issue with respect to potential project effects. Potential project-related changes to pathway VCs are not expected to cause any changes in Aboriginal peoples Current Aboriginal Use methods.

Effects on Current Aboriginal Use activities hold the potential to create further effects on Aboriginal peoples. While Section 21 is limited to the consideration of potential changes in Current Aboriginal Use activities, the following list identifies effects on Aboriginal peoples that could result from changes in Current Aboriginal Use and where these effects are assessed:

- **Infringement of Aboriginal rights:** e.g., effects on subsistence and title rights. See EIS Addendum Section 27
- **Change in socio-economic conditions:** e.g., decreased social cohesion, decreased reciprocity, increased cost of living due to increased reliance on store-bought foods. See EIS Addendum Section 14
- **Change in health status:** e.g., decreased physical activity, increased exposure to dioxins and furans in country foods, increased consumption of low quality store-bought foods. See EIS Addendum Section 19
- **Change in cultural heritage:** e.g., decreased cultural transmission and associated impacts to collective memory. See EIS Addendum Section 20.

21.5 ASSESSMENT METHODS

21.5.1 Assessment Steps

The key steps involved in the assessment are outlined below:

1. Residual environmental effects are carried forward from relevant sections of the EIS and EIS Addendum into the assessment of effects on Current Use of Lands and Resources for Traditional Purposes (Current Aboriginal Use)
2. These residual environmental effects are assessed for their interaction with key conditions for Current Aboriginal Use (defined here as pathway VCs)

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3. Project components and activities are also assessed for direct interactions with pathway VCs, especially for access to lands, waters, and resources
4. Mitigation measures are presented for potential effects on pathway VCs
5. Residual effects on pathway VCs are identified
6. Residual effects on pathway VC are assessed for their interaction with receptor Sub-VCs
7. Mitigation measures are presented for potential effects on receptor Sub-VCs
8. Residual effects on receptor Sub-VCs are characterized via criteria outlined in Section 21.5.4.2
9. Significance, likelihood, and confidence are determined for residual effects on receptor Sub-VCs.

21.5.2 Selection of Measurable Parameters

Indicators are defined for pathway VCs and Sub-VCs in Table 21-7.

Table 21-7 Measurable Parameters and Indicators for Pathway and Receptor Valued Components

Valued Components	Measurable Parameters	Indicators	Section Reference
Pathway VCs			
Access to use sites	Interference with means of approach or entry to use sites	Change in means of approach or entry to use sites	21
Quantity of resources	Relative abundance of resources Geographic distribution of resources	Change in habitat Change in mortality risk Change in wildlife movement patterns Change in fish and marine mammal behaviour	11 and 13
Quality of resources	Contamination of country foods	Risk quotient based on ingestion of and exposure to chemical compounds in sediments	19
	Resource quality	Change in resource quality	21
Sensory environment	Acoustic quality	Noise annoyance risk (%HA)	8
	Air quality	Maximum concentrations of sulfur dioxide (SO ₂), nitrogen dioxide (NO ₂), carbon monoxide (CO), and particulate matter (PM)	6
	Light quality	Light nuisance risk	9
	Visual quality	Visibility of project components Change in existing visual condition Change in visual quality objective class Frequency, duration and prominence of shipping vessels	17
	Human presence	Change in number of non-Aboriginals in the project areas	21

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Valued Components	Measurable Parameters	Indicators	Section Reference
Receptor VC			
Current Aboriginal Use (activities related to fishing practices, hunting and trapping practices, gathering practices, social and ceremonial practices, travel and habitation practices)	Location	Change in preferred geographic locations of traditional use activities	21
	Timing	Change in preferred time of day, month, and/or year of use activities	21
	Methods	Change in preferred means used to achieve use objectives	21
	Effort	Change in quantity of time required to access use site and achieve use goals Change in monetary expense required to access use site and achieve use goals	21
	Success	Change in quantity of harvested resources	21
	Satisfaction	Change in adequacy of resource harvest Change in solitude, peace and quiet, aesthetics Change in social bonding Change in spiritual experience	21

21.5.3 Data Sources

Baseline data sources for this assessment include information from:

- Interim and Final Traditional Use Studies for Metlakatla First Nation, Gitxaala Nation, Kitselas First Nation, Kitsumkalum First Nation, and Gitga’at First Nation (Calliou Group 2014b; Crossroads CRM 2014; DMCS 2014; Inglis 2014; Pulla 2014)
- Past research conducted in the region
- Publicly available TK/TU information
- Engagement and follow-up interviews with potentially affected Aboriginal groups
- Baseline data gathered for the assessments of other VCs.

The following public sources were used:

- Academic Sources, including PhD theses and journal articles (i.e., Coupland 1985; McDonald 1985; Halpin and Seguin 1990; Matthews and Young 2005; McDonald 2006)
- Books and other reference materials (i.e., Boas 1916; Miller 1997; Moerman 1998; Berthiaume 1999; McDonald 2003; Muckle 2007)
- Technical reports (i.e., Seguin-Anderson 2006; Ference Weiker & Company Ltd. 2009; Gill and Ritchie 2011; Marsden 2011; Menzies 2011; Satterfield et al. 2012) In addition, for the purposes of this EIS, PNW LNG commissioned a report that synthesized available information regarding current and past use of Lelu Island (Clark 2013).

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21.5.4 Analytical Methods

21.5.4.1 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 as well as professional judgment. PNW LNG is unaware of established standards or thresholds with which to assess effects on Current Aboriginal Use in professional practice or academic literature.

21.5.4.2 Residual Effects Description Criteria

See Table 21-8 for the criteria used to assess the residual effects from the Project.

Table 21-8 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. Draws 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 vulnerability to change caused by the Project. Aboriginal use close to historic levels, little interference with underlying conditions, little interference with opportunities to engage in use as preferred, high resilience to change. M—Moderate vulnerability to change caused by the Project. Aboriginal use moderately diminished from historical levels, moderate interference with underlying conditions, and moderate interference with opportunities to engage in as preferred, moderate resilience to change. H—High vulnerability to change caused by the Project. Aboriginal use highly diminished from historical levels, high interference with underlying conditions, high interference with opportunities to engage in use as preferred, low resilience to change.
Magnitude	Refers to the expected size or severity of the residual effect. Considers 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. Little to no alteration of behaviour is required to carry out the current Aboriginal use M—Moderate, varies from baseline and may result in noticeable changes to Current Aboriginal Use. At least some behaviours are altered at least some of the time while carrying out the Current Aboriginal Use. H—High, varies from baseline to a high degree. The current Aboriginal use can no longer be carried out in preferred locations and ways.
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.

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Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
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>where that is practical and a long-term management objective</i> 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. MI—Multiple irregular event, will happen more than one time but not in a predictable way. MR—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.

21.5.4.3 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).

Not Significant: The residual effect has: negligible to moderate magnitude; PDA or LAA geographic extent; short- or medium-term duration; and is reversible. The residual effect on the current Aboriginal use results in little discernible change, or a discernible, but not consequential, change in an Aboriginal group’s overall practice with respect to the VC.

Significant: The residual effect has: high magnitude; RAA geographic extent; long term or permanent duration; and is irreversible. The residual effect results in consequential changes to an Aboriginal group’s overall practice with respect to the VC.

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21.5.4.4 Assumptions and the Conservative Approach

Where site-specific information for Current Aboriginal Uses is lacking, the assessment draws on relevant information to conservatively assume which Current Aboriginal Uses may take place at those sites.

21.6 ASSESSMENT OF EFFECTS ON METLAKATLA FIRST NATION’S CURRENT ABORIGINAL USE

21.6.1 Baseline Conditions for Current Aboriginal Use

Information about Metlakatla First Nation’s Current Aboriginal Use is derived from the Metlakatla First Nation Traditional Land Use and Ecological Knowledge of the Proposed Pacific NorthWest LNG Project Final Report (DMCS 2014) and interactions between PNW LNG and Metlakatla on the report. Though this document did not provide clear distinction between Current Aboriginal Use Activities and traditional practices, PNW LNG has assumed that most uses outlined in the study represent current practices. The exception to this is whale harvesting, as PNW LNG understands that the harvesting of whales does not currently occur in the area.

Metlakatla First Nation’s Current Aboriginal Use generally follows traditional annual seasonal patterns (further described in Section 21.6.1). Table 21-9 presents the main features of this traditional seasonal round.

Table 21-9 Metlakatla First Nation Traditional Seasonal Round

Dates	Activities	Locations	Species
Spring			
Feb-Apr	Fishing	lower Nass River around Mill Bay and Kincolith, and in the Observatory Inlet/Portland Canal areas	eulachon
late May	Gathering - marine	Prince Rupert Harbour and further offshore	seaweed herring roe
	Fishing	offshore	halibut, flounder and cod
	Trapping - marine	coast of Chatham Sound	spring salmon, abalone and other shellfish, including octopus, sea urchins, sea prunes and sea cucumbers
June	Gathering	islands just west of the Prince Rupert Harbour	gull and oyster catcher eggs
Throughout spring	Hunting – marine	Not specified	sea lions and seals
Throughout spring	Gathering - terrestrial	Not specified	salmonberry sprouts, cow parsnip, licorice fern roots, jack pine sap and needles, hemlock bark and devil’s club

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Dates	Activities	Locations	Species
Summer			
June through September or October	Fishing	Skeena River	salmon (five species)
Not specified	Gathering – terrestrial		roots and tubers, many varieties of berries (salmonberries, gooseberries, elderberries, raspberries, bunchberries, dwarf blueberries, black and red currants, soapberries and huckleberries), and food and medicinal plants (licorice fern root, Hudson Bay tea, hemlock bark, devil’s club and fireweed)
Not specified	Hunting - terrestrial		bear, mountain goat, beaver and deer
Fall			
June through September or October	Fishing	Skeena River	salmon (five species)
Not specified	Gathering - terrestrial		berries and plants including bog cranberries, salal berries, crab apples, rosehips and licorice fern roots
Not specified	Hunting – terrestrial		mountain goat, moose, ducks and geese
Winter			
November through February	Fishing and marine gathering and trapping	permanent winter villages	winter spring salmon, ling cod, black cod, grey cod, halibut, red snapper, octopus, cockles, china hats, mussels, prawns, shrimp, sea cucumbers, sea urchins, sea prunes, abalone, geoduck and crabs
Not specified	Hunting - terrestrial	Not specified	elk, sheep, deer, mountain goat, mountain lion, bear, ducks, geese and swans
Not specified	Hunting - marine	Not specified	sea lion, seal, sea otter
Not specified	Trapping - terrestrial	Not specified	lynx, raccoon, hare, porcupine, mink, beaver, marmot, muskrat and fox

SOURCE: DMCS (2014)

The following sections provide baseline information about Metlakatla First Nation’s current fishing practices (Section 21.6.1.1), hunting and trapping practices (Section 21.6.1.2), terrestrial gathering practices (Section 21.6.1.3), use of spiritual sites and cultural landscapes (Section 21.6.1.4), and transportation practices (Section 21.6.1.5). Given the inclusion of some marine gathering practices within fisheries designations under the AFS, marine gathering is included within the fishing category.

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21.6.1.1 Current Fishing Practices

Metlakatla First Nation fishes and traps the following marine species within the LAA:

- Crab
- Bottom fish (flounder, unspecified)
- Eulachon
- Halibut
- Herring
- Ling cod
- Pacific cod
- Octopus
- Prawns
- Rock cod
- Rockfish
- Salmon (sockeye, spring, coho, chum pink)
- Sablefish
- Shrimp
- Steelhead
- Yelloweye.

Table 21-10 identifies high density traditional land use sites used by Metlakatla First Nation and the fish species harvested in those locations.

Table 21-10 Fish Species Harvested and Fishing Locations

Fishing Location	Fish Species
Metlakatla, Digby Island; waters off the west coast of Metlakatla	Eulachon, crab (Dungeness, unspecified), halibut, salmon (spring, sockeye, chum, pink, coho), steelhead, herring, ling cod, yelloweye, rock cod, flounder, rockfish, sablefish, groundfish
Potential project shipping route (west of Lelu Island northwest to Triple Island pilotage station)	Salmon (sockeye, spring, coho, chum, pink), steelhead, halibut, sablefish, rockfish, yelloweye, ling cod, Pacific cod, rock cod, red snapper, groundfish, crab (unspecified, Dungeness), octopus (unspecified, giant Pacific)
Tree Knob Island Group	Halibut, salmon (spring, sockeye, chum, pink, coho), ling cod, herring, steelhead, rock cod, Pacific cod, crab (unspecified), octopus (unspecified, giant Pacific), rockfish, yelloweye, groundfish
Melville Island	salmon (sockeye, spring, coho, chum, pink), steelhead, crab (Dungeness, unspecified), halibut, eulachon
Hunt's Inlet, Porcher Island	Salmon (sockeye, spring, coho, chum, pink), steelhead, halibut, herring, bottom fish, rockfish, yelloweye, ling cod, rock cod
Lucy Islands	red snapper, ling cod, rock cod, halibut, salmon (spring, pink, sockeye, coho) steelhead, octopus, crab, yelloweye, rockfish
Lelu Island including project development area	salmon (sockeye, spring, coho, chum, pink), steelhead, crab (Dungeness, unspecified), halibut, yelloweye, rockfish, eulachon

Source: DMCS (2014)

According to the Metlakatla First Nation TUS (DMCS 2014), the marine waters between Lelu and Stapledon Islands, over Flora Bank, and through Inverness Slough are some of the main Sockeye salmon drifts and salmon fishing areas. In addition, Chatham Sound, the location of existing shipping routes into Prince Rupert Harbour from Triple Island, is an important marine resource harvesting and fishing area.

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Metlakatla First Nation gathers the following marine species within the LAA:

- California sea cucumber
- Herring spawn
- Chiton (black, gumboot)
- Clams (butter, geoduck, unspecified)
- Cockles
- Kelp
- Mussels
- Northern abalone
- Rock scallops
- Sea urchin (green, red)
- Sea cucumber
- Seaweed.

Table 21-11 identifies high density traditional land use sites used by Metlakatla First Nation and the marine species gathered in those locations.

Table 21-11 Marine Species Gathered and Marine Gathering Locations

High Density Land Use Site	Marine Species Gathered
Metlakatla, Digby Island; waters off west coast of Metlakatla	herring spawn, giant kelp, clams, butter clams, northern abalone, cockles, green sea urchins, sea urchins (unspecified), California sea cucumber, chiton (unspecified), black chiton, gumboot chiton, mussels, geoduck, seaweed
Potential project shipping route (west of Lelu Island northwest to Triple Island pilotage station)	cockles, clams, mussels, sea urchins (unspecified), red sea urchins, green sea urchins, chiton (unspecified), black chiton, gumboot chiton, northern abalone, sea cucumber (California), seaweed, geoduck, rock scallops,
Tree Knob Island Group	northern abalone, clams, butter clams, sea cucumber (unspecified, California), red sea urchins, green sea urchins, sea urchins (unspecified), cockles, chiton (unspecified), black chiton, gumboot chiton, mussels, seaweed, rock scallops
Melville Island	abalone, seaweed, clams, mussels, cockles, rock scallops, sea cucumber, green sea urchin, black chiton, gumboot chiton, herring spawn, kelp
Hunt's Inlet, Porcher Island	clams, mussels, northern abalone, chiton (unspecified), sea urchins (unspecified), geoduck, seaweed
Lucy Islands	seaweed, black chiton, gumboot chiton, sea urchin, green sea urchin, northern abalone, California sea cucumber, seagull eggs, clams, mussels, cockles, geoducks
Lelu Island including project development area	seaweed

Source: DMCS (2014)

Further meetings with Metlakatla First Nation identified that Metlakatla First Nation members' fishing activities overlap with: water lots surrounding Lelu Island, including the road access bridge to the mainland, MOF dredge area and turning basin; the suspended trestle-bridge and pipe-pile supported jetty to the marine terminal in Chatham Sound; the dredge deposition area and total suspended solids (TSS) area at the disposal at sea site (Brown Passage); marine areas of underwater noise during construction; and along the existing

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ship transit routes travelled by large vessels currently and, if the Project proceeds, liquefied natural gas (LNG) carriers from Triple Island to the Port of Prince Rupert. The overlaps interact with commercial fisheries for sockeye salmon, pink salmon, steelhead, and trout, as well as aboriginal fisheries for salmon, eulachon, groundfish, and shellfish.

21.6.1.2 Current Hunting and Trapping Practices

This section describes Metlakatla First Nation’s current terrestrial and marine hunting and trapping activities within the LAA.

Metlakatla First Nation hunts and traps the following terrestrial species within the LAA:

- Black bear
- Ducks (mallards, not specified)
- Beaver
- Deer
- Geese
- Marten
- Mink
- Moose
- Otter
- Waterfowl
- Wolf.

Table 21-12 identifies high density traditional land use sites used by Metlakatla First Nation and the terrestrial species harvested in those locations.

Table 21-12 Terrestrial Species Harvested and Terrestrial Hunting Locations

High Density Use Site s	Terrestrial Species Hunted and Trapped
Metlakatla, Digby Island; waters off west coast of Metlakatla	deer, ducks, mallards, geese, black bear, waterfowl, otter, mink
Tree Knob Island Group	mink, deer, ducks, geese, otter, gulls (unspecified)
Melville Island	Wolf, mink, otter, beaver, geese, ducks
Skeena Passage and east side of Smith Island	Deer, moose, ducks, geese, marten, mink, otter, beaver
Hunt’s Inlet, Porcher Island	deer, geese, ducks
Lelu Island including project development area	Deer, ducks, geese, mink, otter, marten, beaver

Source: DMCS (2014).

Metlakatla First Nation hunts the following marine species within the LAA:

- Seal
- Stellar sea lion.

Table 21-13 identifies high density traditional use sites used by Metlakatla First Nation and the marine species harvested in those locations.

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Table 21-13 Marine Species Harvested and Hunting Locations

Marine Hunting Location	Marine Species Harvested
Metlakatla marine areas, Digby Island marine areas; waters off west coast of Metlakatla	seal
Potential project shipping route (west of Lelu Island northwest to Triple Island pilotage station)	seal
Tree Knob Island Group – marine foreshore areas	stellar sea lion
Marine areas around Melville Island	seal, sea lion
Skeena Passage and east side of Smith Island	seal
Hunt’s Inlet and marine areas around Porcher Island	seal
Lucy Island marine areas	seal
Lelu Island foreshore areas within project development area	seal

Source: DMCS (2014)

Further meetings with Metlakatla First Nation identified that Metlakatla First Nation members’ marine hunting activities overlap with: some project components on Lelu Island, including foreshore and banks, the MOF dredge area and the turning basin in Porpoise Channel, the dredge deposition area at the disposal at sea site (Brown Passage); marine areas experiencing underwater noise during construction; and along the LNG carrier routes from Triple Island into the Port of Prince Rupert. Species harvested in these sites include: otter, duck, goose, and seal. Traditional practices also included the harvesting of killer and humpback whales, however, PNW LNG understands that the harvesting of these species does not currently occur.

21.6.1.3 Current Gathering Practices

Metlakatla First Nation (DMCS 2014) identified 50 plant species that are present in the Vegetation and Wetland Resources VC LAA and are used for food, material, ceremonial and commercial sale 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, 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

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- Blueberries
- Bog cranberry
- Devil’s club
- Juniper
- Labrador tea
- Red huckleberry
- Salal
- Salmonberry.

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

- Bunchberry
- Hellebore
- Skunk cabbage
- Licorice fern.

Meetings with Metlakatla First Nation to discuss the TUS findings did not reveal or identify any terrestrial plant harvesting or gathering sites on Lelu Island.

21.6.1.4 Current Spiritual and Ceremonial Practices

Lelu Island, Chatham Sound, and surrounding lands, waters, and islands within and near to the Project are culturally sensitive and spiritually significant areas for the Metlakatla First Nation people. According to Metlakatla First Nation’s TUS, many areas within the project development area and associated shipping routes serve as important meeting places, feasting sites, hold Tsimshian place names, and have spiritual or cultural significance for Metlakatla First Nation. Table 21-14 identifies high density spiritual sites and cultural landscapes used by Metlakatla First Nation.

Table 21-14 Location of Spiritual Sites and Cultural Landscapes

High Density Land Use Site	Spiritual and Ceremonial Sites
Metlakatla, Digby Island; waters off west coast of Metlakatla	Place names; Burials; Cemeteries; Spiritual/Ceremonial Sites; Legendary/Myth Sites Supernatural Sites; Cultural Landform
Existing shipping and project LNG carrier ship transit route (west of Lelu Island northwest to the Triple Island pilotage station)	Place name
Skeena Passage	Supernatural Site; Spiritual/Ceremonial Site; Cultural Landform; Place names
Hunt’s Inlet, Porcher Island	Place name
Lucy Islands	Place name

Source: DMCS (2014)

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Meetings with Metlakatla First Nation to discuss the TUS findings identified culturally-modified trees on the south side of Ridley Island and a place name relating to the Dundas Group of Islands. Between PNW LNG’s archaeological field survey and previous work (Eldridge and Gretzinger 2012), 558 features on 431 CMTs were recorded on Lelu Island (section 20). Follow up meetings with Metlakatla did not identify current spiritual and ceremonial sites or practices on Lelu Island.

21.6.1.5 Current Transportation and Habitation Practices

Transportation corridors, including overland trail systems, water routes via ocean passes, rivers, lakes, and creeks provide the Metlakatla First Nation people with access to fishing areas, marine harvesting areas, hunting grounds, traplines, plant and berry collection areas, spiritual sites, trading partners, villages and camps. Fishing, hunting, trapping, and marine resource harvesting, food and medicinal plant gathering, and berry picking activities occur along the trails and water routes, while camping occurs at specific campsites and villages along the trails or at trail ends.

Metlakatla First Nation transportation routes in the vicinity of the Project include traversing Inverness Pass, Flora Bank, Skeena Slough, and surrounding areas. No current used campsites are identified on Lelu Island, however Metlakatla First Nation notes that many suitable campsites are located along the perimeter of Lelu Island. In addition, many permanent and temporary campsites, cabins, foundations, fire hearths, and other habitation areas are found throughout the islands located near to the potential project shipping routes. These sites represent areas of both historic and present MFN habitation. Table 21-15 identifies high density traditional land use sites used by Metlakatla First Nation and the transportation routes and dwelling sites in those locations.

Table 21-15 Location of Transportation Routes and Dwelling Sites

High Density Land Use Site	Transportation and Dwelling Sites
Metlakatla, Digby Island; waters off west coast of Metlakatla	Dwelling Site (Metlakatla Village); Campsites; Canoe Route
Tree Knob Island Group	Campsites (seasonal)
Melville Island	Cabins; Canoe Route; Camping
Skeena Passage and east side of Smith Island	Canoe Route; Dwelling; Camp (seasonal)
Hunt’s Inlet, Porcher Island	Campsites (seasonal)
Lucy Islands	Canoe Route; Campsite
Lelu Island marine areas	Canoe Route

Source: DMCS (2014)

Further meetings with Metlakatla First Nation identified that Metlakatla First Nation members’ transportation routes overlap with: the suspended trestle-bridge, and at the Disposal at Sea deposition area. Transportation routes include canoe routes in Chatham sound, a canoe route that passes north-south along the west side of Lelu Island, and a marine transportation route between the Skeena River and Prince Rupert.

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21.6.2 Assessment of Effects on Pathway Valued Components

21.6.2.1 Access to Lands, Waters, and Resources Used for Traditional Purposes

Marine-based access to traditional use sites for fishing, hunting, trapping, gathering, spiritual and ceremonial practices, and temporary dwellings may be affected to the extent that preferred and traditional access routes overlap with project components and activities (see Section 15). Project components and activities are not expected to interfere with land-based access to preferred traditional use sites.

Access through Lelu Slough is limited to high tide events and may be limited periodically during construction of the bridge between Lelu Island and the mainland. North-south navigation between Lelu Island and Flora Bank is limited to high tide events and may be periodically limited during construction of the suspended bridge-trestle. Associated construction activities with respect to the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound may also temporarily impede normal access to the north-south channel just west of Lelu Island. Project-related vessel traffic during construction may occasionally alter preferred traditional access, particularly in and out of Porpoise Channel and through Lelu Slough. Activities related to dredging and disposal at sea may occasionally interfere with traditional marine navigation. Marine navigation is regulated by the Port of Prince Rupert and therefore project construction-related disruptions will be managed so they do not unduly inconvenience traditional aboriginal navigation use in and around Porpoise Channel.

During operations, local traditional navigation will not be affected through Lelu Slough since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. The suspended bridge-trestle extending over Flora Bank will have a clearance of approximately 11 metres under a portion of the suspended bridge-trestle near Lelu Island to allow high tide access to the current north-south channel and local traditional navigation travel route just west of Lelu Island.

Large ship navigation from the Pacific and into Chatham Sound may be temporarily affected when LNG carriers are being piloted into Port although only one LNG carrier per day/350 per year are estimated to berth at the terminal. Local navigation may also be affected by temporary weather-related LNG carriers using Port of Prince Rupert temporary anchorages. The anchorage locations will be identified by the PRPA and be within the Prince Rupert Inner Harbour and Chatham Sound.

During decommissioning, in the unlikely event the Port approves the removal of project infrastructure on industrial port lands and waters, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may temporarily affect Aboriginal marine users.

Metlakatla First Nations members currently travel through waters in the vicinity of the Project, including Inverness Passage, across Flora Bank at high tide, Skeena Slough, and surrounding areas. A Metlakatla First Nation canoe route is used along the west side of Lelu Island (Section 21.6.1.5).

Metlakatla First Nation members' marine-based access to traditional use sites may experience a degree of temporary interference, but will not at any time be eliminated.

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21.6.2.2 Quantity of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction, operations, and decommissioning hold the potential to affect the quantity of lands, waters, and resources used for fishing, hunting and trapping, gathering, spiritual and ceremonial activities.

Construction of project components such as the road access bridge between Lelu Island and the mainland, the MOF and turning basin in Porpoise Channel, as well as the suspended bridge-trestle over Flora Bank, the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound will temporarily render these locations unavailable for fishing, marine gathering, and marine hunting and trapping. Upon completion of construction, passage under the road access bridge and the suspended bridge-trestle across Flora Bank will be possible at high tide throughout operations, however, it is envisioned that regulatory authorities may require marine safety exclusion zones to be put in place along and underneath the suspended bridge-trestle and along the pipe pile supported jetty on Agnew Bank. Marine traffic will likely only be possible right near Lelu Island where the suspended bridge-trestle allows for safe vessel passage for ships up to a gill netter in size at high tide.

Metlakatla First Nation members currently fish for salmon and eulachon, hunt for seals, and gather seaweed around Lelu Island and Flora Bank (Section 21.6.1).

The quantity of marine waters available for Metlakatla First Nation members' salmon and eulachon fishing and seaweed gathering sites are expected to be somewhat reduced (e.g., temporary increases in turbidity and total suspended solids) during construction in the waters around Lelu Island. Metlakatla First Nation members' hunting areas for seals on the shore of Lelu Island may not be available or have any utility (e.g., seals may have moved away from the industrial LNG plant site) during LNG Plant operations.

Project components and activities during construction, operations, and perhaps, at decommissioning will remove Lelu Island as a location for terrestrial hunting and trapping, gathering, and spiritual and ceremonial activities. Lelu Island is approximately 192 ha, and the PDA (the project development area on Lelu Island and security 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 (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island). Thirty two ha (17%) of Lelu Island will remain outside of the fence line.

The Metlakatla First Nation TUS (DMCS 2014) indicates that members currently hunt and trap deer, ducks, geese, mink, otter, marten, and beaver on Lelu Island (Section 21.6.1.2). Follow up meetings and detailed information collection with Metlakatla First Nation confirmed that members hunt deer on the Island (Section 21.6.1.2).

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A number of trees, plants, and berries are available for gathering on the Island (Section 10.4). Follow up meetings and detailed information collection with Metlakatla First Nation did not confirm terrestrial gathering practices by Metlakatla First Nation members on the Island. Lelu Island is culturally and spiritually significant for Metlakatla First Nation, and may contain important meeting places, feasting sites, and Tsimshian place names (DCMS 2014). Follow up meetings and detailed information collection with Metlakatla First Nation did not confirm meeting places, feasting sites, and Tsimshian place names on Lelu Island.

The quantity of land available for Metlakatla First Nation members' terrestrial hunting (deer and potentially other species), terrestrial gathering (species and practices to be confirmed), and spiritual and ceremonial practices (sites and practices to be confirmed) will be reduced during construction and operations of project components, due to the complete removal of Lelu Island as a use site as the entire island will be under federal land lease to the Project.

Construction and operations activities will, with respect to the use of Lelu Island, reduce the quantity of terrestrial resources within Aboriginal peoples' preferred use locations due to direct mortality and alteration of movement. Mortality of birds, amphibians, and small mammals on Lelu Island will be limited to a small number of individuals since vegetation clearing will optimally be completed outside of breeding periods when wildlife are more likely to be occupying nests, dens, or breeding ponds (Section 11.5.3.4).

Mortality of grizzly bear and wolverine *Luscus* subspecies caused by vehicle collisions and human-wildlife interactions is expected to be negligible because these species are not found on Lelu Island and are unlikely to occur in the LAA. Marine birds may die due to collisions with LNG facility structures after they are constructed and regularly lighted for safety reasons during operations. Project-related effects on wildlife movement from site preparation and construction of the LNG facility, operation of construction equipment, and installation of the mainland road access bridge and access road, will affect some individuals (Section 11.5.4.3) although it is anticipated that most wildlife will move away from an active, noisy and lighted large industrial site. Project-related effects on marine bird movement from the marine terminal, MOF, and bridge are expected to be negligible.

The quantity of terrestrial resources available to Metlakatla First Nation members' within their preferred use locations is expected to be reduced to a very small extent. Specifically, members may experience a small reduction in the number of ducks and geese available for harvesting. Movement of animals from Lelu Island during construction is immaterial with respect to effects on the quantity of terrestrial resources available to Metlakatla First Nation as Lelu Island will be completely removed as a use site as the entire island is to be leased by the federal government to the Project.

Construction and operations activities hold the potential to reduce the quantity of marine resources used by Aboriginal peoples within preferred locations due to direct mortality and alteration of movement. Injury and mortality of fish due to blasting during construction is expected to be limited in extent (Section 13.5.4.3). Blasting activities during marine construction will be undertaken in accordance with DFO blasting guidelines in order to avoid harm to marine mammals. In addition, most species of commercial importance are expected to be rarely present or absent from the blast area. Resident Dungeness crabs will be relocated prior to blasting. Injury or mortality due to 'Disposal At Sea' deposition at Brown Passage associated with dredging

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the MOF and Turning Basin is expected to affect only immobile species in close proximity to these activities. Increases in TSS levels associated with vessel manoeuvring, dredging at the MOF, and disposal at sea are not expected to result in injury or mortality to fish as marine organisms (including juvenile salmon) are adapted to seasonal variations in TSS levels, levels are below those that cause lethal effects to salmon and other species, and will be limited in extent and duration. In any event TSS will be monitored during dredging and deposition.

Any existing sediment chemical compounds (e.g., dioxins and furans) exposed during MOF dredging during construction or vessel berthing and departure during operations are not expected to pose to any toxicological risks to marine biota (Section 13.5.2.5) or to human health from the consumption of marine animals as these sediments have levels of contamination well below regulatory thresholds. Underwater noise from impact pile driving can be mitigated using a bubble curtain. Therefore, the underwater noise is not expected to result in injury or mortality to fish or marine mammals. In the rare case that an impact hammer is used to install piles, and a bubble curtain is used, cetaceans within 1.0 km of the sound source may be exposed to sound levels capable of causing permanent auditory injury. Potentially affected species include harbour porpoise, Dall's porpoise, Northern resident and Bigg's killer whales, humpback whale, Loughlin's Northern sea lion, harbour seal, and Pacific white-sided dolphin. A marine mammal observation (MMO) program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The relative number of marine resources available in preferred hunting sites in the project marine infrastructure areas around Lelu Island may be reduced due to altered distribution of fish and marine mammal populations (Section 13.5.5.3). There is potential for fish (e.g., eulachon, herring, rockfish) to react to construction noises; however, if such reactions occur, they are likely to be spatially and temporally limited. Salmon may show local avoidance of particularly noisy zones (Feist et al. 1996), but this reaction is expected to be limited in spatial extent and short-lived. Pipe pile installation during construction may result in potential residual effects to marine mammal's behavior at distances of up to 15 km. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The transit of LNG carriers into Port and berthing during operations could also affect some marine species' behaviours. Areas of avoidance for Harbour Porpoise may occur within Porpoise Channel and a portion of Prince Rupert Harbour. Because harbour porpoise and other marine mammals in the LAA are important prey species for Bigg's killer whale; potential displacement of these species during pile driving could indirectly result in displacement of Bigg's killer whale. Killer whales might exhibit behavioural response over large areas of the LAA. Modelling results indicate the humpback whales could experience behavioural responses over a radius of 8.9 km at the Triple Island area during ship transits into the Port of Prince Rupert, and, at the marine terminal in Chatham Sound, when the LNG carriers are berthing supported by 4 tugs.

Effects on Loughlin's sea lion may also be a concern near any rookeries (i.e., breeding areas) though none are identified within the project marine infrastructure areas. The severity of threat from LNG carriers coming to, and leaving Port, and to any rookeries along already existing large vessel transit routes from Triple Island to Port at the population-level is "likely low", as this species is described as being able to habituate to chronic disturbances.

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Metlakatla First Nation members currently fish for a wide variety of species for commercial and food, social, and ceremonial purposes through the LAA, including salmon and eulachon in the waters around Lelu Island and crab in the vicinity of the suspended bridge-trestle (DCMS 2014). Metlakatla member's fish for a variety of species of salmon, groundfish, crustaceans, and molluscs within the area potentially affected by underwater noise and within the shipping route (DCMS 2014). Metlakatla First Nations also harvest seal, stellar sea lion (DCMS 2014).

Project-related reductions in the quantity of fish currently harvested by Metlakatla First Nation members within their preferred fishing locations are expected to be negligible. Absolute reductions in the population sizes of harvestable fish species are not expected. Some limited fish movement out of preferred fishing locations may take place during construction activities. The absolute quantity of marine mammals harvested by Metlakatla First Nation members is not expected to be reduced by project activities. Metlakatla First Nations members may find reduced numbers of sea lions in preferred harvesting areas during construction due to noise-related alteration of habitat use.

21.6.2.3 Quality of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction and operations hold the potential to affect the quality of lands, waters and resources for used fishing, hunting, trapping, and gathering. The Project is not expected to result in any adverse effects to the quality of terrestrial country foods.

Dredging during construction of the MOF and turning basin could expose marine species to sediments containing historical deposits of non-toxic (as the levels of contamination in these sediments have been tested as being well below any toxicological thresholds) chemicals (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans - PCDD/Fs) (Section 19.5.2). Although country foods have been tested for any existing dioxin and furan contamination, and the results have shown they are not contaminated, there is perceived potential that MOF dredging could expose additional dioxins and furans and that these chemical contaminants could be further exposed so that they may be at higher concentrations and then accumulate in the tissues of marine country food species and affect human health from the consumption of marine country foods.

The project assessment of these potential effects meets or exceeds the standards imposed by the appropriate regulatory authorities. The overall potential for PCDD/Fs in marine country foods to increase in concentrations is negligible to low. With that said, the Project has committed to on-going country food monitoring over the life of the project marine construction period to confirm this prediction.

Metlakatla First Nations members harvest a wide variety of fish species and marine mammals throughout the LAA, including within the vicinity of Lelu Island (the marine waters between Lelu and Stapledon Islands, over Flora Bank, through Inverness Slough) and within the vicinity of the potential 'Disposal at Sea' site (Brown Passage) (Section 21.6.1.1).

The Project is not expected to affect the quality of resources harvested by Metlakatla First Nation members.

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21.6.2.4 Sensory Environment for Current Aboriginal Use

Construction, operations, and decommissioning of the Project have the potential to affect the sensory environment within which Aboriginal peoples undertake traditional use activities. Project activities will result in changes to sound levels, ambient light, air quality, and quality of the visual landscape. The Project also has the potential to change perceived safety and solitude for Aboriginal people who frequent areas near the PDA and shipping lanes.

Modelled noise levels during construction are predicted to be below the threshold of human hearing perception on Rachel Islands, Lucy Islands, and Triple Island (Section 8.5.2.3). Construction noise will be audible on Kitson Island, Kinahan Islands, Digby Island, and Smith Island. During operations, project-related noise will be audible on Kitson Island, Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Digby Island, and Smith Island. Noise related to construction and operations is not predicted to exceed Health Canada noise limits [percentage highly annoyed (%HA)] at any of the modelled sites (Section 8.5.2.3 and 19.5.2.3).

Changes to light levels will occur during all phases of the project activities during daytime and night-time (Section 19.5.2.3) as construction and operational safety is directly related to adequate lighting. A qualitative assessment of the potential effects of changes in ambient light during construction phase indicates that, with mitigation, adverse effects will be avoided. Most construction activities occur during the daytime with limited night-time lighting required. During operations, exterior lighting associated with some project components (e.g., storage tanks, flares) will be visible. Due to the positioning of the marine terminal component of the Project, for the most part, the exterior lighting associated with the terminal itself and the ships will likely not be visible from mainland locations. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment.

Project components and construction and operations activities are expected to affect visual quality as they will alter the topography and vegetation patterns of the project site and the marine areas in which the suspended bridge trestle, pipe-pile supported trestle and marine terminal will be built (Section 17.5.2.2). The Project will also introduce new industrial human interventions that, pending the viewing angle, will be out of scale and not characteristic of the current landscape character of Visual Sensitivity Units (VSUs) within the LAA. The project facility and marine terminal will be visible from Kitson Island and Kinahan Islands. LNG carrier ships will be visible from Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Stephens Island, and Melville Island. Effects to visual quality related to the facility and marine terminal are expected to be high magnitude. Effects to visual quality related to shipping operations are predicted to be low to moderate magnitude.

No changes to human health are anticipated from air quality during construction (Section 19.5.2.3). The modelled changes to air quality during operations shows that no criteria air contaminants (CACs) exceed applicable BC Ministry of Environment air quality objectives at any time. This indicates that for the general population, there would be no changes to human health to people exposed to CACs in the air from project activities. With that said, project air emissions will be regulated by the province's Oil and Gas Commission and ambient air, soil and water monitoring in the surrounding area will be monitored during the project life cycle to ensure ambient air and any acidic deposition remains below any regulatory thresholds.

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The sensory environment for Metlakatla First Nation members' traditional use activities is expected to be affected by changes in visual quality, but not by changes in noise, light, or air quality. In addition, members' perceptions of safety and solitude may be affected due to the presence of project components and activities, and increased presence of marine traffic.

21.6.3 Mitigation Measures for Pathway Valued Components

Mitigation measures for access to traditional use sites include:

- Measures to reduce changes to aboriginal marine navigation (Section 15.5.2.2).

Mitigation measures for potential effects on quantity of lands, waters, and resources for traditional purposes include measures to reduce:

- The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2)
- Changes to fish habitat (Section 13.5.3.2)
- The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2)
- Changes in behaviour of fish and marine mammals (Section 13.5.5.2)
- Terrestrial habitat for wildlife and marine birds, including wetland compensation and fish habitat offsetting (Section 11.5.2.2)
- Mortality risk to terrestrial wildlife and marine birds (Section 11.5.3.3)
- Alteration of movement of terrestrial wildlife and marine (Section 11.5.4.2)
- Or identify, record, and recover data for heritage features, including culturally modified trees (Sections 20.5.2.2 and 20.5.3.2).

Mitigation measures for potential effects on quality of lands, waters and resources for traditional purposes include:

- Measures to reduce changes to marine resources due to changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2).

Mitigation measures for potential effects on the sensory environment for traditional activities include measures to reduce changes to:

- Air quality (Section 6.5.2.2)
- Acoustic environment (Section 8.5.2.2)
- Ambient light (Section 9.5.2.2)
- Visual quality (Section 17.5.2.4).

21.6.4 Residual Effects on Pathway Valued Components

Following the mitigation measures described and referenced in Section 21.6.3., project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a relatively short temporal amount of interference

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due to construction activities and water vessel traffic (including LNG carrier movements in and out of Port). Project mitigations will be unable to minimize the loss of the use of lands on Lelu Island as the entire island will be leased to the Project. However, other non-Lelu Island terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of Lelu Island peat bogs and wetlands to some degree. Marine waters impacted by the project marine infrastructure will be temporarily unavailable for reasonably short durations during construction and decommissioning, while complete alteration and removal of some marine waters from traditional use during operations will be limited in extent where regulatory authorities require marine traffic exclusion zones for safety reasons. The Port of Prince Rupert will manage the temporary loss of use during construction.

Project mitigations avoid reductions in the absolute quantity of terrestrial and marine resources, except for potential limited reductions in ducks and geese numbers. The relative number of sea lions and humpback whales in preferred harvesting locations may be reduced during construction due to alteration of movement associated with construction activity and associated noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-16 identifies residual effects remaining after the application of mitigation measures.

Table 21-16 Residual Effects to Pathway Valued Components

Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Access to lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	Metlakatla First Nation members' marine-based access to current fishing sites in the LAA and RAA may experience a degree of temporary interference.
Current Hunting and Trapping Practices	C, O, D	Metlakatla First Nation members' marine-based access to current hunting, harvesting and trapping sites may experience a degree of temporary interference.
Current Gathering Practices	C, O, D	Metlakatla First Nation members' marine-based access to current marine and terrestrial gathering sites may experience a degree of temporary interference.
Current Spiritual and Ceremonial Practices	C, O, D	Metlakatla First Nation members' marine-based access to current spiritual and ceremonial sites may experience a degree of temporary interference.
Quantity of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C	The quantity (e.g., area) of marine waters available for Metlakatla First Nation members' salmon and eulachon fishing and seaweed gathering sites are expected to be reduced in the immediate waters around Lelu Island, those impacted by the project marine infrastructure.
Current Hunting and Trapping Practices	C, O	The quantity of land available for Metlakatla First Nation members' terrestrial hunting (deer and potentially other species) will be eliminated on Lelu Island. The quantity of ducks and geese resources available to Metlakatla First Nation members' within their preferred use locations is expected to be reduced to a small extent. Metlakatla First Nation members' hunting areas for seals on the shore of Lelu Island will no longer be available during operations. Metlakatla First Nations members may find reduced numbers of sea lions in preferred harvesting areas during construction due to noise-related alteration of movement.

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Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Current Gathering Practices	C, O	The quantity of land available for Metlakatla First Nation members' terrestrial gathering will be eliminated on Lelu Island.
Current Spiritual and Ceremonial Practices	C, O	The quantity of land available for Metlakatla First Nation members' spiritual and ceremonial practices will be eliminated on Lelu Island.
Quality of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	No predicted residual effects.
Current Hunting and Trapping Practices	C, O, D	No predicted residual effects.
Current Gathering Practices	C, O, D	No predicted residual effects.
Current Spiritual and Ceremonial Practices	C, O, D	No predicted residual effects.
Sensory environment for the Current Aboriginal Use		
Current Fishing Practices	C, O, D	Metlakatla First Nation members' fishers are expected to be affected by changes in visual quality. Fishers' perceptions of safety and solitude may be affected due to the presence of project components and activities and increased presence of marine traffic.
Current Hunting and Trapping Practices	C, O, D	Metlakatla First Nation hunters and trappers are expected to be affected by changes in visual quality.
Current Gathering Practices	C, O, D	No predicted residual effects.
Current Spiritual and Ceremonial Practices	C, O, D	Metlakatla First Nation members engaging in spiritual and ceremonial practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.

21.6.5 Assessment of Effects on Current Aboriginal Use

21.6.5.1 Potential Effects on Current Fishing Practices

21.6.5.1.1 Location of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in displacement of Aboriginal fishers from some preferred fishing locations. Key locations include the waters around Lelu Island, the suspended trestle-bridge, along the Pacific Pilot Authority's existing large ocean going vessel transit/shipping route from Triple Island to the Port of Prince Rupert, and the 'Disposal at Sea' site (Brown Passage). As the marine jetty will be located along the transition between Flora Bank and Agnew Bank, it is not expected to interfere with fishing from larger vessels. Further, the design of the bridge between Lelu Island and the mainland and the redesigned marine jetty will allow fishers in smaller vessels to transit between fishing areas to the north and south without additional travel time. Areas that are used in the vicinity of Inverness Passage, Horsey Bank west of Kitson Island, and Agnew Bank will all remain accessible for fishing. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt

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locational change outside of the zone of visual influence. Lelu Island is located within an industrial port designated under Canada's *Marine Act* and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key fishing sites are likely to outweigh effects to sensory environment associated with visual quality.

Metlakatla First Nation members fish in the waters around Lelu Island, Flora Bank, Triple Island in the Tree Knob Group, and in Chatham Sound (Section 21.6.1.1). Potentially-affected fisheries include salmon, eulachon, groundfish, and shellfish.

Metlakatla First Nation fishers use the waters around Lelu Island, including Inverness Passage, Horsey Bank west of Kitson Island, and Agnew Bank, for sockeye salmon, eulachon, and crab fisheries. They are expected to shift some of these locations in the waters around Lelu Island during construction, due to reduced availability of these sites. Fishers may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Increased marine traffic during any decommissioning may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.

21.6.5.1.2 Timing of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in some changes to the preferred timing of Aboriginal peoples' fishing activities. Fishers may avoid fishing in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, fishing sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping traffic.

Metlakatla First Nation members fish throughout the year, but fish more intensively in the spring and summer months for salmon and groundfish (Section 21.6.1.1). Monthly, weekly, and daily variation in fishing times is not currently known.

Project activities during construction are not expected to affect the seasonality of Metlakatla First Nation members' fishing practices, as this is largely tied to the biology and behavior of fisheries resources. Project activities during operations will occur through the year, so are not expected to affect the seasonality of members' fishing practices. Members may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.

21.6.5.1.3 Effort Involved in Current Fishing Practices

Interruptions in access may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred fishing locations. Temporary limitations in availability of fishing sites that are in the direct path of shipping lanes may also increase effort, if fishers are required to shift their fishing location during the presence of LNG carrier ships. Changes to sensory environment (visual quality) are not expected to directly affect fishing effort but may increase effort if it leads Aboriginal people to shift their fishing locations. Reductions in fish quantity are not expected to affect fishing effort as the reductions will be minimal, not likely to affect commercial species, and limited to the immediate vicinity of project marine infrastructure components and activities.

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Metlakatla First Nation peoples residing in Metlakatla, Prince Rupert, and Port Edward are situated in close proximity to preferred fishing locations in the vicinity of the Project. PNW LNG has not been provided information about Metlakatla fisher's current level of effort with respect to their fishing activities.

Interference with Metlakatla First Nation members' access to preferred fishing sites during construction and, perhaps during any decommissioning is expected to increase the effort required by members to reach preferred sites. This effect is expected to be negligible as project-related presence of marine vessels will not require fishers to substantially alter travel routes while traveling to fishing sites. Temporary reductions in the availability of fishing sites due to LNG carrier traffic is expected to increase the amount of time that members spend actively fishing in those locations. This effect can be mitigated with appropriate communications (see Section 21.6.6). Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of and access to preferred fishing sites.

21.6.5.1.4 Success of Current Fishing Practices

Changes in access to and quantity of waters available for fishing during construction and operations could reduce the success of Aboriginal peoples' fishing practices. Fishing success may also be reduced to the extent that temporary restriction of fishing within existing shipping lanes and interference with access to preferred fishing locations reduces the total amount of time available for active fishing. Additionally, if Aboriginal fishers fish in alternative locations due to interference with access or reduced site availability, success rates could change, depending on the nature of fishing resources in alternative locations.

No information has been provided to PNW LNG regarding Metlakatla First Nation members' current catch quantities for AFS fisheries (see Section 21.3).

Effects on fishing success for Metlakatla First Nation fishers is not expected as a result of changes in access and quantity, given the localized and temporally-limited nature of expected changes. Effects on fishing success due to locational change are expected to be negligible as fishers are not expected to shift fishing efforts to substantially different locations.

21.6.5.1.5 Satisfaction with Current Fishing Practices

Changes in access to preferred fishing locations, quantity of waters and resources used for fishing purposes, and visual quality may affect the extent to which Aboriginal fishing practices satisfy expectations relating to aesthetic experiences, Traditional Ecological Knowledge (TEK), cultural distinctiveness and continuity, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred fishing locations may affect Aboriginal fishers' ability to collect traditional ecological knowledge and to transmit such knowledge to other members. Reductions in fishing success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Metlakatla First Nation has expressed concerns about the potential effects of the Project on members' ability to collect TEK and transmit cultural knowledge (DMCS 2014).

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The Project is not expected to affect the ability of Metlakatla First Nations to collect TEK and transmit cultural knowledge, given expected limited interference with fishing practices resulting from changes in access to and quantity of fishing resources. Changes in visual quality are not expected to be substantial enough to interfere with Metlakatla First Nations' ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.

21.6.5.2 Potential Effects on Current Hunting and Trapping Practices

21.6.5.2.1 Location of Current Hunting and Trapping Practices

Changes in the quantity of, lands, waters, and resources used for hunting and trapping purposes may result in displacement of Aboriginal hunters and trappers from preferred harvesting locations. Key locations include Lelu Island and Islands and waters in the vicinity of the shipping route and disposal at sea site (Brown Passage).

Changes in marine access to hunting and trapping locations is not expected to be sufficient to prompt locational change for these activities, as project-related presence of marine vessels will not require members to substantially alter marine travel routes while traveling to hunting and trapping sites. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key hunting and trapping sites are likely to outweigh effects to sensory environment associated with visual quality.

Metlakatla First Nation members currently hunt and trap terrestrial and marine resources on and around Lelu Island, in the existing shipping route that the LNG carriers will also use, and in the vicinity of the disposal at sea site (Tree Knob Islet Group) (Section 21.6.1.2). Key resources harvested include deer, mink, otter, seal, ducks, and geese.

Metlakatla First Nation hunters who currently hunt deer on Lelu Island and hunters who harvest seal on the shore of Lelu Island, will need to shift the location of these hunting activities during construction, operations, and decommissioning. Hunting of aquatic birds in the vicinity of the shipping route is not expected to be affected.

21.6.5.2.2 Timing of Current Hunting and Trapping Practices

Changes in access to waters for marine hunting, changes in marine access to terrestrial hunting sites, and changes in the quantity of waters available for hunting activities may result in changes to the preferred timing of Aboriginal peoples' hunting activities. Hunters may avoid hunting in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, hunting sites (i.e., during construction activities and associated marine traffic) and during the presence of LNG carriers and other large ocean going vessels sailing into and out of the Port of Prince Rupert.

Metlakatla First Nation members currently hunt for deer in the fall and winter (Section 21.6.1.2). There may be other times of the year during which these species are hunted. No information has been provided with respect to when Metlakatla members hunt for marine birds and seal. PNW LNG has not been provided information relating to the time of month, week, or day during which Metlakatla First Nation members hunt terrestrial and marine species.

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Metlakatla First Nation members may alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day). Seasonal changes are not expected as hunting seasonality is tied to the biology and behaviour of harvested resources. In addition, operations will be continuous throughout the year.

21.6.5.2.3 Effort Involved in Current Hunting and Trapping Practices

Interference with access to lands, waters, and resources for hunting and trapping purposes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred hunting and trapping locations. Temporary limitations in availability of marine hunting sites that are in the direct path of shipping lanes may also increase effort, if hunters are required to interrupt hunting efforts during the presence of LNG carriers, however existing shipping traffic into and out of Prince Rupert already manifests in these impacts. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect hunting effort but may increase effort if it leads Aboriginal people to shift their hunting locations.

Metlakatla First Nation peoples residing in Metlakatla, Prince Rupert, and Port Edward are situated in close proximity to preferred hunting and trapping locations in the vicinity of the Project. PNW LNG has not been provided information about members' current level of effort with respect to their hunting and trapping activities within the project developed area on Lelu Island and in the marine waters occupied by the project marine infrastructure.

The Project is expected to interfere to a limited degree with Metlakatla First Nation members' marine access to hunting locations (terrestrial and marine) during all project phases (Section 21.6.2.1). The resulting effect on effort is expected to be negligible as project-related presence of marine vessels will not require hunters and trappers to substantially alter travel routes while traveling to hunting and trapping sites. Metlakatla member's currently hunting deer and seal on Lelu Island may need to increase effort to obtain these resources from alternative locations.

21.6.5.2.4 Success of Current Hunting and Trapping Practices

Changes in access to and quantity of sites available for hunting and trapping during construction and operations (Section 21.6.2.1) could reduce the success of Aboriginal peoples' efforts. Hunting and trapping success may be also be reduced to the extent that interference with routes of access to marine and terrestrial hunting and trapping locations reduces the total amount of time available for hunting and trapping activities. If Aboriginal hunters and trappers move to alternative locations due to interference with access, reduced site availability, or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative hunting and trapping sites for particular individuals and/or families.

Metlakatla First Nation members currently hunt and trap terrestrial and marine resources on Lelu Island, in the shipping route, in the area affected by underwater construction noise, and in the vicinity of the disposal at sea site (Tree Knob Islet Group) (Section 21.6.1.2). It should be noted that the Port of Prince

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Rupert does not allow hunting and trapping on federal Port lands. Key resources harvested include deer, mink, otter, seal, ducks, and geese. PNW LNG has not been provided with information about current harvesting quantities. PNW LNG has not been provided information about Metlakatla First Nation's internal governance and resource management frameworks pertaining to terrestrial and marine hunting and trapping on Lelu Island.

Project-related interference with Metlakatla First Nation members' access to terrestrial and marine hunting and trapping locations is not expected to be substantial enough to reduce overall hunting and trapping time and therefore success rates at those locations. The success of Metlakatla First Nation harvesters who are no longer be able to hunt and trap for deer and seal on Lelu Island, is not expected to be limited by reductions in the overall abundance of these species in other locations (Section 11). However, Metlakatla First Nation's internal governance and resource management frameworks may limit the availability of alternative hunting locations for particular individuals and/or families, thereby potentially reducing hunting success for these individuals and/or families. Changes in hunting and trapping success are not expected for members who choose to shift harvesting locations to avoid project-related changes in visual quality.

21.6.5.2.5 Satisfaction with Current Hunting and Trapping Practices

Changes in access to preferred hunting and trapping locations, quantity of lands, waters and resources used for hunting and trapping purposes, and visual quality (Sections 21.6.2.1 and 21.6.2.3) may affect the extent to which Aboriginal hunting and trapping practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred hunting and trapping locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to hunt and trap for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in hunting and trapping success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Metlakatla First Nation has expressed concerns about the potential effects of the Project on members' ability to collect TEK and transmit cultural knowledge (DMCS 2014).

Metlakatla First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to hunt and trap on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who hunt on Lelu Island, if those members do not have access to alternative hunting sites (Section 21.65.2.4). To the extent that members experience reduced success hunting for seal and deer in alternative locations to Lelu Island (see Success of Current Hunting and Trapping Practices above), members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.

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21.6.5.3 Potential Effects on Current Gathering Practices

21.6.5.3.1 Location of Current Gathering Practices

Changes in the quantity of, lands, waters, and resources used for terrestrial gathering purposes may result in displacement of Aboriginal peoples from preferred gathering locations. Interference with marine access to preferred terrestrial gathering sites may also result in locational change. Key locations include Lelu Island and gathering sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route across Chatham Sound into the Port of Prince Rupert.

The Metlakatla First Nation TUS traditional land use and ecological knowledge report (DCMS 2014) identified berry picking on and around Lelu Island and Table 1 in the study identifies a number of traditional use plant species to be present on Lelu Island (based on the species listed in the EIS). However, follow up engagement with Metlakatla First Nation has not identified any specific plant, tree, or berry gathering practices on Lelu Island (Section 21.6.1.3). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

The Project is not expected to affect the location of Metlakatla First Nation members' terrestrial gathering practices.

21.6.5.3.2 Timing of Current Gathering Practices

Changes in access to land and resources for terrestrial gathering may result in changes to the preferred timing of Aboriginal peoples' terrestrial gathering activities. Aboriginal peoples may avoid gathering in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with marine access to gathering sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

The Metlakatla First Nation traditional land use and ecological knowledge report identified berry picking on and around Lelu Island and identified a number of traditional use plant species as being present in on the island. However, follow up engagement with Metlakatla First Nation has not identified any specific plant, tree, or berry gathering practices on Lelu Island (DCMS 2014). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

The Project is not expected to affect the timing of Metlakatla First Nation members' terrestrial gathering practices.

21.6.5.3.3 Effort Involved in Current Gathering Practices

Interference with access to lands and resources for terrestrial gathering may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred terrestrial gathering locations. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site,

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if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect gathering effort but may increase effort if it leads Aboriginal people to shift their gathering locations.

The Metlakatla First Nation TUS (DCMS 2014) and follow up engagement with Metlakatla First Nation has not identified any specific plant, tree, or berry gathering practices on Lelu Island (Section 21.6.1.3). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

The Project is not expected to affect the effort involved in Metlakatla First Nation members' terrestrial gathering practices.

21.6.5.3.4 Success of Current Gathering Practices

Changes in the quantity of lands and resources available for terrestrial gathering during construction and operations (Section 21.6.2.2) could reduce the overall success of Aboriginal peoples' gathering efforts. Terrestrial gathering success may be also be reduced to the extent that interference with routes of access to terrestrial gathering locations reduces the total amount of time available for gathering activities. If Aboriginal peoples move to alternative gathering locations due to interference with access or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative terrestrial gathering sites for particular individuals and/or families.

The Metlakatla First Nation TUS and follow up engagement with Metlakatla First Nation has not identified any specific plant, tree, or berry gathering practices on Lelu Island (Section 21.6.1.3). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

The Project is not expected to affect the success of Metlakatla First Nation members' terrestrial gathering practices.

21.6.5.3.5 Satisfaction with Current Gathering Practices

Changes in access to preferred terrestrial gathering locations, quantity of lands and resources used for gathering purposes, and visual quality (Sections 21.6.2.1, 21.6.2.2 and 21.6.2.4) may affect the extent to which Aboriginal gathering practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred terrestrial gathering locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to gather for particular individuals and/or families may reduce opportunities for social and familial bonding.

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Reductions in gathering success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

The Metlakatla First Nation TUS and follow up engagement with Metlakatla First Nation has not identified any plant, tree, or berry gathering practices on Lelu Island (Section 21.6.1.3). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

The Project is not expected to affect the satisfaction of Metlakatla First Nation members' terrestrial gathering practices.

21.6.5.4 Potential Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.6.5.4.1 Location of Current uses of Spiritual Sites and Cultural Landscapes

The federal lease Lelu Island will eliminate Lelu Island as an aboriginal place of use with spiritual sites and cultural landscape resources. All of Lelu Island will be leased to the Project. Interference with marine access to spiritual sites and cultural landscapes, and disruption of sensory environment (visual quality), is not expected to result in locational change, as access will not be precluded and affinities for particular spiritual and ceremonial sites are assumed be strong. Key locations include Lelu Island and spiritual and ceremonial sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

Metlakatla First Nation identifies spiritual sites and cultural landscapes in Metlakatla, Digby Island, marine waters off the west coast of Metlakatla, the shipping route, Skeena Passage, Hunt's Inlet, Porcher Island, Lucy Islands, the Dundas Group of Islands (Section 21.6.1.4). Key features of these spiritual sites and cultural landscapes include place names, burial sites, cemeteries, legendary/myth sites, supernatural sites, cultural landforms, culturally modified trees (CMTs), and unspecified spiritual/ceremonial sites. The Metlakatla First Nation TLUS (DMCS 2014) and follow up meetings with Metlakatla Nation have not identified any specific spiritual and ceremonial sites on Lelu Island. However, the TUS notes that Lelu Island is culturally sensitive and spiritually significant for the Metlakatla First Nation people.

Metlakatla's position regarding culturally modified trees, as outlined in the Metlakatla CMT Policy, is that CMTs "no matter their age, are physical evidence of Metlakatla's occupation, use, and ownership of the Metlakatla traditional territory through time. CMTs signify the presence of Metlakatla peoples on the land and indicate the traditional uses of our ancestors. As CMTs were created and left by our Metlakatla ancestors, no individual, organization, or government agency has the right to cut them down, destroy them, or deface them in any way." Metlakatla considers the removal of recorded CMTs in the project area as significant, as no mitigation measure can compensate for the "loss of context" of these CMTs.

Approximately 50 % of the recorded CMTs on Lelu Island are located within the project development area. Their removal will be carefully orchestrated with Metlakatla guided by a jointly developed Archaeological Resource and Heritage Resource Management Plan. The Impact Benefit Agreement concluded with Metlakatla addressed and compensates for CMT removal. Lastly, PNW LNG has not been provided information about how these CMT-related spiritual and ceremonial sites are currently used by Metlakatla First Nation members.

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If Metlakatla First Nation currently use Lelu Island for cultural purposes, the removal of cultural landscapes (CMTs) from Lelu Island is expected to require members to use other CMT sites for traditional purposes. Some CMTs will remain in the visual buffer surrounding the Island, and may become available to members following project decommissioning if the Port determines that the project lands are to be returned to a more natural state. PNW LNG asserts this is unlikely, with the development of substantive industrial infrastructure on lands designated for industrial development. Metlakatla First Nation members' use of spiritual sites and cultural landscapes at other locations is not expected to be affected by the Project.

21.6.5.4.2 Timing of Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to spiritual sites and cultural landscapes (Section 21.6.2.1) may result in changes to the preferred timing of Aboriginal peoples' use of these sites and features. Aboriginal peoples may avoid using spiritual sites and cultural landscapes during times (of the day, month, and year) when project activities interfere with marine access to these sites (i.e., during construction activities and associated marine traffic).

Metlakatla First Nation has identified spiritual sites and cultural landscapes accessed via waters in Chatham Sound (Section 21.6.1.4). Interference with access to these sites due to project-related shipping (one ship per day) is not expected to be sufficient to alter the timing of members' use of these sites. PNW LNG has not been provided information about Metlakatla First Nation members' current use of this cultural landscape.

21.6.5.4.3 Effort Required for Current Use of Spiritual Sites and Cultural Landscapes

Interference with access to spiritual sites and cultural landscapes (Section 21.6.2.1) may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach key sites and features. Removal of traditional use sites may result in increased effort for Aboriginal peoples currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to be sufficient to prompt Aboriginal people to shift the locations where they use spiritual sites and cultural landscapes, due to the unique significance of such sites and features.

Metlakatla First Nation has identified spiritual sites and cultural landscapes accessed via waters in Chatham Sound (Section 21.6.1.5). Interference with access to these sites due to project-related LNG carriers transiting to Port from Triple Island along established and existing shipping routes (and only about one ship per day) is not expected to be sufficient to increase members' effort to access these sites.

21.6.5.4.4 Success of Current Use of Spiritual Sites and Cultural Landscapes

Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.

21.6.5.4.5 Satisfaction with Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to, availability of, and sensory environment for spiritual sites and cultural landscapes (Section 21.6.2) may affect the extent to which Aboriginal use of these sites and features satisfy expectations relating to aesthetic and spiritual experiences, TEK, and cultural distinctiveness and continuity. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with

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the natural and cultural environment. Interference with access to and availability of spiritual sites and cultural landscapes may affect Aboriginal peoples' ability to collect TEK and to transmit cultural knowledge to other members.

Metlakatla First Nation has identified spiritual sites and cultural landscapes accessed via waters in Chatham Sound (Section 21.6.1.4). Interference with access to these sites due to project-related LNG carriers transiting to Port from Triple Island along established and existing shipping routes (and only about one ship per day) is not expected to be sufficient to increase members' effort to access these sites and features.

Metlakatla First Nation members' aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use of cultural landscapes (CMTs) on Lelu Island.

21.6.6 Mitigation Measures for Current Aboriginal Use

PNW LNG will apply the following mitigation measures to minimize project-related effects on Current Aboriginal Use described in Section 21.6.5).

Specific to the assessment concerns regarding pathway components and mitigations, Table 21-17 describes how Current Aboriginal Use practices and project components will be mitigated.

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Table 21-17 Measures to Mitigate Potential Effects to Metlakatla’s Current Aboriginal Use

Potential Effect	Mitigations
Current Fishing Practices	<p>The project changes, including a suspension bridge and relocated trestle and berth, result in no infrastructure located on Flora Bank and eliminate the need for dredging on Agnew Bank.</p> <p>The project changes reduce the effects of infrastructure construction and dredging upon navigation. The jetty length (including the suspension bridge and trestle) will be approximately 300 m longer; however vessels will continue to be able to pass underneath it.</p> <p>The project changes will result in a much reduced volume of sediment for ocean disposal. The resulting dispersal area is significantly reduced, reducing the impact, or perceived impact, on Brown Passage.</p> <p>Section 13 contains a description of mitigation measures relating to marine resources, including those for:</p> <ul style="list-style-type: none"> • The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2) • Changes to fish habitat (Section 13.5.3.2) • The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2) • Changes in behaviour of fish and marine mammals (Section 13.5.5.2).
Current Hunting and Trapping Practices	<p>Mitigations related to impacts to current hunting and trapping practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Metlakatla First Nations regarding restricted access to Lelu Island and the resulting effects on Metlakatla’s cultural practices.</p> <p>PNW LNG plans shift rotation during construction as well as recreational facilities at work camps to help reduce the impacts of increased workers on local recreation and resources.</p>

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Potential Effect	Mitigations
Current Gathering Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Metlakatla First Nations regarding restricted access to Lelu Island and the resulting effects on Metlakatla’s cultural practices.</p>
Current Use of Spiritual Sites and Cultural Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Metlakatla First Nations regarding restricted access to Lelu Island and the resulting effects on Metlakatla’s cultural practices.</p> <p>Of the 431 CMTs recorded on Lelu Island approximately 50% are located outside the project development area and will not be removed.</p> <ul style="list-style-type: none"> • Removal of CMTs on Lelu Island will be conducted as articulated in the jointly developed Archaeological and Heritage Resource Management Plan (Section 20.5.2.2) • A chance find protocol will be used during project construction in the event that unrecorded CMTs are encountered.

Discussions are under way with Metlakatla to identify appropriate means with which to accommodate project effects that cannot be completely mitigated (see Section 27).

21.6.7 Residual Effects on Current Aboriginal Use

Following the mitigation measures described and referenced in Section 21.6.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island as the entire island will be leased to the Project by the federal Prince Rupert Port Authority.

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However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources, except for limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting location may be reduced during construction due to alteration of movement associated with noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-18 describes expected residual effects following implementation of the above mitigation measures.

Table 21-18 Residual Effects to Current Aboriginal Use

Effect	Project Phase	Description of Residual Effect
Current Fishing Practices		
Location	C, O, D	Fishers are expected to shift the location of sockeye salmon, eulachon, and crab fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. Fishers may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers using the existing ship transit route from Triple Island to the Port of Prince Rupert. Increased marine traffic during any decommissioning required by the Port may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.
Timing	O	Fishers may alter the time of day for fishing practices in the existing ship transit route from Triple Island into the Port of Prince Rupert to avoid interaction with LNG carriers not unlike avoidance already practiced by aboriginal fishers of other large vessels that currently transit from Triple Island and call on the Port of Prince Rupert.
Effort	C, O	Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of, and access to, preferred fishing sites.
Success	n/a	No predicted residual effects.
Satisfaction	C, O, D	Visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.
Current Hunting and Trapping Practices		
Location	C, O, D	Hunters who currently hunt deer on Lelu Island, and hunters who harvest seal on the shore of Lelu Island, are expected to shift the location of these hunting activities during construction, operations, and decommissioning.
Timing	C, O, D	Members are expected to alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day).
Effort	C, O, D	Metlakatla member's currently hunting deer and seal on Lelu Island are expected to increase effort to obtain these resources from alternative locations.
Success	C, O, D	The success of deer and seal hunting on Lelu Island is expected to be reduced for individuals and/or families currently using these sites, if Metlakatla First Nation's internal governance and resource management frameworks limit the availability of alternative hunting locations these individuals and/or families.

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Effect	Project Phase	Description of Residual Effect
Satisfaction	C, O, D	Members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to visual quality changes. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to hunt and trap on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who hunt on Lelu Island, if those members do not have access to alternative hunting sites. To the extent that members experience reduced success hunting for seal and deer in alternative locations to Lelu Island, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.
Current Terrestrial Gathering Practices		
Location	n/a	No predicted residual effects.
Timing	n/a	No predicted residual effects.
Effort	n/a	No predicted residual effects.
Success	n/a	No predicted residual effects.
Satisfaction	n/a	No predicted residual effects.
Current Use of Spiritual Sites and Cultural Landscapes		
Location	C, O, D	Removal of cultural landscapes (CMTs) from Lelu Island is expected to require members to use other CMT sites for traditional purposes. CMTs will remain in the visual buffer surrounding the Island, however, will be on lands leased by the PRPA to PNW LNG and be relatively inaccessible for safety reasons.
Timing	C, D	Interference with access associated with increased marine traffic during construction and decommissioning is expected to prompt some Metlakatla First Nation members to change their timing for use of cultural landscapes (CMTs).
Effort	n/a	No predicted residual effects
Success	n/a	Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.
Satisfaction	C, O, D	Members' aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use of cultural landscapes (CMTs) on Lelu Island.

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21.6.8 Assessment of Residual Effects on Current Aboriginal Use

21.6.8.1 Assessment of Residual Effects on Fishing Practices

21.6.8.1.1 Characterization of Residual Effects on Fishing Practices

The residual effect on preferred locations for fishing practices is rated as **low**. The Project will only affect small portions of wider fishing areas and other portions of the fishing areas will remain available. Fishers are expected to move to different locations within existing fishing areas, rather than move to new fishing areas, resulting in a small change from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning in the unlikely event an industrial port area is returned to a natural state. Metlakatla First Nation fishers are rated as moderately vulnerable to changes in fishing locations (**moderate context**).

The residual effect on timing of fishing practices is rated as **low**. Alteration of the timing of fishing activities in relation to project shipping schedules is expected to take place for only some fishers and would only occur at one period during the day. The residual effect is expected to be limited to operations (**medium-term**) and would be a **multiple regular event**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning in the unlikely event an industrial port area is returned to a natural state. Metlakatla First Nation fishers are rated as moderately vulnerable to changes in the timing of fishing practices (**moderate context**).

The residual effect fishing effort is rated as **low**. The extent of locational change is expected to be small and will result in only a small change from existing baseline conditions for fishing effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Metlakatla First Nation fishers are rated as moderately vulnerable to changes in fishing effort (**moderate context**).

The residual effect on satisfaction with fishing practices related to aesthetic experiences while fishing in the vicinity of the Project is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning in the unlikely event an industrial port area is returned to a natural state. Metlakatla First Nation fishers are rated as moderately vulnerable to changes in fishing satisfaction (**moderate context**).

21.6.8.1.2 Significance of Residual Effects on Fishing Practices

Residual effects on Metlakatla First Nation's fishing practices are assessed as **not significant**: The residual effects have low magnitude, local geographic extent, medium-term duration, and may be reversible.

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The residual effects are predicted to result in little discernable change in Metlakatla First Nations' overall fishing practices.

21.6.8.1.3 Likelihood and Confidence for Residual Effects Conclusions on Fishing Practices

The likelihood that residual effects on fishing locations, timing, effort, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific data about Metlakatla First Nation's Current Aboriginal Use.

21.6.8.2 Assessment of Residual Effects Hunting and Trapping Practices

21.6.8.2.1 Characterization of Residual Effects on Hunting and Trapping Practices

The residual effect on preferred locations for hunting and trapping practices is rated as **moderate**. The Project is expected to result in the relocation of hunting efforts for only small number of individuals. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning if in the unlikely event the site is returned to a natural state after being used as an industrial area. Metlakatla First Nation hunters and trappers are rated as moderately vulnerable to changes in hunting locations (**moderate context**).

The residual effect on timing of hunting and trapping practices is rated as **low**. Alteration of the timing of hunting and trapping activities in relation to construction activities and project shipping schedules is expected to take place for only some hunters; timing effects related to shipping would only occur at one period during the day. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**) and would be **continuous** during construction and a **multiple regular event** during operations. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Metlakatla First Nation members are rated as moderately vulnerable to changes in the timing of hunting and trapping practices (**moderate context**).

The residual effect hunting and trapping effort is rated as **low**. The Port does not permit or authorize hunting and trapping on Lelu Island. The extent of locational change for deer, mink, otter, and seal hunting and trapping is expected to be small and will result in only a small change from existing baseline conditions for hunting effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Metlakatla First Nation members are rated as moderately vulnerable to changes in hunting and trapping effort (**moderate context**).

The residual effect on hunting and trapping success is rated as **low**. The Project is not predicted to affect the population viability of deer, mink, otter, and seal and these species can be harvested at similar rates in alternative locations. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is

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restricted to the **LAA** and may be **reversible** after decommissioning. Metlakatla First Nation members are rated as moderately vulnerable to changes in hunting and trapping success (**moderate context**).

The residual effect on satisfaction with hunting and trapping practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects to the aesthetic experience are expected to be relatively low. Lelu Island has not been identified as particularly important site for the collection and transmission of TEK. Reduced opportunities for social bonding in relation to hunting and trapping practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Metlakatla First Nation members are rated as moderately vulnerable to changes in hunting and trapping satisfaction (**moderate context**).

21.6.8.2.2 Significance of Residual Effects on Hunting and Trapping Practices

Residual effects on Metlakatla First Nation's hunting and trapping practices are assessed as **not significant**: The residual effects have low to medium magnitude, local geographic extent, medium-term duration, and may be reversible. The residual effects are predicted to result in little discernable change in Metlakatla First Nations' overall hunting and trapping practices.

21.6.8.2.3 Likelihood and Confidence for Residual Effects Conclusions on Hunting and Trapping Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **high**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific data about Metlakatla First Nation's Current Aboriginal Use.

21.6.8.3 Assessment of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.6.8.3.1 Characterization of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

The residual effect on preferred locations for use of spiritual sites and cultural landscapes is rated as **moderate**. Lelu Island will no longer provide a location for the use of cultural landscapes (CMTs), due to project activities. However, PNW LNG has not been provided any evidence of current use of these Lelu Island CMT sites for spiritual purposes. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will be **irreversible** as the removal of approximately 50% of the CMTs on Lelu Island will be permanent. Though Mitigation measures will record the information related to the practice of tree harvesting from impacted CMTs, access to the location will be restricted, Metlakatla First Nation

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members are rated as highly vulnerable to changes in locations for the use of spiritual sites and cultural landscapes (**high context**).

The residual effect on timing of use of spiritual sites and cultural landscapes is rated as **moderate**. It is expected to occur through the duration of construction and decommissioning (**medium-term**) and would be **continuous**. The extent of the effect is restricted to the **LAA** and may be **irreversible** after decommissioning (depending on future use of Lelu Island). Metlakatla First Nation members are rated as moderately vulnerable to changes in the timing of use of spiritual sites and cultural landscapes (**moderate context**).

The residual effect on satisfaction with use of spiritual sites and cultural landscapes practices is rated as **moderate**. Alteration of aesthetic experiences and reduction in the ability to collect and teach TEK in the vicinity of the Project are predicted to be limited. However, use of such sites is assumed to be highly important to Metlakatla First Nation members. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will be **irreversible** after decommissioning as the CMT site on Lelu will be permanently altered. Metlakatla First Nation members are rated as highly vulnerable to changes in satisfaction with the use of spiritual sites and cultural landscapes (**high context**).

21.6.8.3.2 Significance of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes
Residual effects on Metlakatla First Nation's current use of spiritual sites and cultural landscapes are assessed as **not significant**: The residual effects have moderate magnitude, LAA extent, medium-term duration, will occur continuously, and will be irreversible as approximately half the CMTs will be permanently removed from Lelu Island within the LNG plant's development area. In addition, access to the CMTs that remain in the buffer area on the leased Lelu Island will not be practical. The residual effect on the current Aboriginal use results in a discernible, but not consequential, change in Metlakatla First Nation's overall use practice with respect to the Sub-VC.

21.6.8.3.3 Likelihood and Confidence for Residual Effects Conclusions on Current Use of Spiritual Sites and Cultural Landscapes

The likelihood that residual effects on location, timing, and satisfaction with respect to current use of spiritual sites and cultural landscapes will occur is rated as **high**. There is a high probability of effects relating to the permanent removal of approximately half of the CMTs on Lelu Island.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific archaeological inventories and Metlakatla-provided information about Metlakatla First Nation's Current Aboriginal Use of Lelu Island.

21.6.9 Summary of Residual Effects on Current Aboriginal Use

Table 21-19 summarizes the residual effects characterization for Metlakatla First Nation Current Aboriginal Use VCs.

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Table 21-19 Metlakatla First Nation: Summary of Current Aboriginal Use Residual Effects Characterization, Significance, Likelihood and Confidence

Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Fishing Practices									
Location	L	LAA	MT	R	C, MR	M	N	M	H
Timing	L	LAA	MT	R	MR	M	N	M	H
Effort	L	LAA	MT	R	C	M	N	M	H
Success	-	-	-	-	-	-	-	-	-
Satisfaction	L	LAA	MT	R	C	M	N	M	H
Current Hunting and Trapping Practices									
Location	L	LAA	MT	R	C	M	N	M	H
Timing	L	LAA	MT	R	C, MR	M	N	M	H
Effort	L	LAA	MT	R	C	M	N	M	H
Success	L	LAA	MT	R	C	M	N	M	H
Satisfaction	L	LAA	MT	R	C	M	N	M	H
Current Gathering Practices									
Location	-	-	-	-	-	-	-	-	-
Timing	-	-	-	-	-	-	-	-	-
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	-	-	-	-	-	-	-	-	-

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Use of Spiritual Sites and Cultural Landscapes									
Location	M	LAA	MT	I	C	H	N	H	H
Timing	M	LAA	MT	I	C	M	N	M	H
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	M	LAA	MT	I	C	H	N	H	M

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
<p>KEY</p> <p>Context:</p> <p>L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment</p> <p>M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment</p> <p>H = High resilience: occurs in viable ecosystem and/or undisturbed environment</p>	<p>Magnitude:</p> <p>N = Negligible: no detectable change on individuals of a regional wildlife population or hectares of habitat</p> <p>L = Low: change detectable on a few individuals or hectares of habitat (i.e., < 10 ha) in a regional population</p> <p>M = detectable change on many individuals or hectares of habitat (i.e., 10 to 250 ha) in a regional population</p> <p>H = High: detectable change on the majority of individuals or hectares of habitat (> 250 ha) in the regional population</p> <p>Extent:</p> <p>PDA = project development area</p> <p>LAA = local assessment area</p> <p>RAA = regional assessment area</p>	<p>Duration:</p> <p>ST = Short-term: effect less than one breeding season/generation</p> <p>MT = Medium-term: effect occurs for several breeding seasons/generations or a project phase</p> <p>LT = Effect occurs across multiple breeding seasons/generations or project phases</p> <p>P = Permanent: Effect permanent and unlikely to recover following project decommissioning and reclamation</p> <p>Reversibility:</p> <p>R = Reversible: will recover during lifetime of the Project or after project decommissioning and reclamation</p> <p>I = Irreversible: effects will persist after project decommissioning and reclamation</p> <p>Frequency:</p> <p>S = Single event</p> <p>MI = Multiple, irregular event</p> <p>MR = Multiple, regular event</p> <p>C = Continuous</p>	<p>Likelihood:</p> <p><i>Based on professional judgment.</i></p> <p>L = Low probability of occurrence</p> <p>M = Medium probability of occurrence</p> <p>H = High probability of occurrence</p> <p>Significance:</p> <p>S = Significant</p> <p>N = Not significant</p> <p>Confidence:</p> <p><i>Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation, and assumptions made.</i></p> <p>L = Low level of confidence</p> <p>M = Moderate level of confidence</p> <p>H = High level of confidence</p>						

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21.7 ASSESSMENT OF EFFECTS ON LAX KW'ALAAMS FIRST NATION'S CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

21.7.1 Baseline Conditions for Current Aboriginal Use

21.7.1.1 Current Fishing Practices

In a factum prepared by Lax Kw'alaams First Nation for *Lax Kw'alaams Indian Band v. Canada (Attorney General)* (LKFN 2011), the Nation identifies itself with traditional Coast Tsimshian fishing practices. The Nation notes that in late winter, Coast Tsimshian moved north from their permanent winter villages in Prince Rupert Harbour to the Nass River to harvest and process the eulachon. In spring, the Coast Tsimshian occupied the coastal islands and areas around and north of Prince Rupert Harbour, where they collected herring spawn on seaweed in the inter-tidal areas, trawled for salmon in the ocean waters, and fished for halibut, herring and other saltwater fish. In late summer and fall, Coast Tsimshian moved up the lower Skeena River and to their major salmon fisheries at sites on the tributaries on both sides of the Skeena River. Late fall and winter were spent in permanent winter villages around Prince Rupert Harbour, where some harvesting of fisheries resources (e.g., shellfish) continued.

Lax Kw'alaams First Nation holds communal Aboriginal fishing licenses.

Lax Kw'alaams comments during the environmental assessment process raised general concerns about marine and land use areas, including concerns about fishing areas:

“What about land and marine use areas (hunting grounds, berry/medicinal gathering sites, fishing areas, etc.)? An increase in sound in this area has the potential to change these practices. These must be identified. For example, we know that Aboriginal people and other fishermen and crab trappers use the areas around Lelu Island for harvesting purposes, so will the increased noise west and south of Lelu contribute to change in practices (e.g., reduction in participation)?”

Despite best efforts (Section 21.7), PNW LNG has not obtained, from Lax Kw'alaams First Nation or other sources, direct information about Lax Kw'alaams First Nation's current fishing practices in areas potentially affected by the Project.

Given the intertwined ethno-history of Lax Kw'alaams First Nation and Metlakatla First Nation, current interconnections between the two communities, and their shared strength of claim to shared traditional territory, PNW LNG made best efforts and proceeded within the preparation of the EIS Addendum to assess Project impacts to Lax Kw'alaams First Nation's current fishing practices as if their practices are approximately similar to Metlakatla First Nation practices, although the scale of fishing may be larger for Lax Kw'alaams. PNW LNG understands that Lax Kw'alaams fishing practices may exist on a larger scale than Metlakatla First Nation, as their population of fishers is higher and as they operate their own fish processing plant in Port Simpson/Lax Kw'alaams. PNW LNG refers the reader to Section 21.6.1.1.

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21.7.1.2 Current Hunting and Trapping Practices

As noted in Section 21.1.1.1, Lax Kw'alaams First Nation raised general concerns about marine and land use practices, including hunting, in areas around the Project.

Despite best efforts (Section 21.7), PNW LNG has not obtained, from Lax Kw'alaams First Nation or other sources, site-specific information about Lax Kw'alaams First Nation's current hunting and trapping practices with respect to Lelu Island and those marine waters impacted by the Project's marine infrastructure.

Given the intertwined ethno-history of Lax Kw'alaams First Nation and Metlakatla First Nation, current interconnections between the two communities, and their shared strength of claim to their shared traditional territory, PNW LNG is making best efforts and assuming that Lax Kw'alaams First Nation's current hunting and trapping practices are roughly similar to the current hunting and trapping practices of Metlakatla First Nation (see Section 21.6.1.2).

21.7.1.3 Current Gathering Practices

As noted in Section 21.1.1.1, Lax Kw'alaams comments on the EIS raised general concerns about marine and land use areas, including concerns about berry/medicinal gathering sites, in areas around the Project. Comments also express concerns about loss of traditional use plant species on Lelu Island.

Despite best efforts (Section 21.7), PNW LNG has not obtained, from Lax Kw'alaams First Nation or other sources, site-specific information about Lax Kw'alaams First Nation's current gathering practices on Lelu Island, if any, or other gathering sites that are accessed via travel routes potentially affected by the Project.

Given the intertwined ethno-history of Lax Kw'alaams First Nation and Metlakatla First Nation, current interconnections between the two communities, and their shared strength of claim to their shared traditional territory, PNW LNG assumes that Lax Kw'alaams First Nation's current gathering practices are roughly similar to the current gathering practices of Metlakatla First Nation (see Section 21.6.1.3).

21.7.1.4 Current Use of Spiritual Sites and Cultural Landscapes

Through written submissions made during the environmental assessment process, Lax Kw'alaams raised concerns about the cultural values of the project area:

Lelu Island, Flora Bank, and the Skeena Estuary are in the heart of Lax Kw'alaams territory and central to Lax Kw'alaams culture and identity

Lelu Island is an area of active, historic and desired future use, which holds important cultural values as a part of the cultural landscape of the Coast Tsimshian

The permanent loss of in situ heritage and/or archaeological resources represents an enormous and unacceptable loss to Lax Kw'alaams. CMT data demonstrates long term and continuous traditional use of Lelu Island for wood/bark collection. The use and management of this renewable resource has

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likely been taking place for millennia. The loss of this resource represents a profound and immense infringement to past and future uses on Lelu Island by Lax Kw'alaams.

"Lax Kw'alaams and other parties have stated from the outset of the EA that the Lelu Island/Flora Bank area has natural resources and traditional use values that do in fact make it unique,"

"Lax Kw'alaams reiterates that the Project LSA has unique and extremely highly valued ecological and use values, which make protection of this location a high priority for Lax Kw'alaams. It is a place that cannot be replaced."

Despite best efforts (Section 21.7), PNW LNG has not obtained, from Lax Kw'alaams First Nation or other sources, site-specific information about Lax Kw'alaams First Nation's current use of spiritual sites and cultural landscapes.

Given the intertwined ethno-history of Lax Kw'alaams First Nation and Metlakatla First Nation, current interconnections between the two communities, and their shared strength of claim to their shared traditional territory, PNW LNG assumes that Lax Kw'alaams First Nation's current fishing practices are roughly similar to the current fishing practices of Metlakatla First Nation (see Section 21.6.1.1).

21.7.1.5 Current Transportation Practices

During the environmental assessment process, Lax Kw'alaams provided comments noting that Lelu Island is an important "navigation route for Coast Tsimshian." Other comments raised concerns about "reduction in the size of the navigable area around Lelu Island," and "effects on navigation through the narrow confines of Porpoise Channel, especially in an instance where Project-specific and cumulative infrastructure is put in place (MOFs on either side of the Channel)."

Further, Lax Kw'alaams raised general concerns about

The Proponent must provide additional information on Aboriginal harvesting and navigation patterns in the area, willingness to use the area in the Project scenario, enumeration of the nature and geographic and temporal extent of perceived risks in the Project-case and planned development case, and updating of PNW LNG's effects characterization and significance estimations across a variety of VCs to reflect the role of perceived risk and alienation (e.g., current use of lands and marine resources for traditional purposes and Aboriginal rights and title interests).

Despite best efforts (Section 21.7), PNW LNG has not obtained, from Lax Kw'alaams First Nation or other sources, site-specific information about Lax Kw'alaams First Nation's current transportation practices.

Given the intertwined ethno-history of Lax Kw'alaams First Nation and Metlakatla First Nation, current interconnections between the two communities, and their shared strength of claim to their shared traditional territory, PNW LNG assumes that Lax Kw'alaams First Nation's current transportation practices are roughly similar to the current transportation practices of Metlakatla First Nation (see Section 21.6.1.5).

21.7.2 Assessment of Effects on Pathway Valued Components

PNW LNG has not been provided direct information from Lax Kw'alaams about Lax Kw'alaams First Nation's Current Aboriginal Use (see section 21.3). However, given the intertwined ethno-history of Lax Kw'alaams First Nation and Metlakatla First Nation, current interconnections between the two communities, and their

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shared strength of claim to their shared traditional territory (See Section 21.7.1), PNW LNG assumes that Lax Kw'alaams First Nation's Current Aboriginal Uses are roughly similar to the Current Aboriginal Uses of Metlakatla First Nation.

21.7.2.1 Access to Lands, Waters, and Resources Used for Traditional Purposes

Marine-based access to traditional use sites for fishing, hunting, trapping, gathering, spiritual and ceremonial practices, and temporary dwellings may be affected to the extent that preferred and traditional access routes overlap with project components and activities (see Section 15). Project components and activities are not expected to interfere with land-based access to preferred traditional use sites.

Access through Lelu Slough is limited to high tide events and may be limited periodically during construction of the bridge between Lelu Island and the mainland. North-south navigation between Lelu Island and Flora Bank is limited to high tide events and may be periodically limited during construction of the suspended bridge-trestle. Associated construction activities with respect to the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound may also temporarily impede normal access to the north-south channel just west of Lelu Island. Project-related vessel traffic during construction may occasionally alter preferred traditional access, particularly in and out of Porpoise Channel and through Lelu Slough. Activities related to dredging and disposal at sea may occasionally interfere with traditional marine navigation. Marine navigation is regulated by the Port of Prince Rupert and therefore project construction-related disruptions will be managed so they do not unduly inconvenience traditional aboriginal navigation use in and around Porpoise Channel.

During operations, local traditional navigation will not be affected through Lelu Slough since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. The suspended bridge-trestle extending over Flora Bank will have a clearance of approximately 11 metres under a portion of the suspended bridge-trestle near Lelu Island to allow high tide access to the current north-south channel and local traditional navigation travel route just west of Lelu Island.

Large ship navigation from the Pacific and into Chatham Sound may be temporarily affected when LNG carriers are being piloted into Port although only one LNG carrier per day/350 per year are estimated to berth at the terminal. Local navigation may also be affected by temporary weather-related LNG carriers using Port of Prince Rupert temporary anchorages. The anchorage locations will be identified by the PRPA and be within the Prince Rupert Inner Harbour and Chatham Sound.

During decommissioning, in the unlikely event the Port approves the removal of project infrastructure on industrial port lands and waters, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may temporarily affect Aboriginal marine users.

Metlakatla First Nations members currently travel through waters in the vicinity of the Project, including Inverness Passage, across Flora Bank at high tide, Skeena Slough, and surrounding areas. A Metlakatla First Nation canoe route is used along the west side of Lelu Island (Section 21.6.1.5).

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Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' marine-based access to traditional use sites may experience a degree of temporary interference, but will not at any time be eliminated.

21.7.2.2 Quantity of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction, operations, and decommissioning hold the potential to affect the quantity of lands, waters, and resources used for fishing, hunting and trapping, gathering, spiritual and ceremonial activities.

Construction of project components such as the road access bridge between Lelu Island and the mainland, the MOF and turning basin in Porpoise Channel, as well as the suspended bridge-trestle over Flora Bank, the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound will temporarily render these locations unavailable for fishing, marine gathering, and marine hunting and trapping. Upon completion of construction, passage under the road access bridge and the suspended bridge-trestle across Flora Bank will be possible at high tide throughout operations, however, it is envisioned that regulatory authorities may require marine safety exclusion zones to be put in place along and underneath the suspended bridge-trestle and along the pipe pile supported jetty on Agnew Bank.. Marine traffic will likely only be possible right near Lelu Island where the suspended bridge-trestle allows for safe vessel passage for ships up to a gill netter in size at high tide.

PNW LNG believes the Lax Kw'alaams First Nation fishers currently fish for salmon and eulachon, hunt for seals, and gather seaweed around Lelu Island and Flora Bank. The quantity of marine waters available for Lax Kw'alaams First Nation members' salmon and eulachon fishing and seaweed gathering sites are expected to be somewhat reduced (e.g., temporary increases in turbidity and total suspended solids) during construction in the waters around Lelu Island. Lax Kw'alaams First Nation members' hunting areas for seals on the shore of Lelu Island may not be available or have any utility (e.g., seals may have moved away from the industrial LNG plant site) during LNG Plant operations.

Project components and activities during construction, operations, and perhaps, at decommissioning will remove Lelu Island as a location for terrestrial hunting and trapping, gathering, and spiritual and ceremonial activities. Lelu Island is approximately 192 ha, and the PDA (the area within the project development area on Lelu Island and security 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 (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island). Thirty two ha (17%) of Lelu Island will remain outside of the fence line.

Lax Kw'alaams First Nation has raised concerns about potential effects of the Project on hunting practices (Section 21.1.1.2). It is unknown if Lax Kw'alaams hunt on Lelu Island. However, The Metlakatla First Nation TLUS (DMCS 2014) indicates that Metlakatla First Nation currently hunt and trap deer, ducks, geese, mink, otter, marten, and beaver on Lelu Island.

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A number of trees, plants, and berries are available for gathering on the Island (Section 21.6.1.3). Lax Kw'alaams First Nation has raised concerns about potential effects of the Project on berry/medicinal gathering sites in areas around the Project (Section 21.1.1.3). It is unknown if Lax Kw'alaams gather on Lelu Island.

Lelu Island is culturally significant for Lax Kw'alaams First Nation. Lax Kw'alaams First Nation has raised concerns about Project-related loss of archaeological and heritage resources on Lelu Island (Section 21.1.1.4). It is not known if Lax Kw'alaams currently uses spiritual sites and cultural landscapes on Lelu Island.

Construction and operations activities will, with respect to the use of Lelu Island, reduce the quantity of terrestrial resources within Aboriginal peoples' preferred use locations due to direct mortality and alteration of movement. Mortality of birds, amphibians, and small mammals on Lelu Island will be limited to a small number of individuals since vegetation clearing will optimally be completed outside of breeding periods when wildlife are more likely to be occupying nests, dens, or breeding ponds (Section 11.5.3).

Mortality of grizzly bear and wolverine *luscus* subspecies caused by vehicle collisions and human-wildlife interactions is expected to be negligible because these species are not found on Lelu Island and are unlikely to occur in the LAA. Marine birds may die due to collisions with LNG facility structures after they are constructed and regularly lighted for safety reasons during operations. Project-related effects on wildlife movement from site preparation and construction of the LNG facility, operation of construction equipment, and installation of the mainland road bridge and access road, will affect some individuals (Section 11.5.4.3) although it is anticipated that most wildlife will move away from an active, noisy and lighted large industrial site. Project-related effects on marine bird movement from the marine terminal, MOF, and bridge are expected to be negligible.

The quantity of terrestrial resources available to Lax Kw'alaams First Nation members' within their preferred use locations is expected to be reduced to a very small extent. Movement of animals from Lelu Island during construction is immaterial with respect to effects on the quantity of terrestrial resources available to Lax Kw'alaams First Nation as Lelu Island will be completely removed as a use site as the entire island is to be leased to the Project.

Consequently, using Metlakatla First Nation as a proxy, the quantity of land available for Lax Kw'alaams First Nation members' terrestrial hunting (deer and potentially other species), terrestrial gathering (species and practices to be confirmed), spiritual and ceremonial practices (sites and practices to be confirmed) is expected to be reduced during construction and operations of project components, due to removal of Lelu Island as a use site.

Construction and operations activities hold the potential to reduce the quantity of marine resources used by Aboriginal peoples within preferred locations due to direct mortality and alteration of movement. Injury and mortality of fish due to blasting during construction is expected to be limited in extent (Section 13.5.4.3). Blasting activities during marine construction will be undertaken in accordance with DFO blasting guidelines in order to avoid harm to marine mammals. In addition, most species of commercial importance are expected to be rarely present or absent from the blast area. Resident Dungeness crabs will be relocated prior to blasting. Injury or mortality due to 'Disposal At Sea deposition at Brown Passage associated with dredging the

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MOF and Turning Basin is expected to affect only immobile species in close proximity to these activities. Increases in TSS levels associated with vessel manoeuvring, dredging at the MOF, and disposal at sea are not expected to result in injury or mortality to fish as marine organisms (including juvenile salmon) are adapted to seasonal variations in TSS levels, levels are below those that cause lethal effects to salmon and other species, and will be limited in extent and duration. In any event TSS will be monitored during dredging and deposition.

Any existing sediment chemical compounds (e.g., dioxins and furans) exposed during MOF dredging during construction or vessel berthing and departure during operations are not expected to pose to any toxicological risks to marine biota (Section 13.5.2.5) or to human health from the consumption of marine animals as these sediments have levels of contamination well below regulatory thresholds. Underwater noise from impact pile driving can be mitigated using a bubble curtain, therefore, the underwater noise is not expected to result in injury or mortality to fish or marine mammals. In the rare case that an impact hammer is used to install piles, and a bubble curtain is used, cetaceans within 1.0 km of the sound source may be exposed to sound levels capable of causing permanent auditory injury. Potentially affected species include harbour porpoise, Dall's porpoise, Northern resident and Bigg's killer whales, humpback whale, Loughlin's Northern sea lion, harbour seal, and Pacific white-sided dolphin. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The relative number of marine resources available in preferred hunting sites in the project marine infrastructure areas around Lelu Island may be reduced due to altered distribution of fish and marine mammal populations (Section 13.5.5.3). There is potential for fish (e.g., eulachon, herring, rockfish) to react to construction noises; however, if such reactions occur, they are likely to be spatially and temporally limited. Salmon may show local avoidance of particularly noisy zones (Feist et al. 1996), but this reaction is expected to be limited in spatial extent and short-lived. Pipe pile installation during construction may result in potential residual effects to marine mammal's behavior at distances of up to 15 km. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The transit of LNG carriers into Port and berthing during operations could also affect some marine species' behaviours. Areas of avoidance for Harbour Porpoise may occur within Porpoise Channel and a portion of Prince Rupert Harbour. Because harbour porpoise and other marine mammals in the LAA are important prey species for Bigg's killer whale; potential displacement of these species during pile driving could indirectly result in displacement of Bigg's killer whale. Killer whales might exhibit behavioural response over large areas of the LAA. Modelling results indicate the humpback whales could experience behavioural responses over a radius of 8.9 km at the Triple Island area during ship transits into the Port of Prince Rupert, and, at the marine terminal in Chatham Sound, when the LNG carriers are berthing supported by 4 tugs.

Effects on Loughlin's sea lion may also be a concern near any rookeries (i.e., breeding areas) though none are identified within the project marine infrastructure areas. The severity of threat from LNG carriers coming to, and leaving Port, and to any rookeries along already existing large vessel transit routes from Triple Island to Port at the population-level is "likely low", as this species is described as being able to habituate to chronic disturbances.

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Consequently, using Metlakatla First Nation as a proxy, the quantity of marine waters available for Lax Kw'alaams First Nation members' salmon and eulachon fishing and seaweed gathering sites are expected to be reduced during construction in the waters around Lelu Island. Lax Kw'alaams will no longer be able to hunt for seals on the foreshore of Lelu Island during construction or operations, if Lax Kw'alaams First Nation members engage in such activities.

Metlakatla First Nation members currently fish for a wide variety of species for commercial and food, social, and ceremonial purposes through the LAA, including salmon and eulachon in the waters around Lelu Island and crab in the vicinity of the suspended bridge-trestle (Section 21.6.1.1). Metlakatla member's fish for a variety of species of salmon, groundfish, crustaceans, and molluscs within the area potentially affected by underwater noise and within the shipping route (Section 21.6.1.1). Metlakatla First Nations also harvest seal, stellar and sea lion (Section 21.6.1.1).

Lax Kw'alaams has expressed concerns about potential effects to fish habitat and the Flora Bank in particular as a result of the jetty location off of Lelu Island and its proximity to Flora Bank. Lax Kw'alaams has noted the location of the Project is close to the mouth of the Skeena River, is within the Skeena River estuary and that the Project could have impacts on the out-migration of juveniles of some fish species, especially salmon. It believes that the Project could affect its members ability to harvest marine resources for cultural, recreational and subsistence purposes.

Using Metlakatla First Nation as a proxy, project-related reductions in the quantity of fish currently harvested by Lax Kw'alaams First Nation members within their preferred fishing locations are expected to be negligible. Absolute reductions in the population sizes of harvestable fish species are not expected. Some limited fish movement out of preferred fishing locations may take place during construction activities. The absolute quantity of marine mammals harvested by Lax Kw'alaams First Nation members is not expected to be reduced by project activities. Lax Kw'alaams First Nations members may find reduced numbers of sea lions in preferred harvesting areas during construction due to noise-related alteration of movement.

21.7.2.3 Quality of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction and operations hold the potential to affect the quality of lands, waters and resources for used fishing, hunting, trapping, and gathering. The Project is not expected to result in any adverse effects to the quality of terrestrial country foods.

Dredging during construction of the MOF and turning basin could expose marine species to sediments containing historical deposits of non-toxic (as the levels of contamination in these sediments have been tested as being well below any toxicological thresholds) chemicals (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans - PCDD/Fs) (Section 19.5.2). Although country foods have been tested for any existing dioxin and furan contamination, and the results have shown they are not contaminated, there is perceived potential that MOF dredging could expose additional dioxins and furans and that these chemical contaminants could be further exposed so that they may be at higher concentrations and then accumulate in the tissues of marine country food species and affect human health from the consumption of marine country foods.

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The project assessment of these potential effects meets or exceeds the standards imposed by the appropriate regulatory authorities. The overall potential for PCDD/Fs in marine country foods to increase in concentrations is negligible to low. With that said, PNW LNG has committed to on-going country food monitoring over the marine construction phase of the Project to confirm this prediction.

Lax Kw'alaams First Nations members harvest a wide variety of fish species and marine mammals throughout the LAA, including within the vicinity of Lelu Island (the marine waters between Lelu and Stapledon Islands, over Flora Bank, through Inverness Slough) and within the vicinity of the presented 'Disposal at Sea site' (Brown Passage) (Section 21.6.1.1 and 27.7.1.1).

Using Metlakatla as a proxy, the Project is not expected to affect the quality of resources harvested by Lax Kw'alaams First Nation members.

21.7.2.4 Sensory Environment for Current Aboriginal Use

Construction, operations, and decommissioning of the Project have the potential to affect the sensory environment within which Aboriginal peoples undertake traditional use activities. Project activities will result in changes to sound levels, ambient light, air quality, and quality of the visual landscape. The Project also has the potential to change perceived safety and solitude for Aboriginal people who frequent areas near the PDA and shipping lanes.

Modelled noise levels during construction are predicted to be below the threshold of human hearing perception on Rachel Islands, Lucy Islands, and Triple Island (Section 8.5.2.3). Construction noise will be audible on Kitson Island, Kinahan Islands, Digby Island, and Smith Island. During operations, project-related noise will be audible on Kitson Island, Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Digby Island, and Smith Island. Noise related to construction and operations is not predicted to exceed Health Canada noise limits (%HA) at any of the modelled sites (Section 8.5.2.3 and 19.5.2.3).

Changes to light levels will occur during all phases of the project activities during daytime and night-time (Section 19.5.2.3) as construction and operational safety is directly related to adequate lighting. A qualitative assessment of the potential effects of changes in ambient light during construction phase indicates that, with mitigation, adverse effects will be avoided. Most construction activities occur during the daytime with limited night-time lighting required. During operations, exterior lighting associated with some project components (e.g., storage tanks, flares) will be visible. Due to the positioning of the marine terminal component of the Project, for the most part, the exterior lighting associated with the terminal itself and the ships will likely not be visible from mainland locations. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment.

Project components and construction and operations activities are expected to affect visual quality as they will alter the topography and vegetation patterns of the project site and the marine areas in which the suspended bridge trestle, pipe-pile supported trestle and marine terminal will be built (Section 17.5.2.2). The Project will also introduce new industrial human interventions that, pending the viewing angle, will be

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out of scale and not characteristic of the current landscape character of VSUs within the LAA. The project facility and marine terminal will be visible from Kitson Island and Kinahan Islands. LNG carrier ships will be visible from Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Stephens Island, and Melville Island. Effects to visual quality related to the facility and marine terminal are expected to be high magnitude. Effects to visual quality related to shipping operations are predicted to be low to moderate magnitude.

No changes to human health are anticipated from air quality during construction (Section 19.5.2.3). The modelled changes to air quality during operations shows that no criteria air contaminants (CACs) exceed applicable BC Ministry of Environment air quality objectives at any time. This indicates that for the general population, there would be no changes to human health to people exposed to CACs in the air from project activities. With that said, project air emissions will be regulated by the province's Oil and Gas Commission and ambient air, soil and water monitoring in the surrounding area will be monitored during the life cycle of the Project to ensure ambient air and any acidic deposition remains below any regulatory thresholds.

The sensory environment for Lax Kw'alaams First Nation members' traditional use activities is expected to be affected by changes in visual quality, but not by changes in noise, light, or air quality. In addition, members' perceptions of safety and solitude may be affected due to the presence of project components and activities, and increased presence of marine traffic.

21.7.3 Mitigation Measures for Pathway Valued Components

Mitigation measures for access to traditional use sites include:

- Measures to reduce changes to aboriginal marine navigation (Section 15.5.2.2).

Mitigation measures for potential effects on quantity of lands, waters, and resources for traditional purposes include measures to reduce:

- The potential for project related changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2)
- Changes to fish habitat (Section 13.5.3.2)
- The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2)
- Changes in behaviour of fish and marine mammals (Section 13.5.5.2)
- Terrestrial habitat for wildlife and marine birds, including wetland compensation and fish habitat offsetting (Section 11.5.2.2)
- Mortality risk to terrestrial wildlife and marine birds (Section 11.5.3.3)
- Alteration of movement of terrestrial wildlife and marine (Section 11.5.4.2)
- Or identify, record, and recover data for heritage features, including culturally modified trees (Sections 20.5.2.2 and 20.5.3.2).

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Mitigation measures for potential effects on quality of lands, waters and resources for traditional purposes include:

- Measures to reduce changes to marine resources due to changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2).

Mitigation measures for potential effects on the sensory environment for traditional activities include measures to reduce changes to:

- Air quality (Section 6.5.2.2)
- Acoustic environment (Section 8.5.2.2)
- Ambient light (Section 9.5.2.2)
- Visual quality (Section 17.5.2.4).

21.7.4 Residual Effects on Pathway Valued Components

Following the mitigation measures described and referenced in Section 21.4.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a relatively short temporal amount of interference due to construction activities and water vessel traffic (including LNG carrier movements in and out of Port). Project mitigations will be unable to minimize the loss of the use of lands on Lelu Island as the entire island will be leased to the Project. However, other non-Lelu Island terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of Lelu Island peat bogs and wetlands to some degree. Marine waters impacted by the project marine infrastructure will be temporarily unavailable for reasonably short durations during construction and decommissioning, while complete alteration and removal of some marine waters from traditional use during operations will be limited in extent where regulatory authorities require marine traffic exclusion zones for safety reasons. The Port of Prince Rupert will manage the temporary loss of use during construction.

Project mitigations avoid reductions in the absolute quantity of terrestrial and marine resources, except for potential limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting locations may be reduced during construction due to alteration of movement associated with construction activity and associated noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-20 identifies residual effects remaining after the application of mitigation measures.

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Table 21-20 Lax Kw'alaams First Nation: Residual Effects to Pathway Valued Components

Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Access to lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' marine-based access to current fishing sites may experience a degree of temporary interference.
Current Hunting and Trapping Practices	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' marine-based access to current hunting and trapping sites may experience a degree of temporary interference.
Current Gathering Practices	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' marine-based access to current marine and terrestrial gathering sites may experience a degree of temporary interference.
Current Spiritual and Ceremonial Practices	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' marine-based access to current spiritual and ceremonial sites may experience a degree of temporary interference.
Quantity of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C	Using Metlakatla First Nation as a proxy, the quantity of marine waters available for Lax Kw'alaams First Nation members' salmon and eulachon fishing and seaweed gathering sites are expected to be reduced in the waters around Lelu Island.
Current Hunting and Trapping Practices	C, O	Using Metlakatla First Nation as a proxy, the quantity of land available for Lax Kw'alaams First Nation members' terrestrial hunting (deer and potentially other species) is expected to be reduced on Lelu Island. The quantity of ducks and geese resources available to Lax Kw'alaams First Nation members' within their preferred use locations is expected to be reduced to a small extent. Lax Kw'alaams First Nation members' hunting areas for seals on the shore of Lelu Island will not be available during operations. Lax Kw'alaams First Nations members may find reduced numbers of sea lions in preferred harvesting areas during construction due to noise-related alteration of movement.
Current Gathering Practices	C, O	Using Metlakatla First Nation as a proxy, the quantity of land available for Lax Kw'alaams First Nation members' terrestrial gathering (species and practices to be confirmed) is expected to be reduced on Lelu Island.
Current Spiritual and Ceremonial Practices	C, O	Using Metlakatla First Nation as a proxy, the quantity of land available for Lax Kw'alaams First Nation members' spiritual and ceremonial practices (sites and practices to be confirmed) is expected to be reduced on Lelu Island.
Quality of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	No predicted residual effects.
Current Hunting and Trapping Practices	C, O, D	No predicted residual effects.
Current Gathering Practices	C, O, D	No predicted residual effects.
Current Spiritual and Ceremonial Practices	C, O, D	No predicted residual effects.

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Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Sensory environment for the Current Aboriginal Use		
Current Fishing Practices	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' fishers are expected to be affected by changes in visual quality. Fishers' perceptions of safety and solitude may be affected due to the presence of project components and activities and increased presence of marine traffic.
Current Hunting and Trapping Practices	C, O, D	Using Metlakatla First Nation as a proxy Lax Kw'alaams First Nation hunters and trappers are expected to be affected by changes in visual quality.
Current Gathering Practices	C, O, D	No predicted residual effects
Current Spiritual and Ceremonial Practices	C, O, D	Using Metlakatla First Nation as a proxy Lax Kw'alaams First Nation members engaging in spiritual and ceremonial practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.

21.7.5 Assessment of Effects on Current Aboriginal Use

21.7.5.1 Potential Effects on Current Fishing Practices

21.7.5.1.1 Location of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in displacement of Aboriginal fishers from some preferred fishing locations. Key locations include the waters around Lelu Island, the suspended trestle-bridge, along the Pacific Pilot Authority's existing large ocean going vessel transit/shipping route from Triple Island to the Port of Prince Rupert, and the 'Disposal at Sea' site (Brown Passage). As the marine jetty will be located along the transition between Flora Bank and Agnew Bank, it is not expected to interfere with fishing from larger vessels. Further, the design of the bridge between Lelu Island and the mainland and the redesigned marine jetty will allow fishers in smaller vessels to transit between fishing areas to the north and south without additional travel time. Areas that are used in the vicinity of Inverness Passage, Horsey Bank west of Kitson Island, and Agnew Bank will all remain accessible for fishing. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port designated under Canada's *Marine Act* and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key fishing sites are likely to outweigh effects to sensory environment associated with visual quality.

Using Metlakatla First Nation as a Proxy, Lax Kw'alaams First Nation fishers are expected to shift the location of sockeye salmon, eulachon, and crab fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. Fishers may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Increased marine traffic during decommissioning may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.

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21.7.5.1.2 Timing of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in changes to some preferred timing of Aboriginal peoples' fishing activities. Fishers may avoid fishing in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, fishing sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping traffic.

PNW LNG assumes that, like Metlakatla First Nation members, Lax Kw'alaams First Nation members also fish throughout the year, but fish more intensively in the spring and summer months for salmon and groundfish (Section 21.6.1.1). Monthly, weekly, and daily variation in fishing times is not currently known.

Using Metlakatla First Nation as a proxy, project activities during construction are not expected to affect the seasonality of Lax Kw'alaams First Nation members' fishing practices, as this is largely tied to the biology and behavior of fisheries resources. Project activities during operations will occur through the year, so are not expected to affect the seasonality of members' fishing practices. Members may alter the time of day for fishing practices to avoid interaction with LNG carries in the shipping route.

21.7.5.1.3 Effort Involved in Current Fishing Practices

Interruptions in access may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred fishing locations. Temporary limitations in availability of fishing sites that are in the direct path of shipping lanes may also increase effort, if fishers are required to shift their fishing location during the presence of LNG carrier ships. Changes to sensory environment (visual quality) are not expected to directly affect fishing effort but may increase effort if it leads Aboriginal people to shift their fishing locations. Reductions in fish quantity are not expected to affect fishing effort as the reductions will be minimal, not likely to affect commercial species, and limited to the immediate vicinity of project components and activities.

Lax Kw'alaams First Nation peoples residing in Prince Rupert and Port Edward are situated in close proximity to preferred fishing locations in the vicinity of the Project. PNW LNG has not obtained information about members' current level of effort with respect to their fishing activities.

Using Metlakatla First Nation as a proxy, interference with Lax Kw'alaams First Nation members' access to preferred fishing sites during construction and, perhaps, any decommissioning is expected to increase the effort required by members to reach preferred sites. This effect is expected to be negligible as project-related presence of marine vessels will not require fishers to substantially alter travel routes while traveling to fishing sites. Temporary reductions in the availability of fishing sites due to LNG carrier traffic is expected to increase the amount of time that members spend actively fishing in those locations. This effect can be mitigated with appropriate communications (see Section XXX). Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of and access to preferred fishing sites.

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21.7.5.1.4 Success of Current Fishing Practices

Changes in access to and quantity of waters available for fishing during construction and operations (Section 21.7.2) could reduce the success of Aboriginal peoples' fishing practices. Fishing success may be also be reduced to the extent that temporary restriction of fishing within shipping lanes and interference with access to preferred fishing reduces the total amount of time available for active fishing. Additionally, if Aboriginal fishers fish in alternative locations due to interference with access or reduced site availability, success rates could change, depending on the nature of fishing resources in alternative locations.

No information has been provided to PNW LNG from Lax Kw'alaams regarding Lax Kw'alaams First Nation members' current catch quantities for AFS fisheries (see Section 21.3).

Using Metlakatla First Nation as a proxy, effects on fishing success for Lax Kw'alaams First Nation fishers is not expected as a result of changes in access and quantity, given the localized and temporally-limited nature of expected changes. Effects on fishing success due to locational change are expected to be negligible as fishers are not expected to shift fishing efforts to substantially different locations.

21.7.5.1.5 Satisfaction with Current Fishing Practices

Changes in access to preferred fishing locations, quantity of waters and resources used for fishing purposes, and visual quality (Section 21.6.2) may affect the extent to which Aboriginal fishing practices satisfy expectations relating to aesthetic experiences, Traditional Ecological Knowledge (TEK), cultural distinctiveness and continuity, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred fishing locations may affect Aboriginal fishers' ability to collect traditional ecological knowledge and to transmit such knowledge to other members. Reductions in fishing success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Using Metlakatla First Nation as a proxy, the Project is not expected to affect the ability of Lax Kw'alaams First Nations to collect TEK and transmit cultural knowledge, given expected limited interference with fishing practices resulting from changes in access to and quantity of fishing resources. Changes in visual quality are not expected to be substantial enough to interfere with Lax Kw'alaams First Nations' ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.

21.7.5.2 Potential Effects on Current Hunting and Trapping Practices

21.7.5.2.1 Location of Current Hunting and Trapping Practices

Changes in the quantity of, lands, waters, and resources used for hunting and trapping purposes (Section 21.6.2) may result in displacement of Aboriginal hunters and trappers from preferred harvesting locations. Key locations include Lelu Island and Islands and waters in the vicinity of the potential shipping routes and disposal at sea site (Brown Passage). Changes in marine access to hunting and trapping locations is not expected to be sufficient to prompt locational change for these activities, as project-related presence of marine vessels will not require members to substantially alter marine travel routes while traveling to hunting

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and trapping sites. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key hunting and trapping sites are likely to outweigh effects to sensory environment associated with visual quality.

PNW LNG understands that Metlakatla First Nation members currently hunt and trap terrestrial and marine resources on and around Lelu Island, in the potential shipping routes, and in the vicinity of the disposal at sea site (Tree Knob Islet Group) (Section 21.6.1.2). Key resources harvested include deer, mink, otter, seal, ducks, and geese.

Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation hunters who currently hunt deer on Lelu Island, and hunters who harvest seal on the shore of Lelu Island, are expected to shift the location of these hunting activities during construction, operations, and decommissioning. Hunting of aquatic birds in the vicinity of the potential shipping routes is not expected to be affected.

21.7.5.2.2 Timing of Current Hunting and Trapping Practices

Changes in access to waters for marine hunting, changes in marine access to terrestrial hunting sites, and changes in the quantity of waters available for hunting activities may result in changes to the preferred timing of Aboriginal peoples' hunting activities. Hunters may avoid hunting in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, hunting sites (i.e., during construction activities and associated marine traffic) and during the presence of LNG carriers and other large ocean going vessels sailing into and out of the Port of Prince Rupert.

Using information from Metlakatla First Nation, it is assumed that Lax Kw'alaams First Nation members currently hunt for deer in the fall and winter (Section 21.6.1.2). There may be other times of the year during which deer are hunted. It is not known when Members hunt for marine birds and seal. PNW LNG has not been provided with information relating to the time of month, week, or day during which Lax Kw'alaams First Nation members hunt terrestrial and marine species.

Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members may alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day). Seasonal changes are not expected as hunting seasonality is tied to the biology and behaviour of harvested resources. In addition, operations will be continuous throughout the year.

21.7.5.2.3 Effort Involved in Current Hunting and Trapping Practices

Interference with access to lands, waters, and resources for hunting and trapping purposes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred hunting and trapping locations. Temporary limitations in availability of marine hunting sites that are in the direct path of shipping lanes may also increase effort, if hunters are required to interrupt hunting efforts during the presence of LNG carrier ships. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places.

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Changes to sensory environment (visual quality) are not expected to directly affect hunting effort but may increase effort if it leads Aboriginal people to shift their hunting locations.

Lax Kw'alaams First Nation peoples residing in Prince Rupert and Port Edward are situated in close proximity to preferred hunting and trapping locations in the vicinity of the Project. PNW LNG has not obtained information about Lax Kw'alaams current level of effort with respect to their hunting and trapping activities.

Using Metlakatla First Nation as a proxy, the Project is expected to interfere to a limited degree with Lax Kw'alaams First Nation members' marine access to hunting locations (terrestrial and marine) during all project phases (Section 21.6.5). The resulting effect on effort is expected to be negligible as project-related presence of marine vessels will not require hunters and trappers to substantially alter travel routes while traveling to hunting and trapping sites. Lax Kw'alaams First Nation member's currently hunting deer and seal on Lelu Island may need to increase effort to obtain these resources from alternative locations.

21.7.5.2.4 Success of Current Hunting and Trapping Practices

Changes in access to and quantity of sites available for hunting and trapping during construction and operations could reduce the success of Aboriginal peoples' efforts. Hunting and trapping success may be also be reduced to the extent that interference with routes of access to marine and terrestrial hunting and trapping locations reduces the total amount of time available for hunting and trapping activities. If Aboriginal hunters and trappers move to alternative locations due to interference with access, reduced site availability, or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative hunting and trapping sites for particular individuals and/or families.

Assuming that Lax Kw'alaams members share similar locations as identified in the information provided by Metlakatla First Nation, members are likely to currently hunt and trap terrestrial and marine resources on Lelu Island, in the potential shipping routes, in the area affected by underwater construction noise, and in the vicinity of the disposal at sea site (Tree Knob Islet Group) (Section 21.6.1.2). Key resources harvested include deer, mink, otter, seal, ducks, and geese. PNW LNG has not obtained information about current harvesting quantities. PNW LNG has not obtained information about Metlakatla First Nation's internal governance and resource management frameworks pertaining to terrestrial and marine hunting and trapping on Lelu Island.

Using Metlakatla First Nation as a proxy, project-related interference with Lax Kw'alaams First Nation members' access to terrestrial and marine hunting and trapping locations is not expected to be substantial enough to reduce overall hunting and trapping time and therefore success rates at those locations. Lax Kw'alaams First Nation harvesters who are no longer able to hunt and trap for deer and seal on Lelu Island are not expected to be limited by reductions in the overall abundance of these species in other locations (Section 11). However, Lax Kw'alaams First Nation's internal governance and resource management frameworks may limit the availability of alternative hunting locations for particular individuals and/or families, thereby potentially reducing hunting success for these individuals and/or families. Changes in hunting trapping success are not expected for members who choose to shift harvesting locations to avoid project-related changes in visual quality.

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21.7.5.2.5 Satisfaction with Current Hunting and Trapping Practices

Changes in access to preferred hunting and trapping locations, quantity of lands, waters and resources used for hunting and trapping purposes, and visual quality may affect the extent to which Aboriginal hunting and trapping practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred hunting and trapping locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to hunt and trap for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in hunting and trapping success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Metlakatla First Nation has expressed concerns about the potential effects of the Project on members' ability to collect TEK and transmit cultural knowledge (DMCS 2014).

Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to hunt and trap on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who hunt on Lelu Island, if those members do not have access to alternative hunting sites (see Success of Current Hunting and Trapping Practices above). To the extent that members experience reduced success hunting for seal and deer in alternative locations to Lelu Island (see Success of Current Hunting and Trapping Practices above), members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.

21.7.5.3 Potential Effects on Current Gathering Practices

21.7.5.3.1 Location of Current Gathering Practices

Changes in the quantity of, lands, waters, and resources used for terrestrial gathering purposes may result in displacement of Aboriginal peoples from preferred gathering locations. Interference with marine access to preferred terrestrial gathering sites may also result in locational change. Key locations include Lelu Island and gathering sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

PNW LNG understands that Metlakatla First Nation members' berry picking on and around Lelu Island a number of traditional use plant species are present on Lelu Island (based on the species listed in the EIS). However engagement with both Lax Kw'alaams and Metlakatla First Nation has not identified specific plant, tree, or berry gathering practices on Lelu Island (Sections 21.3 and 21.6.1.3). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

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Using Metlakatla First Nation as a proxy, the Project is not expected to affect the location of Lax Kw'alaams First Nation members' terrestrial gathering practices.

21.7.5.3.2 Timing of Current Gathering Practices

Changes in access to land and resources for terrestrial gathering may result in changes to the preferred timing of Aboriginal peoples' terrestrial gathering activities. Aboriginal peoples may avoid gathering in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with marine access to gathering sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

The Metlakatla First Nation traditional land use and ecological knowledge report identified berry picking on and around Lelu Island a number of traditional use plant species are present in on the island. However, follow up engagement with both Metlakatla First Nation and Lax Kw'alaams First Nation has not identified any specific plant, tree, or berry gathering practices on Lelu Island (DCMS 2014). Terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

Using Metlakatla First Nation as a proxy, the Project is not expected to affect the timing of Lax Kw'alaams First Nation members' terrestrial gathering practices.

21.7.5.3.3 Effort Involved in Current Gathering Practices

Interference with access to lands and resources for terrestrial gathering may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred terrestrial gathering locations. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect gathering effort but may increase effort if it leads Aboriginal people to shift their gathering locations.

Current information provided to PNW LNG has not identified specific plant, tree, or berry gathering practices on Lelu Island Section 21.6.1.3. Metlakatla First Nation has identified terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway (Section 21.6.1.3).

Using Metlakatla First Nation as a proxy, the Project is not expected to affect the effort involved in Lax Kw'alaams First Nation members' terrestrial gathering practices.

21.7.5.3.4 Success of Current Gathering Practices

Changes in the quantity of lands and resources available for terrestrial gathering during construction and operations could reduce the overall success of Aboriginal peoples' gathering efforts. Terrestrial gathering success may be also be reduced to the extent that interference with routes of access to terrestrial gathering

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locations reduces the total amount of time available for gathering activities. If Aboriginal peoples move to alternative gathering locations due to interference with access or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative terrestrial gathering sites for particular individuals and/or families.

Current information provided to PNW LNG has not identified plant, tree, or berry gathering practices on Lelu Island (Section 21.6.1.3). Metlakatla First Nations have identified terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

Using Metlakatla First Nation as a proxy, the Project is not expected to affect the success of Lax Kw'alaams First Nation members' terrestrial gathering practices.

21.7.5.3.5 Satisfaction with Current Gathering Practices

Changes in access to preferred terrestrial gathering locations, quantity of lands and resources used for gathering purposes, and visual quality may affect the extent to which Aboriginal gathering practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred terrestrial gathering locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to gather for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in gathering success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Current information provided to PNW LNG has not identified plant, tree, or berry gathering practices on Lelu Island (Section 21.3). However, Metlakatla First Nation identified terrestrial gathering locations within the vicinity of the Project are identified in an area from Port Edward south along the North Pacific Cannery Road (Skeena Drive) to Phelan (Inverness); along Skeena Slough just southwest of Port Edward to Inverness along the road; and both sides of Highway 16 from Port Edward South East to end of highway.

Using Metlakatla First Nation as a proxy, the Project is not expected to affect the satisfaction of Lax Kw'alaams First Nation members' terrestrial gathering practices.

21.7.5.4 Potential Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.7.5.4.1 Location of Current uses of Spiritual Sites and Cultural Landscapes

The federal removal of Lelu Island as an aboriginal place of use with spiritual sites and cultural landscape resources (Section 21.6.2) will displace Aboriginal peoples' use of these sites and features. Interference with marine access to spiritual sites and cultural landscapes, and disruption of sensory environment (visual quality), is not expected to result in locational change, as access will not be precluded and affinities for

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particular spiritual and ceremonial sites are assumed to be strong. Key locations include Lelu Island and spiritual and ceremonial sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

Using the provided information from Metlakatla First Nation, PNW LNG understands that spiritual sites and cultural landscapes are present in Digby Island, the potential shipping routes, Skeena Passage, Hunt's Inlet, Porcher Island, Lucy Islands, and the Dundas Group of Islands (Section 21.6.1.4). Key features of these spiritual sites and cultural landscapes include place names, burial sites, cemeteries, legendary/myth sites, supernatural sites, cultural landforms, culturally modified trees (CMTs), and unspecified spiritual/ceremonial sites. The Metlakatla First Nation TLUS (DMCS 2014) and follow up meetings with both Metlakatla Nation and Lax Kw'alaams Nation have not identified specific spiritual and ceremonial sites on Lelu Island.

However, the Metlakatla First Nation TUS notes that Lelu Island is culturally sensitive and spiritually significant for the Metlakatla First Nation people. PNW LNG has not obtained information about how these spiritual and ceremonial sites are currently used by Lax Kw'alaams First Nation members.

Approximately 50 % of the recorded CMTs on Lelu Island are located within the project development area. Their removal will be carefully orchestrated with aboriginal groups guided by a jointly developed Archaeological Resource and Heritage Resource Management Plan. Impact Benefit Agreements are one way to compensate for CMT removal. Lastly, PNW LNG has not been provided information about how these CMT-related spiritual and ceremonial sites are currently used by Lax Kw'alaams First Nation members.

Using Metlakatla First Nation as a proxy, if Lax Kw'alaams First Nation currently use Lelu Island for cultural purposes, the removal of cultural landscapes (CMTs) from Lelu Island is expected to require Lax Kw'alaams to use other CMT sites for traditional purposes. Some CMTs will remain in the visual buffer surrounding the Island, and may become available to members following project decommissioning if the Port determines that the project lands are to be returned to a more natural state. PNW LNG asserts this is unlikely, with the development of substantive industrial infrastructure on lands designated for industrial development. Lax Kw'alaams use of spiritual sites and cultural landscapes at other locations other locations is not expected to be affected by the Project.

21.7.5.4.2 Timing of Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to spiritual sites and cultural landscapes (Section 21.7.2.1) may result in changes to the preferred timing of Aboriginal peoples' use of these sites and features. Aboriginal peoples may avoid using spiritual sites and cultural landscapes during times (of the day, month, and year) when project activities interfere with marine access to these sites (i.e., during construction activities and associated marine traffic).

Using the information provided by Metlakatla First Nation, PNW LNG identified that spiritual sites and cultural landscapes are accessed via waters in Chatham Sound (Section 21.6.1.5). Interference with access to these sites due to project-related shipping (one ship per day) is not expected to be sufficient to alter the timing of members' use of these sites.

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21.7.5.4.3 Effort Required for Current Use of Spiritual Sites and Cultural Landscapes

Interference with access to spiritual sites and cultural landscapes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach key sites and features. Removal of traditional use sites may result in increased effort for Aboriginal peoples currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to be sufficient to prompt Aboriginal people to shift the locations where they use spiritual sites and cultural landscapes, due to the unique significance of such sites and features.

Metlakatla First Nation has identified spiritual sites and cultural landscapes accessed via waters in Chatham Sound (Section 21.6.1.4). Interference with access to these sites due to project-related LNG carriers transiting to Port from Triple Island along established and existing shipping routes (and only about one ship per day) is not expected to be sufficient to increase members' effort to access these sites.

21.7.5.4.4 Success of Current Use of Spiritual Sites and Cultural Landscapes

Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.

21.7.5.4.5 Satisfaction with Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to, availability of, and sensory environment for spiritual sites and cultural landscapes may affect the extent to which Aboriginal use of these sites and features satisfy expectations relating to aesthetic and spiritual experiences, TEK, and cultural distinctiveness and continuity. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural and cultural environment. Interference with access to and availability of spiritual sites and cultural landscapes may affect Aboriginal peoples' ability to collect TEK and to transmit cultural knowledge to other members.

Interference with access spiritual sites and cultural landscapes due to project-related LNG carriers transiting to Port from Triple Island along established and existing shipping routes (and only about one ship per day) is not expected to be sufficient to increase members' effort to access these sites and features.

Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use of cultural landscapes (CMTs) on Lelu Island.

21.7.6 Mitigation Measures for Current Aboriginal Use

PNW LNG will apply the following mitigation measures to minimize project-related effects on Current Aboriginal Use described in Section 21.7.5).

Specific to the assessment concerns regarding pathway components and mitigations, Table 21-21 describes how Current Aboriginal Use practices and project components will be mitigated.

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Table 21-21 Measures to Mitigate Potential Effects to Lax Kw'alaams' Current Aboriginal Use

Potential Effect	Mitigations
Current Fishing Practices	<p>The project changes, including a suspension bridge and relocated trestle and berth, result in no infrastructure located on Flora Bank and eliminate the need for dredging on Agnew Bank.</p> <p>The project changes reduce the effects of infrastructure construction and dredging upon navigation. The jetty length (including the suspension bridge and trestle) will be approximately 300 m longer; however vessels will continue to be able to pass underneath it.</p> <p>The project changes will result in a much reduced volume of sediment for ocean disposal. The resulting dispersal area is significantly reduced, reducing the impact, or perceived impact, on Brown Passage.</p> <p>Section 13 contains a description of mitigation measures relating to marine resources, including those for:</p> <ul style="list-style-type: none"> • The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2) • Changes to fish habitat (Section 13.5.3.2) • The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2) • Changes in behaviour of fish and marine mammals (Section 13.5.5.2).
Current Hunting and Trapping Practices	<p>Mitigations related to impacts to current hunting and trapping practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Lax Kw'alaams First Nations regarding restricted access to Lelu Island and the resulting effects on Lax Kw'alaams cultural practices.</p> <p>PNW LNG plans shift rotation during construction as well as recreational facilities at work camps to help reduce the impacts of increased workers on local recreation and resources.</p>

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Potential Effect	Mitigations
Current Gathering Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Lax Kw'alaams First Nations regarding restricted access to Lelu Island and the resulting effects on Lax Kw'alaams cultural practices.</p>
Current Use of Spiritual Sites and Cultural Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Lax Kw'alaams First Nations regarding restricted access to Lelu Island and the resulting effects on Lax Kw'alaams cultural practices.</p>
	<p>Of the 431 CMTs recorded on Lelu Island approximately 50% are located outside the project development area and will not be removed.</p> <ul style="list-style-type: none"> • Removal of CMTs on Lelu Island will be conducted as articulated in the jointly developed Archaeological and Heritage Resource Management Plan (Section 20.5.2.2) • A chance find protocol will be used during project construction in the event that unrecorded CMTs are encountered.

Discussions are under way with Lax Kw'alaams First Nation to identify appropriate means with which to accommodate effects to project effects that cannot be completely mitigated (see Section 27).

21.7.7 Residual Effects on Current Aboriginal Use

Following the mitigation measures described and referenced in Section 21.7.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island as the entire island will be leased to the project by the federal Prince Rupert Port Authority. However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland

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habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources, except for limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting location may be reduced during construction due to alteration of movement associated with noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-22 describes expected residual effects following implementation of the above mitigation measures.

Table 21-22 Lax Kw’alaams First Nation: Residual Effects to Current Aboriginal Use

Effect	Project Phase	Description of Residual Effect
Current Fishing Practices		
Location	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw’alaams First Nation Fishers are expected to shift the location of sockeye salmon, eulachon, and crab fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. Fishers may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers using the existing ship transit route from Triple Island to the Port of Prince Rupert. Increased marine traffic during any decommissioning required by the Port may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.
Timing	O	Using Metlakatla First Nation as a proxy, Lax Kw’alaams First Nation fishers may alter the time of day for fishing practices to avoid interaction with LNG carriers in the potential shipping routes.
Effort	C, O, D	Using Metlakatla First Nation as a proxy, increased effort to access alternative fishing locations is expected for Lax Kw’alaams First Nation fishers who shift fishing location due to project-related changes in availability of, and access to, preferred fishing sites.
Success	n/a	No predicted residual effects.
Satisfaction	C, O, D	Using Metlakatla First Nation as a proxy, visual quality changes may affect the degree of Lax Kw’alaams First Nation members’ aesthetic satisfaction while fishing in the vicinity of the Project.
Current Hunting and Trapping Practices		
Location	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw’alaams First Nation hunters who currently hunt deer on Lelu Island, and hunters who harvest seal on the shore of Lelu Island, are expected to shift the location of these hunting activities during construction, operations, and decommissioning.
Timing	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw’alaams First Nation members are expected to alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day).
Effort	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw’alaams First Nation member’s currently hunting deer and seal on Lelu Island are expected to increase effort to obtain these resources from alternative locations.

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Effect	Project Phase	Description of Residual Effect
Success	C, O, D	Using Metlakatla First Nation as a proxy, the success of deer and seal hunting on Lelu Island is expected to be reduced for individuals and/or families currently using Lelu Island for hunting, if Lax Kw'alaams First Nation's internal governance and resource management frameworks limit the availability of alternative hunting locations these individuals and/or families.
Satisfaction	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to visual quality changes. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to hunt and trap on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who hunt on Lelu Island, if those members do not have access to alternative hunting sites. To the extent that members experience reduced success hunting for seal and deer in alternative locations to Lelu Island, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.
Current Terrestrial Gathering Practices		
Location	n/a	No predicted residual effects.
Timing	n/a	No predicted residual effects.
Effort	n/a	No predicted residual effects.
Success	n/a	No predicted residual effects.
Satisfaction	n/a	No predicted residual effects.
Current Use of Spiritual Sites and Cultural Landscapes		
Location	C, O, D	Using Metlakatla First Nation as a proxy, removal of cultural landscapes (CMTs) from Lelu Island is expected to require members to use other CMT sites for traditional purposes. CMTs will remain in the visual buffer surrounding the Island, however, will be on lands leased by the PRPA to PNW LNG and be relatively inaccessible for safety reasons.
Timing	n/a	No predicted residual effects.
Effort	n/a	No predicted residual effects.
Success	n/a	Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.
Satisfaction	C, O, D	Using Metlakatla First Nation as a proxy, Lax Kw'alaams First Nation members' aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use of cultural landscapes (CMTs) on Lelu Island.

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21.7.8 Assessment of Residual Effects on Current Aboriginal Use

21.7.8.1 Assessment of Residual Effects on Fishing Practices

21.7.8.1.1 Characterization of Residual Effects on Fishing Practices

The residual effect on preferred locations for fishing practices is rated as **low**. The Project will only affect small portions of wider fishing areas and other portions of the fishing areas will remain available. Fishers are expected to move to different locations within existing fishing areas, rather than move to new fishing areas, resulting in a small change from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in fishing locations (**moderate context**).

The residual effect on timing of fishing practices is rated as **low**. Alteration of the timing of fishing activities in relation to project shipping schedules is expected to take place for only some fishers and would only occur at one period during the day. The residual effect is expected to be limited to operations (**medium-term**) and would be a **multiple regular event**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in the timing of fishing practices (**moderate context**).

The residual effect fishing effort is rated as **low**. The extent of locational change is expected to be small and will result in only a small change from existing baseline conditions for fishing effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in fishing effort (**moderate context**).

The residual effect on satisfaction with fishing practices related to aesthetic experiences while fishing in the vicinity of the Project is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in fishing satisfaction (**moderate context**).

21.7.8.1.2 Significance of Residual Effects on Fishing Practices

Residual effects on Lax Kw'alaams First Nation's fishing practices are assessed as **not significant**: The residual effects have low magnitude, local geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in a Lax Kw'alaams First Nations' overall fishing practices.

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21.7.8.1.3 Likelihood and Confidence for Residual Effects Conclusions on Fishing Practices

The likelihood that residual effects on fishing locations, timing, effort, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **medium**. The assessments are based on detailed site-specific data. However, this information relates to Metlakatla First Nation's Current Aboriginal Use, which is used as a reasonable proxy for Lax Kw'alaams First Nation.

21.7.8.2 Assessment of Residual Effects Hunting and Trapping Practices

21.7.8.2.1 Characterization of Residual Effects on Hunting and Trapping Practices

The residual effect on preferred locations for hunting and trapping practices is rated as **medium**. The Project is expected to result in the relocation of hunting efforts for only small number of individuals. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation hunters and trappers are rated as moderately vulnerable to changes in hunting locations (**moderate context**).

The residual effect on timing of hunting and trapping practices is rated as **low**. Alteration of the timing of hunting and trapping activities in relation to construction activities and project shipping schedules is expected to take place for only some hunters; timing effects related to shipping would only occur at one period during the day. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**) and would be **continuous** during construction and a **multiple regular event** during operations. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in the timing of hunting and gathering practices (**moderate context**).

The residual effect hunting and trapping effort is rated as **low**. The extent of locational change for deer, mink, otter, and seal hunting and trapping is expected to be small and will result in only a small change from existing baseline conditions for hunting effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in hunting and trapping effort (**moderate context**).

The residual effect on hunting and trapping success is rated as **low**. The Project is not predicted to affect the population viability of deer, mink, otter, and seal and these species can be harvested at similar rates in alternative locations. The success rate for hunting is not expected to deviate to a large degree from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in hunting and trapping success (**moderate context**).

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The residual effect on satisfaction with hunting and trapping practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. Lelu Island has not been identified as particularly important site for the collection and transmission of TEK. Reduced opportunities for social bonding in relation to hunting and trapping practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Lax Kw'alaams First Nation fishers are rated as moderately vulnerable to changes in hunting and trapping satisfaction (**moderate context**).

21.7.8.2.2 Significance of Residual Effects on Hunting and Trapping Practices

Residual effects on Lax Kw'alaams First Nation's hunting and trapping practices are assessed as **not significant**: The residual effects have low to medium magnitude, local geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Lax Kw'alaams First Nations' overall hunting and trapping practices.

21.7.8.2.3 Likelihood and Confidence for Residual Effects Conclusions on Hunting and Trapping Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **medium**. The assessments are based on detailed site-specific data. However, this information relates to Metlakatla First Nation's Current Aboriginal Use, which is used as a reasonable proxy for Lax Kw'alaams First Nation.

21.7.8.3 Assessment of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.7.8.3.1 Characterization of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

The residual effect on preferred locations for use of spiritual sites and cultural landscapes is rated as **moderate**. Lelu Island will no longer provide a location for the use of cultural landscapes (CMTs), due to project activities. However, there is no available evidence of current use of these sites. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will be **irreversible** as the removal of approximately 50% of the CMTs on Lelu Island will be permanent. Though Mitigation measures will record the information related to the practice of tree harvesting from impacted CMTs, access to the location will be restricted. Lax Kw'alaams First Nation hunters and trappers are rated as highly vulnerable to changes in locations for the use of spiritual sites and cultural landscapes (**high context**).

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The residual effect on timing of use of spiritual sites and cultural landscapes is rated as **moderate**. Alteration of the timing of activities in relation to construction activities is expected to vary from baseline conditions. The residual effect is expected to occur through the duration of construction and decommissioning (**medium-term**) and would be **continuous**. The extent of the effect is restricted to the **LAA** and will be **irreversible** after decommissioning (depending on future use of Lelu Island). Lax Kw'alaams First Nation members are rated as moderately vulnerable to changes in the timing of use of spiritual sites and cultural landscapes (**moderate context**).

The residual effect on satisfaction with use of spiritual sites and cultural landscapes practices is rated as **moderate**. Alteration of aesthetic experiences and the ability to collect and teach TEK in the vicinity of the Project are predicted to be limited. However, use of such sites is assumed to be highly important to Lax Kw'alaams First Nation members. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **irreversible** after decommissioning as the CMT site on Lelu Island will be permanently altered. Lax Kw'alaams First Nation fishers are rated as highly vulnerable to changes in satisfaction with the use of spiritual sites and cultural landscapes (**high context**).

21.7.8.3.2 Significance of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

Residual effects on Lax Kw'alaams First Nation's current use of spiritual sites and cultural landscapes are assessed as not **significant**: The residual effects have moderate magnitude, LAA extent, medium-term duration, will occur continuously, and will be irreversible as approximately half the CMTs will be permanently removed from Lelu Island within the LNG plant's development area. The residual effect on the current Aboriginal use results in a discernible, but not consequential, change in Lax Kw'alaams First Nation's overall practice with respect to the use of spiritual sites and cultural landscapes.

21.7.8.3.3 Likelihood and Confidence for Residual Effects Conclusions on Current Use of Spiritual Sites and Cultural Landscapes

The likelihood that residual effects on location, timing, and satisfaction with respect to current use of spiritual sites and cultural landscapes will occur is rated as **high**. There is a high probability of effects relating to the removal of approximately half of the CMTs on Lelu Island.

Confidence in the predictions is rated as **medium**. The assessments are based on detailed site-specific information relating to Metlakatla First Nation's Current Aboriginal Use, which is used as a reasonable proxy for Lax Kw'alaams First Nation.

21.7.9 Summary of Residual Effects on Current Aboriginal Use

Table 21-23 summarizes the residual effects characterization for Lax Kw'alaams First Nation Current Aboriginal Use VCs.

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Table 21-23 Lax Kw'alaams First Nation: Summary of Current Aboriginal Use Residual Effects Characterization, Significance, Likelihood and Confidence

Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Fishing Practices									
Location	L	LAA	MT	R	C, MR	M	N	M	M
Timing	L	LAA	MT	R	MR	M	N	M	M
Effort	L	LAA	MT	R	C	M	N	M	M
Success	-	-	-	-	-	-	-	-	-
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Hunting and Trapping Practices									
Location	L	LAA	MT	R	C	M	N	M	M
Timing	L	LAA	MT	R	C, MR	M	N	M	M
Effort	L	LAA	MT	R	C	M	N	M	M
Success	L	LAA	MT	R	C	M	N	M	M
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Gathering Practices									
Location	-	-	-	-	-	-	-	-	-
Timing	-	-	-	-	-	-	-	-	-
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	-	-	-	-	-	-	-	-	-

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Use of Spiritual Sites and Cultural Landscapes									
Location	M	LAA	MT	I	C	H	N	H	H
Timing	M	LAA	MT	I	C	M	N	M	M
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	M	LAA	MT	I	C	H	N	H	M

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
<p>KEY</p> <p>Context:</p> <p>L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment</p> <p>M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment</p> <p>H = High resilience: occurs in viable ecosystem and/or undisturbed environment</p>		<p>Magnitude:</p> <p>N = Negligible: no detectable change on individuals of a regional wildlife population or hectares of habitat</p> <p>L = Low: change detectable on a few individuals or hectares of habitat (i.e., < 10 ha) in a regional population</p> <p>M = detectable change on many individuals or hectares of habitat (i.e., 10 to 250 ha) in a regional population</p> <p>H = High: detectable change on the majority of individuals or hectares of habitat (> 250 ha) in the regional population</p> <p>Extent:</p> <p>PDA = project development area</p> <p>LAA = local assessment area</p> <p>RAA = regional assessment area</p>			<p>Duration:</p> <p>ST = Short-term: effect less than one breeding season/generation</p> <p>MT = Medium-term: effect occurs for several breeding seasons/generations or a project phase</p> <p>LT = Effect occurs across multiple breeding seasons/generations or project phases</p> <p>P = Permanent: Effect permanent and unlikely to recover following project decommissioning and reclamation</p> <p>Reversibility:</p> <p>R = Reversible: will recover during lifetime of the Project or after project decommissioning and reclamation</p> <p>I = Irreversible: effects will persist after project decommissioning and reclamation</p> <p>Frequency:</p> <p>S = Single event</p> <p>MI = Multiple, irregular event</p> <p>MR = Multiple, regular event</p> <p>C = Continuous</p>		<p>Likelihood:</p> <p><i>Based on professional judgment.</i></p> <p>L = Low probability of occurrence</p> <p>M = Medium probability of occurrence</p> <p>H = High probability of occurrence</p> <p>Significance:</p> <p>S = Significant</p> <p>N = Not significant</p> <p>Confidence:</p> <p><i>Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation, and assumptions made.</i></p> <p>L = Low level of confidence</p> <p>M = Moderate level of confidence</p> <p>H = High level of confidence</p>		

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21.8 ASSESSMENT OF EFFECTS ON GITXAALA NATION’S CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

The Port Edward area of the Project overlaps Gitxaala house territories. The *Gitxaala Use Study* (Calliou Group 2014b) and the *Gitxaala Socio-economic Baseline Report* (Calliou Group 2014a) note that this area underpins Gitxaala’s participation in the commercial fishery, is an important area for the exercise harvesting rights, and relates to Gitxaala’s cultural identity and governance (Calliou Group 2014a). The following sections summarize the baseline findings from these reports, as well as follow-up meetings, and assess potential effects on Gitxaala CULRTP.

21.8.1 Baseline Conditions for Gitxaala Current Aboriginal Use

The *Gitxaala Use Study* aimed to identify Gitxaala Nation marine, intertidal and land use information in the vicinity of four proposed LNG projects in the Port Edward area. The study was based on interviews with 30 Gitxaala members and past traditional use research conducted for the Enbridge Northern Gateway Project (Calliou Group 2014b). Gitxaala members reported past and current use for subsistence, commercial and cultural purposes in the area north of Digby Island, Prince Rupert and Brown Passage; South of Porcher Island (including east of the mouth of the Skeena River, and west including Stephens Island), and Triple Island.

The *Gitxaala Socio-economic Baseline Report* (Calliou Group 2014a) was similarly prepared in August 2014 for the proposed Port Edward Area LNG Projects and supplements information within the *Gitxaala Use Study*. Research indicates that the system of resource use and management employed by Gitxaala is directly tied to specific areas within their territory, and also informs their system of governance (Calliou Group 2014b). Gitxaala cultural identity is inherently tied to their ability to freely access their territories to support their continued land and marine subsistence-based lifestyle. Gitxaala Nation’s CULRTP broadly follows annual seasonal patterns.

Table 21-24 summarizes the main seasonal harvesting practices and locations for the Gitxaala Nation.

Table 21-24 Seasonal Harvesting

Dates	Activities	Locations	Species
Spring			
March	Fishing, harvesting roe	Edye Passage, Island Point of Porcher Island, Hunt Point on Porcher Island, southwest coast of Stephens Island, Lucy Islands, Prescott Island, Author Island, Porpoise Harbour up to Seal Cove, Off the west coast of Digby Island, through Chatham Sound and the Hecate Strait, South west coast of Stephens Island, north end of Porcher Island, Morse Basin, Wainwright Basin, and Genn Island.	Herring and herring roe-on-kelp

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Dates	Activities	Locations	Species
March and April	Gathering	The East coast of Prescott Island; the Tree Nob Group; Prescott Island and Arthur Island; Along the West coast of Stephens Island; southwest coast of Stephens Island; and Prescott Passage.	Kelp
Summer			
Beginning late in July	Fishing	Skeena River	Salmon (sockeye, pinks, chums, and coho). Halibut
June to the end of July	Gathering	The south end of the Digby Island and the Kinahan Islands; around Smith Island; the Gull Rocks; along the North coast of Porcher Island; Greentop Islet; the Genn, Rachael, and Lucy Islands; The Kinahan and Lawyer Islands; along the West coast and northwest of Stephens Island; the Tree Nob Group; around the Holland Rock area; Bribery Island; south of the Rachael Islands; and Alexandra Rocks.	Seagull eggs
Fall			
November (late fall)	best time for cockles which are only good for time period	General tidal harvesting areas (see Table 21.8-2)	Cockles
Winter			
All winter until March		Off the coast of Kaien Island, near Barrett Rock; north of Porcher Island, the Smith Island Area, and part of the Grenville Channel; around Lima Point and Spire Island; along the Southwest coast of Digby Island; along the West coast of Stephens Island, from Butler Cove to Skiakl Point; the mouth of Prince Rupert Harbour, by Ridley Island; off Island Point; and on Digby Island	Clams

Source: Calliou Group (2014b, 2014a)

The following subsections provide additional baseline information on Current Aboriginal Use valued subcomponents for the Gitxaala Nation.

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21.8.1.1 Current Fishing and Marine Harvesting Practices

The reports provided by the Gitxaala Nation note that the practice and products of fishing produce substantive contributions to:

- Traditional livelihoods, furthering the production and transmission of Gitxaala culture
- The subsistence way of living, providing nutritional, economic and cultural benefits
- Commercial objectives, furthering individual and community economic pursuits and providing a basis for trade with other Aboriginal groups, which again forms the basis for the production and transmission of culture (Calliou Group 2014b, 2014a).

Fish species highlighted as being of particular importance in the *Gitxaala Use Study* include salmon, eulachon, herring and halibut. Harvest locations and areas known as good habitat for a number of fish and marine species, particularly salmon, include Flora Bank, Inverness Passage, Porpoise Channel, and Chatham Sound (Calliou Group 2014b) Flora Bank in particular is noted as important for continued fish harvesting activities due to the eel grass habitat preferred by juvenile salmon and other species (Calliou Group 2014a). General fishing and marine harvesting locations also include areas around Ridley Island, the southeast corner of Smith Island, and Holland Rock (Calliou Group 2014b). Fish species and locations of harvest of importance to Gitxaala are listed in Table 21-25.

Table 21-25 Fish Harvest Species and Locations

Fish Species	Fishing Locations ¹	
Herring, eulachon, and halibut	<ul style="list-style-type: none"> • North of Digby island • Prince Rupert • Brown Passage • South of Porcher Island (including east of the mouth of the Skeena River, and west including Stephens Island) • Triple Island. 	
Herring, herring roe and kelp	<ul style="list-style-type: none"> • The Island and Hunt Points and north end of Porcher Island • Southwest coast of Stephens Island • Lucy, Prescott, Genn and Author Islands. 	<ul style="list-style-type: none"> • Porpoise Harbour up to Seal Cove • Off the west coast of Digby Island • Through Chatham Sound and the Hecate Strait • Morse and Wainwright Basins • Edey Passage.
Fishing areas – general	<ul style="list-style-type: none"> • Agnew Bank, Flora Bank, and Horsey Bank • East of the Gull Rocks • South of the Gull Rocks • Around Greentop Islet • Between the Rachael Islands • Around Kennedy Island and the Lawyer Islands • The Southern mouth of Prince Rupert Harbour. 	<ul style="list-style-type: none"> • At the mouth of the Skeena River • Telegraph Passage • Arthur Passage • Between Holland Rock and Kitson Island • East of Smith Island • Along the East coast of Stephens Island • Off Hunt Point • Around the Lucy Islands • Around the Kinahan Islands.

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Fish Species	Fishing Locations ¹	
Halibut	<ul style="list-style-type: none"> • Between the Kinahan Islands and Greentop Islet • South of and at Greentop Islet • North, south, and west of the Rachael Islands • Around the Kennedy, Lawyer and Smith Islands • Off the West coast of Digby Island • West of Smith Island • South of Lelu Island • North of Porcher Island • Agnew Bank. 	<ul style="list-style-type: none"> • East and South of, and elsewhere around the Gull Rocks • Chatham Sound • The mouth of the Porpoise Channel; Porpoise Harbour • The Edye, Malacca, Marcusm, Inverness and Brown Passages • Morse Basin • Holland Rock Around Seal Rocks, Warrior Rocks, and Grenville Rock • The mouth of the Skeena River • Off the Hunt, Hooper and Lima Points.
Salmon (general)	<ul style="list-style-type: none"> • West, south, and North of the Kinahan Islands • Smith Island: the Inlet on; around; to the mouth of the Skeena • Off the West coast of the Digby and Smith Islands • Between Lelu Island and Smith Island • West of Smith Island to Greentop Islet • North coast of Porcher Island • Flora Bank, off Lelu Island • Around the Genn, Porcher, Rachel, and Lawyer Islands. 	<ul style="list-style-type: none"> • South of the Rachael Islands • Horsey Bank • The Malacca, Marcus, Inverness, and Telegraph Passages • The Principe Channel • Around the Gull and Holland Rocks • Southern part of Chatham Sound; Chatham Sound • Off the Hunt and Lima Points • Morse Basin • Hecate Strait • Greentop Islet • Telegraph Passage up to and including the Skeena River • West of Ridley Island.
Sockeye salmon	<ul style="list-style-type: none"> • Off the West coast of Smith Island • Inverness Passage • Around Chatham Sound; North from Digby Island through Chatham Sound • Near Smith Island; Creeks on Smith Island • The Marcus, Telegraph, Brown, Edye, and Inverness Passages • Along the East side and north end of the Telegraph Passage • By the Havelock, Holland and Brooks Rocks • Robertson Banks, East of De Horsey Island. 	<ul style="list-style-type: none"> • South of the Rachael Islands • Around the Rachel, Kitson, and Lawyer, Stapledon, Kinahan, and Smith Islands • North of the Lawyer Islands • Along the North coast of Porcher Island • Off the West coast of the Kinahan Islands • Between Lelu Island and Smith Island • Off the coast of Lelu Island • Off Hunt Point • The Horsey, Agnew, and Flora Banks • Porpoise Channel and Porpoise Harbour • Skeena River • Butler Cove.

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Fish Species	Fishing Locations ¹	
Spring salmon	<ul style="list-style-type: none"> • Off the Hunt and Mason Points of Porcher Island • Along the West coast of Smith Island • The Telegraph, Brown and Inverness Passages • Throughout and at the mouth of the Skeena River • Off the West coast of Digby Island. 	<ul style="list-style-type: none"> • Porpoise Channel and Porpoise Harbour • Around the Avery, Kinahan, De Horsey, Smith, Kitson, Stapledon, and Lawyer Islands • The Agnew, Flora, and Horsey Banks • The Kloiya and Humpback Bays • Between Lelu Island and Smith Island • Port Edward • Chatham Sound.
Chum salmon	<ul style="list-style-type: none"> • Along the West coast of Smith Island • The Telegraph, Edye, and Inverness Passages • Around the Kitson, Stapledon, and Lawyer Islands. 	<ul style="list-style-type: none"> • Porpoise Channel and Porpoise Harbour • The Agnew, Flora, and Horsey Banks • Off the West coast of Digby Island • Between Lelu Island and Smith Island • West of the Rachael Islands.
Pink salmon	<ul style="list-style-type: none"> • Along the West coast of Smith Island • The Edye, Telegraph, and Inverness Passages • Around the Lawyer, Stapleton, and Kitson Islands • Between Lelu Island and Smith Island. 	<ul style="list-style-type: none"> • The Agnew, Flora, and Horsey Banks • West of Digby Island, in Chatham Sound • All around Porcher Island, McCauley Island, and Smith Island • Porpoise Channel and Porpoise Harbour • Up the Skeena River.
Coho salmon	<ul style="list-style-type: none"> • By Hunt Inlet • Along the west coast of Smith Island • West of Smith Island, Lelu Island, and Ridley Island • The Telegraph, Edye, and Inverness Passages • West of the Rachael Islands • The Agnew, Flora, and Horsey Banks near Kloiya Bay. 	<ul style="list-style-type: none"> • Porpoise Channel and Porpoise Harbour • Around Stapledon Island and Kitson Island • West of Digby Island, in Chatham Sound • At the mouth of and up the Skeena River • Between Lelu Island and Smith Island • Around the Lawyer Islands.
Steelhead salmon	<ul style="list-style-type: none"> • Between Lelu Island and Smith Island • Off the west coast of Smith Island • Porpoise Channel and Porpoise Harbour. 	<ul style="list-style-type: none"> • Around Stapledon, Lawyer and Kitson Islands • The Agnew, Flora, and Horsey Banks • West of Digby Island, in Chatham Sound.
Cod	<ul style="list-style-type: none"> • East of the Gull Rocks • Morse Basin • Alexandra Rocks, North of the Rachael Islands. 	<ul style="list-style-type: none"> • Off the West coast of Digby Island • Through Chatham Sound and the Hecate Strait • Off Hunt Point.
Ling cod	<ul style="list-style-type: none"> • Chatham Sound, from Stephens Island to Digby Island and South to Smith Island. 	<ul style="list-style-type: none"> • Around Holland Rock and Greentop Islet.
Rock cod	<ul style="list-style-type: none"> • Chatham Sound, from Stephens Island to Digby Island and south to Smith Island. 	
Red snapper	<ul style="list-style-type: none"> • South of the Gull Rocks. 	

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Fish Species	Fishing Locations ¹	
Rockfish	<ul style="list-style-type: none"> • Off the Lawyer Islands • Off and east of Greentop Islet • South and east of the Gull Rocks; at Gull Rocks. 	<ul style="list-style-type: none"> • Off the West Kinahan Island • Between, south of, and north of the Rachael Islands • From Hanmer Island to Lelu Island.
Crab	<ul style="list-style-type: none"> • Off the West coast of the Smith, Ridley, and Lelu Islands • Off the Tsimpsean Peninsula, by Prince Rupert • The Malacca, Telegraph and Marcus Passages • The Flora, Horsey, and Agnew Banks • Around and north of Kitson Island • The southern part of Chatham Sound • Coast Island, off the west coast of Ridley Island • South of Lima Point. 	<ul style="list-style-type: none"> • Between Holland Rock and Kitson Island • Porpoise Harbour and Porpoise Channel • Between the Kinahan and Kitson Islands • By Port Edward • By Lelu Island and Ridley Island • East of Smith Island • Around the Kinahan Islands, Greentop Islet, and Holland Rock.
Prawns	<ul style="list-style-type: none"> • South of Greentop Islet • South of the Gull Rocks • Morse Basin • Porpoise Harbour. 	<ul style="list-style-type: none"> • From Porpoise Harbour to Seal Cove • Through the Tuck Narrows, near Prince Rupert.
Shrimp	<ul style="list-style-type: none"> • Around Holland Rock and Greentop Islet. 	<ul style="list-style-type: none"> • Horsey Bank.
Sea prunes/chitons	<ul style="list-style-type: none"> • Around the Lawyer Islands • By Hunt Inlet and Off Hunt Inlet • Around Coast Island, off the West coast of Ridley Island • Holland Rock. 	<ul style="list-style-type: none"> • All around the Porcher and Stephens Island • Around the Rachael Islands. • On Ridley Island.
Chinese Slippers	<ul style="list-style-type: none"> • By Hunt Inlet • Around the Rachael Islands. 	<ul style="list-style-type: none"> • All along Stephens Island.
Abalone	<ul style="list-style-type: none"> • Around Stephens Island. 	<ul style="list-style-type: none"> • Around Greentop Islet.
Mussels and Giant Mussels	<ul style="list-style-type: none"> • Around the Rachael Islands. 	
Sea Cucumbers	<ul style="list-style-type: none"> • All around Porcher Island. 	<ul style="list-style-type: none"> • All along Stephens Island.
Clams	<ul style="list-style-type: none"> • Off the coast of Kaien Island, near Barrett Rock • North of Porcher Island, the Smith Island Area, and part of the Grenville Channel • Around Lima Point and Spire Island • On Digby Island • Off Island Point. 	<ul style="list-style-type: none"> • Along the West coast of Stephens Island, from Butler Cove to Skiakl Point • The mouth of Prince Rupert Harbour, by Ridley Island • Along the Southwest coast of Digby Island.
Clams and Cockles	<ul style="list-style-type: none"> • Along the West coast of Stephens Island, from Butler Cove to Skiakl Point • Off Island Point. 	<ul style="list-style-type: none"> • The mouth of Prince Rupert Harbour, by Ridley Island • On Digby Island and Ridley Island.
Sea Urchins	<ul style="list-style-type: none"> • All around Porcher Island. 	<ul style="list-style-type: none"> • Around Holland Rock.

Source: Calliou Group (2014b).

Note: ¹ As indicated in the Gitxaala Use Study (2014b) fish location include both those in which Gitxaala harvest certain fish species and those locations also known for providing good fish habitat.

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Marine harvesting is a main focus for the Gitxaala, who have participated in the commercial fishing industry since its establishment in the early 1800s (Calliou Group 2014b). The Gitxaala fishery plays a critical role in supporting livelihoods and the cultural way of life. Commercial fishing, seining and gillnetting sites for salmon, herring, halibut, eulachon, crab and shrimp are located around the Kinahan Islands and in the area north of Digby island, Prince Rupert and Brown Passage; south of Porcher Island, including east of the mouth of the Skeena River, and west including Stephens Island and Triple Island (Calliou Group 2014b). Commercial gillnetting and seining occurs in the study area is used for herring, eulachon, crab, and shrimp.

The Gitxaala Nation contributes to the operation of two commercial boats in conjunction with certain fishing licenses and allowances held by the Nation. Their fisheries include those used for subsistence and commercial purposes but also with other community uses such as feasting, barter, and bait. Some Gitxaala fishermen additionally hold commercial licenses for salmon, halibut, and roe-on kelp. Others participate as crew for these fisheries as well as the crab fishery. "Depending on the individual and fishery, some Gitxaala fishermen run their own boats for part of the season and then participate as crew on another boat on another fishery"(Calliou Group 2014a). Members of the Gitxaala Nation are noted as "forming an active network of people who harvest a wide range of resources... [and] even without regular access to boats" are able to access for harvest, fish and other marine resources "through extensive family and social trade networks." Additional data on the Gitxaala commercial fishery or AFS licenses with DFO were unavailable as this information has been removed from the public record (J. Chin, Pers. Comm., 2014).

Key fishing grounds near the project area noted by Gitxaala survey participants were located adjacent to Flora Bank to the south and west of Kitson Island, the areas between Flora Bank, Agnew Bank and Horsey Bank and Smith Island, as well as Inverness Channel (Calliou Group 2014a). Fishing may also occur along frequent marine travel routes into Port Edward and Prince Rupert, notably between Flora Bank and Lelu Island, Porpoise Channel, as well as Lelu Slough (see Section 21.8.1.5 for marine travel routes).

Gitxaala employ a number of methods of fishing including set gear and jig, particularly in relation to the harvest of halibut (Calliou Group 2014b). Gitxaala members often use cod as bait for halibut; baiting no less than 40 hooks with one ling cod (Calliou Group 2014b).

Gitxaala members note a preference for Skeena Sockeye salmon due to the fat and oil content that is optimal for jarring or canning (Calliou Group 2014a). Families resident in the Prince Rupert area participate in salmon fishing for subsistence and trade, in areas around Smith Island, Kitson Island, Lelu Island, and Inverness Passage (Calliou Group 2014a). Salmon are prepared in many ways including preservation through smoking, salting, and jarring which serves to support later consumption, feasting, or trade.

Harvesters often trade herring eggs with the Nass and Skeena River people for moose meat and other items. Herring eggs and roe-on-kelp are often harvested in open water. In March, kelp is collected from one area and moved to another location, weighting it with rocks as when the herring spawn, their roe attaches itself to kelp. Harvesters then collect the roe-on-kelp (Calliou Group 2014b).

Additional fishing and marine harvesting is also summarized in Table 21.8-2. Notably, marine harvesting activities, such as gathering seaweed and kelp, are often pursued in conjunction with fish harvesting activities. These activities, though related to fish harvesting, are summarized in Section 21.8.1.3.

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Harvest practices are not carried out indiscriminately but are guided by principles which regulate harvesting practices, including fishing. For instance, shellfish are gathered only when the tide is out and only at the edge of the tide in order to preserve shellfish species and ensure continued harvest in years to come (Calliou Group 2014b).

21.8.1.2 Current Hunting and Trapping Practices

The Gitxaala pursue a number of hunting and trapping practices for land and marine species throughout their traditional territory. However, the *Gitxaala Use Study* (2014b) focused primarily on marine resources. As a result, the species and harvest locations for land animals presented in Table 21-26 likely represents only a portion of Gitxaala wildlife harvesting and locations.

Table 21-26 Wildlife Species Harvested and hunting Locations

Wildlife Species	Hunting Locations	
Bear	<ul style="list-style-type: none"> Ridley Island. 	
Deer	<ul style="list-style-type: none"> All of Porcher Island Both Shores of the Grenville Channel Both Sides of the Porcher Inlet Billy Bay The Ridley, Kinahan, Lelu, Phillips, Stephens, and Smith Islands Around Kelp Pass Along the Skeena River. 	<ul style="list-style-type: none"> The beaches West of Holland Rock South part of Ridley Island Along Porpoise Channel Between Hunt Point and the Creak Islands Along the Telegraph Passage The Northeast corner of Porcher Island On both sides of the Tsum Tsadai Inlet Hunt Point.
Ducks	<ul style="list-style-type: none"> Off Lima Point. 	
Seals	<ul style="list-style-type: none"> Around Smith Island Around the Lawyer Islands The beaches West of Holland Rock A sandbar South of the Lawyer Islands Base Sand in Marcus Passage South part of Ridley Island Kloiya Bay Around the Kinahan Islands. 	<ul style="list-style-type: none"> Around Stephens Island Along the West coast of Stephens Island The Tree Nob Group The Genn Islands The Gull Rocks North coast of Porcher Island Telegraph Passage Off the West coast of Smith Island The Lucy Islands Hunt Point.
Sea lion	<ul style="list-style-type: none"> Along the West coast of Stephens Island The Ogden Channel to the Skeena River, up the Telegraph Passage. 	<ul style="list-style-type: none"> The Tree Nob Group Between the Kinahan Islands and Kitson Island The Marcus Passage.

Source: Calliou Group (2014b).

21.8.1.3 Current Gathering Practices

The gathering of resources for subsistence and other purposes is noted as an ongoing practice for Gitxaala members and contributes to Gitxaala culture, nutrition, and economy. Resources gathered may compliment other harvesting activities. The ability to continue to practice and access areas that support these activities is

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the main driver behind the intergenerational transfer of cultural knowledge (Calliou Group 2014b). Table 21-27 notes the type of resources gathered as well as the location.

Table 21-27 Resources Gathered and Locations

Resource Gathered	Location	
Sea bird eggs	<ul style="list-style-type: none"> • The South end of the Digby Island and the Kinahan Islands • Around Smith Island • The Gull Rocks • Along the North coast of Porcher Island • Greentop Islet • The Genn, Rachael, and Lucy Islands. 	<ul style="list-style-type: none"> • The Kinahan and Lawyer Islands • Along the West coast and northwest of Stephens Island • The Tree Nob Group • Around the Holland Rock area • Bribery Island • South of the Rachael Islands • Alexandra Rocks.
Seaweed	<ul style="list-style-type: none"> • Lelu Island • Along the West coast of Stephens Island • The Rachael Islands. 	<ul style="list-style-type: none"> • Greentop Islet • The Lucy Islands • The Southwest coast of Stephens Island.
Kelp	<ul style="list-style-type: none"> • Along the West coast of Stephens Island • The Southwest coast of Stephens Island. 	<ul style="list-style-type: none"> • The East coast of Prescott Island • The Tree Nob Group • Prescott Island and Arthur Island • Prescott Passage.
General Medicinal Plant Gathering	<ul style="list-style-type: none"> • All over Porcher Island. 	
Devil's Club	<ul style="list-style-type: none"> • Mount Hays. 	<ul style="list-style-type: none"> • Southeast corner of Smith Island.
Berries	<ul style="list-style-type: none"> • Mouth of the Skeena River • Mount Hays. 	<ul style="list-style-type: none"> • The South part of Ridley Island.
Blueberries	<ul style="list-style-type: none"> • Lelu Island • Ridley Island. 	<ul style="list-style-type: none"> • Along the South coast of the Tsimpsean Peninsula.
Huckleberries	<ul style="list-style-type: none"> • The Southeast corner of Smith Island • By Port Edward • South of Prince Rupert • Lelu Island. 	<ul style="list-style-type: none"> • Between Hunt Point and the Creak Islands • Along the South coast of the Tsimpsean Peninsula • Ridley Island.
Salmon Berries	<ul style="list-style-type: none"> • Southeast corner of Smith Island • Along the South coast of the Tsimpsean Peninsula. 	<ul style="list-style-type: none"> • By Port Edward • South of Prince Rupert • Lelu Island • Ridley Island.
Stink Currant	<ul style="list-style-type: none"> • Along Telegraph Passage. 	
Bark	<ul style="list-style-type: none"> • The Kinahan Islands. 	
Driftwood	<ul style="list-style-type: none"> • Around Stephens Island. 	
Trees	<ul style="list-style-type: none"> • Medicine trees are found along the tree line from the beach. 	

Source: Calliou Group (2014b).

Banks Island and areas surrounding Stephens Island were particularly noted for seaweed harvest, with the taste of seaweed often dependent on the location at which it is harvested (Calliou Group 2014b). Medicinal

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gathering locations, species, and specific uses are considered culturally sensitive and were not reported in detail. And the importance of berry picking was noted, often occurring as an incidental activity to other resource harvesting.

21.8.1.4 Current Use of Spiritual Sites and Cultural Landscapes

Spiritual and ceremonial practices often ‘tell a story’ or transmit information within and between generations of Gitxaala people. Spiritual and ceremonial practices may be perceived as expressions of the principles that guide traditional resource management and other aspects of culture. Stories are told to share information related to: experiences on the land and water, history of the Nation, education, resource management principles, sacred and cultural knowledge, values, and ethics, and Gitxaala identity (Calliou Group 2014b).

Table 21-28 reports the location of sacred places and cultural areas that support Gitxaala spiritual and ceremonial practices.

Table 21-28 Culturally Important Places

Type of Place	Place Locations
Sacred Place	<ul style="list-style-type: none"> • On the Northern point of Porcher Island • Kloiya • On the West coast of Ridley Island, adjacent to Coast Island • At the Butze Rapids • In the Prince Rupert Harbour • Around Stapledon Island and the East coast of Lelu Island • At Casey Point, on the West coast of Kaien Island • In Sourdough Bay • In Tsum Tsudai Inlet.
Cultural Area	<ul style="list-style-type: none"> • By Veitch Point • Through the Telegraph Passage and the Inverness Passage.

Source: Calliou Group (2014b).

Sacred places include those associated with supernatural events or beings (both the location and what exists there) or places that connect to something else.

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21.8.1.5 Current Transportation and Habitation Practices

Transportation routes (see Table 21-29) and the facilities that support these activities are noted to be as important as resource harvesting activities (Calliou Group 2014b). Travel routes are often chosen with two considerations in mind: the type of weather and water conditions experienced (rough vs. calm seas) and the ability to harvest or fish along the way (Calliou Group 2014b). Opportunistic harvesting can depend on both the route taken and the location of the camp that enables harvesters to cover larger areas. Gitxaala members are highly mobile within their traditional territory. Nation members regularly travel between Lach Klan and the Prince Rupert/Port Edward Area to harvest, feast and participate in cultural events, and participate in the sharing and trading of traditional foods and resources. Over 90% of 237 Gitxaala members surveyed had travelled between Lach Klan and Prince Rupert/Port Edward in the past year (Calliou Group 2014a).

Travel routes in the Port Edward Area provide preferred access between Lach Klan and Prince Rupert when travelling on a personal vessel. The preferred navigation route (54.4% of respondents) runs to the north of Smith Island then turns westward between Flora Bank and Lelu Island. Gitxaala boaters then either continue along the west coast of Ridley Island, or turn into Porpoise Channel to seek harbor in Port Edward. Over 33% of respondents also stated that they occasionally navigate via Lelu Slough along Stapledon Island. These travel routes are not only key access routes but also key marine gathering and harvesting routes (Calliou Group 2014a). Marine and other travels routes are those considered the preferred route based on weather conditions. Small vessels prefer marine travel near the shores of Lelu and Ridley Island and between either Prince Rupert or Port Edward and Lach Klan (Calliou Group 2014b).

Table 21-29 Transportation Routes and Habitation Areas

Transportation Routes and Habitation Areas	Location
Transportation Routes	<ul style="list-style-type: none"> • Dolphin Island up to the East side of Smith Island • Porpoise Harbour out to Chatham Sound • Porpoise Harbour and through the Inverness Passage • From Prince Rupert Harbour to Inverness Passage • To Port Edward and Prince Rupert • Around Ridley Island • Inverness Passage • Around Lelu Island, down to Hanmer Island • To Malacca Passage • Prince Rupert to Kitkatla • Prince Rupert to Kitkatla, through the Telegraph Passage • From Prince Rupert through Edye Passage • Around Porcher Island • Safer Route from Smith Island to either side of Ridley Island • The Skeena River, around the West side of Porcher and Banks Island • Along Smith Island to Prince Rupert • Prince Rupert Harbour into Chatham Sound • East of Lelu Island • Up the Skeena River • Smith Island to Prince Rupert Harbour • Along the West coast of Digby Island.

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Transportation Routes and Habitation Areas	Location
Weather dependent Travel Routes	<ul style="list-style-type: none"> • Good weather route from Kitkatla to Prince Rupert • Bad weather route from Kitkatla to Prince Rupert • Bad Weather route from Kitkatla to Porpoise Harbour • Bad Weather route through the Inverness Passage to the Skeena River • Bad Weather route from Porpoise Harbour to Prince Rupert Harbour • Bad Weather route along Ridley Island • Bad Weather route through Porpoise Channel.
Anchorage Sites	<ul style="list-style-type: none"> • Between Smith Island and De Horsey Island • Greentop Islet • The Kinahan Islands • By the Tsum Tsadai Inlet • Off Soar Point • Off Hicks Point on Smith Island.

Source: Calliou Group (2014b, 2014a).

Knowledge of tides, currents, and weather conditions informs Gitxaala harvesters travel and fishing activities. Strong tidal wave action were noted between the Skeena River to Hecate Strait, through Ogden Channel and from Smith Island south through Arthur Passage (Calliou Group 2014b). Traditional knowledge of weather and ocean conditions likely informs travel routes and harvest locations on an ongoing basis.

21.8.2 Assessment of Effects on Pathway Valued Components

21.8.2.1 Change in the Access to Lands, Waters, and Resources Used for Traditional Purposes

Marine-based navigation and access to current traditional use sites for fishing, hunting, trapping, gathering, spiritual and ceremonial practices, and temporary dwellings may be affected to the extent that access routes overlap with project components and activities (see Section 15). The following section summarizes how marine navigation may interact with project component and activities. Project components and activities are not expected to interfere with land-based access to preferred current traditional use sites.

During the construction phase, access through Lelu Slough may be limited periodically during construction of the access bridge between Lelu Island and the mainland. North-south navigation between Lelu Island and Flora Bank may be periodically limited during construction of the suspended bridge-trestle. Associated construction activities with respect to the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound may also temporarily impede normal access to the north-south channel just west of Lelu Island. Project-related vessel traffic during construction may occasionally alter preferred traditional access, particularly in and out of Porpoise Channel and through Lelu Slough. Marine navigation is regulated by the Port of Prince Rupert and therefore project construction-related disruptions will be managed so they do not unduly inconvenience traditional aboriginal navigation use in and around Porpoise Channel. Project-related vessel traffic during construction will interfere with access near the MOF. Ship activities related to dredging and disposal at sea may also interact with Gitxaala marine navigation.

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During operations, local traditional navigation will not be affected through Lelu Slough since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. The suspended bridge-trestle extending over Flora Bank will have a clearance of approximately 11 metres under a portion of the suspended bridge-trestle near Lelu Island to allow high tide access to the current north-south channel and local traditional navigation travel route just west of Lelu Island.

Large ship navigation from the Pacific and into Chatham Sound may be temporarily affected when LNG carriers are being piloted into Port although only one LNG carrier per day/350 per year are estimated to berth at the terminal. Local navigation may also be affected by temporary weather-related LNG carriers using Port of Prince Rupert temporary anchorages. The anchorage locations will be identified by the PRPA and be within the Prince Rupert Inner Harbour and Chatham Sound.

During decommissioning, in the unlikely event the Port approves the removal of project infrastructure on industrial port lands and waters, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may temporarily affect Aboriginal marine users.

Gitxaala Nation's members currently travel through waters in the vicinity of the Project, including Inverness Passage, between Flora Bank and Lelu Island, Lelu Slough, and Porpoise Channel (Section 21.8.1.5).

Gitxaala Nation members' marine-based access to current use sites, and to the ports in Port Edward and Prince Rupert, may experience temporary interference during specific build periods of marine infrastructure (i.e., bridge to mainland, suspended bridge-trestle, pipe pile supported trestle and marine terminal), but will not at any time be eliminated.

21.8.2.2 Quantity of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction, operations, and decommissioning hold the potential to affect the quantity of lands, waters, and resources used for fishing, hunting and trapping, gathering, spiritual and ceremonial activities.

From a marine waters perspective, construction of project components such as the road access bridge between Lelu Island and the mainland, the MOF and turning basin in Porpoise Channel, as well as the suspended bridge-trestle over Flora Bank, the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound will temporarily render these locations unavailable for fishing, marine gathering, and marine hunting and trapping. Upon completion of construction, passage under the road access bridge and the suspended bridge-trestle across Flora Bank will be possible at high tide throughout operations, however, it is envisioned that regulatory authorities may require marine safety exclusion zones to be put in place along and underneath the suspended bridge-trestle and along the pipe pile supported jetty on Agnew Bank. Marine traffic will likely only be possible right near Lelu Island where the suspended bridge-trestle allows for safe vessel passage for ships up to a gill netter in size at high tide.

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Gitxaala Nation members currently fish for halibut, salmon, crabs and clams around Lelu Island, Flora Bank, Agnew Bank, Horsey Bank, Porpoise Channel, and near Port Edward. The specific area around Flora Bank to the west and south of Kitson Island, as well as the areas between Flora Bank and Smith Island are noted by Gitxaala to be of particular significance for harvesting purposes (Calliou Group 2014a). Seaweed is also gathered around Lelu Island (Section 21.8.1.3). Halibut, cod, salmon, crab and herring is also harvested in Chatham Sound.

Consequently, the quantity of marine waters available for Gitxaala Nation members' halibut, salmon, crabs and clams fishing and seaweed gathering sites are expected to be nominally reduced during construction in the waters around Lelu Island, and as a result of any safety exclusion zones imposed by regulatory authorities during construction and operations. Potential exclusion zone areas along and underneath the suspended bridge-trestle crossing Flora Bank, along the pipe pile supported jetty on Agnew Bank and at the marine terminal in Chatham Sound do not appear to overlap with key fishing areas noted by Gitxaala and will not prevent current halibut and crab fishing activities within and adjacent to Porpoise Channel.

On land, project components and activities within the project development area during construction, operations, and decommissioning will remove Lelu Island as a location for terrestrial hunting and trapping, gathering, and spiritual and ceremonial activities. 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 (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island). Thirty two ha (17%) of Lelu Island will remain outside of the fence line as a vegetation buffer.

The Gitxaala Nation traditional use study (Calliou Group 2014b) does not indicate any hunting or trapping activity on Lelu Island or in Port Edward (Section 21.8.1.2). Follow up meetings did not identify these activities as occurring on Lelu Island. Blueberries and salmon berries are gathered on the Island, as well as other locations along the coast and other islands in the region (Section 21.8.1.3). Information provided in the studies, as well as follow up meetings with Gitxaala Nation did not identify any meeting places, feasting sites, and Tsimshian place names on the Island. There are no known current temporary dwelling sites on Lelu Island.

Consequently, a nominal quantity of land available for Gitxaala Nation members' for gathering berries within their traditional territory is expected to be reduced during construction and throughout the project lifecycle.

Construction and operations activities hold the potential to reduce the quantity of terrestrial resources within Aboriginal peoples' preferred use locations due to direct mortality and alteration of movement. Mortality of birds, amphibians, and small mammals on Lelu Island will be limited to a small number of individuals since vegetation clearing will be completed outside of breeding periods when wildlife are more likely to be occupying nests, dens, or breeding ponds (Section 11.5.3.4).

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Mortality of grizzly bear and wolverine *luscus* subspecies caused by vehicle collisions and human-wildlife interactions is expected to be negligible because these species are unlikely to occur in the LAA. Marine bird mortality is expected impact a few to many individuals when facility structures are regularly lit during operations. Project-related effects on wildlife movement from site preparation and construction of the LNG facility, operation of construction equipment, and installation of bridge and access road, will affect a few to many individuals (Section 11.5.4.3). Project-related effects on marine bird movement from the marine terminal, MOF, and bridge are expected to be negligible.

Gitxaala Nation members are not known to hunt and trap on Lelu Island (Section 21.8.1.2). However, members harvest ducks, which may be affected during operations. Consequently, members may experience a small reduction in the number of ducks and geese available for harvesting.

Construction and operations activities hold the potential to reduce the quantity of marine resources used by Aboriginal peoples within preferred locations due to direct mortality and alteration of movement. Injury and mortality of fish due to blasting during construction is expected to be limited in extent (Section 13.5.4.3). Blasting activities during marine construction will be undertaken in accordance with DFO blasting guidelines in order to avoid harm to marine mammals. In addition, most species of commercial importance are expected to be rarely present or absent from the blast area. Resident Dungeness crabs will be relocated prior to blasting. Injury or mortality due to 'Disposal At Sea' deposition site at Brown Passage associated with dredging the MOF and Turning Basin is expected to affect only immobile species in close proximity to these activities. Increases in TSS levels associated with vessel manoeuvring, dredging at the MOF, and disposal at sea are not expected to result in injury or mortality to fish as marine organisms (including juvenile salmon) are adapted to seasonal variations in TSS levels, levels are below those that cause lethal effects to salmon and other species, and will be limited in extent and duration. In any event TSS will be monitored during dredging and deposition.

Any existing sediment chemical compounds (e.g., dioxins and furans) exposed during MOF dredging during construction or vessel berthing and departure during operations are not expected to pose to any toxicological risks to marine biota (Section 13.5.2.5) or to human health from the consumption of marine animals as these sediments have levels of contamination well below regulatory thresholds. Underwater noise from impact pile driving can be mitigated using a bubble curtain. Therefore, the underwater noise is not expected to result in injury or mortality to fish or marine mammals. In the rare case that an impact hammer is used to install piles, and a bubble curtain is used, cetaceans within 1.0 km of the sound source may be exposed to sound levels capable of causing permanent auditory injury. Potentially affected species include harbour porpoise, Dall's porpoise, Northern resident and Bigg's killer whales, humpback whale, Loughlin's Northern sea lion, harbour seal, and Pacific white-sided dolphin. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

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The relative number of marine resources available in preferred hunting sites in the project marine infrastructure areas around Lelu Island may be reduced due to altered distribution of fish and marine mammal populations (Section 13.5.5.3). There is potential for fish (e.g., eulachon, herring, rockfish) to react to construction noises; however, if such reactions occur, they are likely to be spatially and temporally limited. Salmon may show local avoidance of particularly noisy zones (Feist et al. 1996), but this reaction is expected to be limited in spatial extent and short-lived. Pipe pile installation during construction may result in potential residual effects to marine mammal's behavior at distances of up to 15 km. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The transit of LNG carriers into Port and berthing during operations could also affect some marine species' behaviours. Areas of avoidance for Harbour Porpoise may occur within Porpoise Channel and a portion of Prince Rupert Harbour. Because harbour porpoise and other marine mammals in the LAA are important prey species for Bigg's killer whale; potential displacement of these species during pile driving could indirectly result in displacement of Bigg's killer whale. Killer whales might exhibit behavioural response over large areas of the LAA. Modelling results indicate the humpback whales could experience behavioural responses over a radius of 8.9 km at the Triple Island area during ship transits into the Port of Prince Rupert, and, at the marine terminal in Chatham Sound, when the LNG carriers are berthing supported by 4 tugs.

Effects on Loughlin's sea lion may also be a concern near any rookeries (i.e., breeding areas) though none are identified within the project marine infrastructure areas. The severity of threat from LNG carriers coming to, and leaving Port, and to any rookeries along already existing large vessel transit routes from Triple Island to Port at the population-level is "likely low", as this species is described as being able to habituate to chronic disturbances.

Gitxaala Nation members currently fish for a wide variety of species for commercial and food, social, and ceremonial purposes throughout the LAA, including halibut and salmon in the waters around Lelu Island as well as crabs and clams in the vicinity of the suspended bridge-trestle (Section 21.8.1.1). Member's fish for a variety of species of salmon, groundfish, crustaceans, and molluscs within the area potentially affected by underwater noise and within the potential shipping routes. Gitxaala members also harvest seal and sea lion within the RAA (Table 21.8-3).

Project-related reductions in the quantity of fish currently harvested by Gitxaala members within their preferred fishing locations as a result of behavioural displacement are expected to be negligible. Absolute reductions in the population sizes of harvestable fish species are not expected. Some limited fish movement out of preferred fishing locations may take place during construction activities. Similarly, the absolute quantity of marine mammals harvested is not expected to be reduced by project activities. Gitxaala members may find reduced numbers of sea lions and seals in preferred harvesting areas during construction due to noise-related alteration of movement.

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21.8.2.3 Quality of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction and operations hold the potential to affect the quality of lands, waters and resources for used fishing, hunting, trapping, and gathering. The Project is not expected to result in any adverse effects to the quality of terrestrial country foods.

Dredging during construction of the MOF and turning basin could expose marine species to sediments containing historical deposits of non-toxic (as the levels of contamination in these sediments have been tested as being well below any toxicological thresholds) chemicals (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans - PCDD/Fs) (Section 19.5.2). Although country foods have been tested for any existing dioxin and furan contamination, and the results have shown they are not contaminated, there is perceived potential that MOF dredging could expose additional dioxins and furans and that these chemical contaminants could be further exposed so that they may be at higher concentrations and then accumulate in the tissues of marine country food species and affect human health from the consumption of marine country foods.

The project assessment of these potential effects meets or exceeds the standards imposed by the appropriate regulatory authorities. The overall potential for PCDD/Fs in marine country foods to increase in concentrations is negligible to low. With that said, the Project has committed to on-going country food monitoring through the marine construction phase of the Project to confirm this prediction.

Gitxaala Nation members harvest a wide variety of fish species throughout the LAA, including within the vicinity of Lelu Island (the marine waters between Lelu and Stapledon Islands, over Flora Bank) as well as halibut and herring within the vicinity of Brown Passage (Section 21.8.1.1). However, as the overall potential for PCDD/Fs concentrations to increase in marine country foods is negligible to low, the Project is not expected to affect the quality of resources harvested by Gitxaala members.

21.8.2.4 Change in the Sensory Environment for Current Aboriginal Use

Construction, operations, and decommissioning of the Project have the potential to affect the sensory environment within which Aboriginal peoples undertake traditional use activities. Project activities will result in changes to sound levels, ambient light, air quality, and quality of the visual landscape. The Project also has the potential to change perceived safety and solitude for Aboriginal people who frequent areas near the PDA and shipping lanes.

Modelled noise levels during construction are predicted to be below the threshold of human hearing perception on Rachel Islands, Lucy Islands, and Triple Island (Section 8.5.2.3). Construction noise will be audible on Kitson Island, Kinahan Islands, Digby Island, and Smith Island. During operations, project-related noise will be audible on Kitson Island, Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Digby Island, and Smith Island. Noise related to construction and operations is not predicted to exceed Health Canada noise limits (%HA) at any of the modelled sites (Section 8.5.2.3 and 19.5.2.3).

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Changes to light levels will occur during all phases of the project activities during daytime and nighttime (Section 19.5.2.3). A qualitative assessment of the potential effects of changes in ambient light during construction phase indicates that, with mitigation, adverse effects will be avoided. Most construction activities occur during the daytime with limited nighttime lighting required. During operations, there is potential that the exterior lighting associated with some project components (e.g., storage tanks, flares) will be visible. Lighting along the suspended bridge-trestle will be visible. Due to the positioning of the marine terminal component of the Project, for the most part, the exterior lighting associated with the terminal itself and the ships will likely not be visible. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment.

Project components and construction and operations activities are expected to affect visual quality as they will alter the topography and vegetation patterns of the project site and the marine areas in which the Marine bridge and trestle will be built (Section 17.5.2.2). The Project will also introduce new industrial human interventions that, pending the viewing angle, will be out of scale and not characteristic of the current landscape character of VSUs within the LAA. The project facility and marine terminal will be visible from Kitson Island and Kinahan Islands. LNG carrier ships will be visible from Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Stephens Island, and Melville Island. Effects to visual quality related to the facility and marine terminal are expected to be high magnitude. Effects to visual quality related to shipping operations are predicted to be low to moderate magnitude.

No changes to human health are anticipated from air quality during construction (Section 19.5.2.3). The modelled changes to air quality during operations shows that no criteria air contaminants (CACs) exceed applicable BC Ministry of Environment air quality objectives at any time. This indicates that for the general population, there would be no changes to human health to people exposed to CACs in the air from project activities.

The sensory environment for Gitxaala members' traditional use activities is expected to be affected by changes in visual quality, but not by changes in noise, light, or air quality. In addition, members' perceptions of safety and solitude may be affected due to the presence of project components and activities, and increased presence of marine traffic. How this effect on the sensory environment will be experienced is difficult to predict as it will vary from individual to individual.

21.8.3 Mitigation Measures for Pathway Valued Subcomponents

Mitigation measures for access to traditional use sites include:

- Measures to reduce changes to aboriginal marine navigation (Section 15.5.2.2).

Mitigation measures for potential effects on quantity of lands, waters, and resources for traditional purposes include measures to reduce:

- The potential for project related changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2)
- Changes to fish habitat (Section 13.5.3.2)

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- The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2)
- Changes in behaviour of fish and marine mammals (Section 13.5.5.2)
- Terrestrial habitat for wildlife and marine birds, including wetland compensation and fish habitat offsetting (Section 11.5.2.2)
- Mortality risk to terrestrial wildlife and marine birds (Section 11.5.3.3)
- Alteration of movement of terrestrial wildlife and marine (Section 11.5.4.2)
- Or identify, record, and recover data for heritage features, including culturally modified trees (Sections 20.5.2.2 and 20.5.3.2).

Mitigation measures for potential effects on quality of lands, waters and resources for traditional purposes include:

- Measures to reduce changes to marine resources due to changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2).

Mitigation measures for potential effects on the sensory environment for traditional activities include measures to reduce changes to:

- Air quality (Section 6.5.2.2)
- Acoustic environment (Section 8.5.2.2)
- Ambient light (Section 9.5.2.2)
- Visual quality (Section 17.5.2.4).

21.8.4 Residual Effects on Pathway Valued Subcomponents for Gitxaala

Following the mitigation measures described and referenced in Section 21.8.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island as the entire island will be leased to the Project by the federal Prince Rupert Port Authority.

However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources, except for limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting location may be reduced during construction due to alteration of movement associated with noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-32 identifies residual effects remaining after the application of mitigation measures.

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Table 21-30 Gitxaala Nation: Residual Effects to Pathway Valued Components

Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Change in the Access to lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, D	Gitxaala Nation members' marine-based access to current fishing sites around Lelu Island may experience a degree of temporary interference.
Current Hunting and Trapping Practices	C, D	Gitxaala First Nation members' marine-based access to current hunting and trapping sites may experience a degree of temporary interference.
Current Gathering Practices	C, D	Gitxaala First Nation members' marine-based access to current gathering sites, including seaweed gathering around Lelu Island, may experience a degree of temporary interference.
Current Spiritual and Ceremonial Practices	C, D	Gitxaala First Nation members' marine-based access to current spiritual and ceremonial sites may experience a degree of temporary interference.
Change in the Quantity of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O	Gitxaala members may experience a residual effect from a reduction in the quantity of marine waters used for traditional harvesting purposes as a result of restrictions during marine infrastructure construction. A change in the quantity of marine resources is anticipated for Gitxaala during construction as a result of displacement from project related noise and activities.
Current Hunting and Trapping Practices	C, O	Gitxaala members may find reduced numbers of sea lions, and seals in preferred harvesting areas during construction due to noise-related alteration of movement.
Current Gathering Practices	C, O	A negligible residual effect is anticipated from the loss of berry picking sites on Lelu Island.
Current Spiritual and Ceremonial Practices	C, O	No predicted residual effects.
Change in the Quality of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	No predicted residual effects.
Current Hunting and Trapping Practices	C, O, D	No predicted residual effects.
Current Gathering Practices	C, O, D	No predicted residual effects.
Current Spiritual and Ceremonial Practices	C, O, D	No predicted residual effects.
Change in the Sensory environment for the Current Aboriginal Use		
Current Fishing Practices	C, O, D	Gitxaala Nation members' are expected to be affected by changes in visual quality. Harvesters' perceptions of safety and solitude may be affected due to the presence of project components and activities and increased presence of marine traffic.
Current Hunting and Trapping Practices	C, O, D	Gitxaala First Nation members engaging in hunting and trapping practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.

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Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Current Gathering Practices	C, O, D	Gitxaala First Nation members engaging in gathering practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.
Current Spiritual and Ceremonial Practices	C, O, D	Gitxaala First Nation members engaging in spiritual and ceremonial practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.

21.8.5 Assessment of Effects on Gitxaala Current Aboriginal Use

The following sections assess the potential effects on Gitxaala Nation use and users as a result of predicted residual effects on pathway valued subcomponents.

21.8.5.1 Potential Effects on Current Fishing Practices

21.8.5.1.1 Location of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in displacement of Aboriginal fishers from some preferred fishing locations. Key locations include the waters around Lelu Island, the suspended trestle-bridge, along the Pacific Pilot Authority’s existing large ocean going vessel transit/shipping route from Triple Island to the Port of Prince Rupert, and the ‘Disposal at Sea’ site (Brown Passage). As the marine jetty will be located along the transition between Flora Bank and Agnew Bank, it is not expected to interfere with fishing from larger vessels. Further, the design of the bridge between Lelu Island and the mainland and the redesigned marine jetty will allow fishers in smaller vessels to transit between fishing areas to the north and south without additional travel time. Areas that are used in the vicinity of Inverness Passage, Horsey Bank west of Kitson Island and Agnew Bank will all remain accessible for fishing.

Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port designated under Canada’s *Marine Act* and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key fishing sites are likely to outweigh effects to sensory environment associated with visual quality. Gitxaala Nation members fish in the waters around Lelu Island, Flora Bank, Triple Island, and in Chatham Sound (Section 21.8.1.1). Potentially-affected fisheries include salmon, halibut, herring, and shellfish.

Gitxaala harvesters are may temporarily shift the location of salmon, clams, and crab harvesting in the waters around Lelu Island, Flora Bank and Porpoise Channel during construction, due to reduced availability of these sites. Increased marine traffic during construction may result in site avoidance for fishers in waters surrounding Lelu Island. Harvesters may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Finally, increased marine traffic during decommissioning may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.

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21.8.5.1.2 Timing of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in changes to the preferred timing of Aboriginal peoples' fishing activities. Fishers may avoid fishing in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, fishing sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping traffic.

Gitxaala Nation members fish throughout the year, but fish more intensively in the spring and summer months for salmon and halibut (Section 21.8.1.1). Monthly, weekly, and daily variation in fishing times is not currently known.

Project activities during construction are not expected to affect the seasonality of fishing practices, as this is largely tied to the biology and behaviour of fisheries resources. Project activities during operations are not expected to affect the seasonality of members' fishing practices, though Gitxaala members may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.

21.8.5.1.3 Effort Involved in Current Fishing Practices

Interruptions in access may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred fishing locations. Temporary limitations in availability of fishing sites that are in the direct path of shipping lanes may also increase effort, if fishers are required to shift their fishing location during the presence of LNG carrier ships. Changes to sensory environment (visual quality) are not expected to directly affect fishing effort but may increase effort if it leads Aboriginal people to shift their fishing locations. Reductions in fish quantity are not expected to affect fishing effort as the reductions will be minimal, not likely to affect commercial species, and limited to the immediate vicinity of project components and activities.

Interference with Gitxaala First Nation members' access to preferred fishing sites during construction and decommissioning is expected to increase the effort required by members to reach preferred sites. This effect is expected to be negligible as project-related presence of marine vessels will not require fishers to substantially alter travel routes while traveling to fishing sites.

During operations, temporary reductions in the availability of fishing sites due to LNG carrier traffic is expected to increase the amount of time that members spend actively fishing in those locations. This effect can be mitigated with appropriate communications (see Section 21.8.3). Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of and access to preferred fishing sites.

21.8.5.1.4 Success of Current Fishing Practices

Changes in access to and quantity of waters available for fishing during construction and operations could reduce the success of Aboriginal peoples' fishing practices. Fishing success may also be reduced to the extent that temporary restriction of fishing within shipping lanes reduces the total amount of time available for active fishing by Gitxaala members. Additionally, if Aboriginal harvesters fish in alternative locations due to interference with access or reduced site availability, success rates could change, depending on the nature of fishing resources in alternative locations.

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No information has been provided to PNW LNG regarding Gitxaala Nation's current catch quantities for AFS fisheries (see Section 21.3).

Effects on fishing success for the Gitxaala Nation are not expected as a result of changes in access and quantity, given the localized and temporally-limited nature of expected changes. Effects on fishing success due to locational change are expected to be negligible as fishers are not expected to shift fishing efforts to substantially different locations.

21.8.5.1.5 Satisfaction with Current Fishing Practices

Changes in access to preferred fishing locations, quantity of waters and resources used for fishing purposes, and visual quality may affect the extent to which Aboriginal fishing practices satisfy expectations relating to aesthetic experiences, Traditional Ecological Knowledge (TEK), cultural distinctiveness and continuity, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred fishing locations may affect Aboriginal fishers' ability to collect traditional ecological knowledge and to transmit such knowledge to other members. Reductions in fishing success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Gitxaala Nation has expressed concerns about the potential effects of the Project on members' aesthetic experiences, sense of place, feelings of solitude, and ability to commune with the natural environment (Calliou Group 2014b). Specific information relating to Gitxaala Nation members' expectations about Traditional Ecological Knowledge (TEK), cultural distinctiveness, and social cohesion were not provided.

The Project is not expected to affect the ability of the Gitxaala Nation to collect TEK and transmit cultural knowledge, given expected limited interference with fishing practices resulting from changes in access to and quantity of fishing resources. Changes in visual quality are not expected to be substantial enough to interfere with the ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction and feeling of cultural distinctiveness while fishing in the vicinity of the Project. How this effect is experienced is difficult to predict and will vary from individual to individual.

21.8.5.2 Potential Effects on Gitxaala Current Hunting and Trapping Practices

21.8.5.2.1 Location of Current Hunting and Trapping Practices

Changes in the quantity of, lands, waters, and resources used for hunting and trapping purposes may result in displacement of Aboriginal hunters from preferred harvesting locations. Information specific to Gitxaala trapping activities was not provided. Key marine hunting locations include Lelu Island and Islands and waters in the vicinity of the shipping route and disposal at sea site (Brown Passage). Changes in marine access to hunting locations is not expected to be sufficient to prompt locational change for these activities, as project-related presence of marine vessels will not require members to substantially alter marine travel routes while traveling to hunting and trapping sites. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic (Section 17).

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Locational affinities to key hunting sites are likely to outweigh effects to sensory environment associated with visual quality.

Limited information related to Gitxaala terrestrial hunting practices was provided. Gitxaala members currently hunt marine resources near Smith Island and Kitson Island (Section 21.8.1.2). Key resources harvested near the PDA include deer around Porpoise Channel, as well as seal, and sea lion.

Gitxaala hunters who currently hunt deer around Porpoise Channel are expected to shift the location of these hunting activities during construction, operations, and decommissioning. The location of seal and sea lion harvests may shift, if these species alter their behaviour in response to construction-related noise and noise related to shipping traffic.

21.8.5.2.2 Timing of Current Hunting and Trapping Practices

Changes in access to waters for marine hunting, changes in marine access to terrestrial hunting sites, and changes in the quantity of waters available for hunting activities may result in changes to the preferred timing of Aboriginal peoples' hunting activities. Hunting may be avoided in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, hunting sites (i.e., during construction activities and associated marine traffic) and during the presence of LNG carriers and other large ocean going vessels sailing into and out of the Port of Prince Rupert.

Information relating to the time of month, week, or day during which Gitxaala Nation members hunt terrestrial and marine species was not provided.

Gitxaala Nation members may alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day). Seasonal changes are not expected as hunting seasonality is tied to the biology and behaviour of harvested resources.

21.8.5.2.3 Effort Involved in Current Hunting and Trapping Practices

Interference with access to lands, waters, and resources for hunting and trapping purposes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred hunting and trapping locations. Temporary limitations in availability of marine hunting sites that are in the direct path of shipping lanes may also increase effort, if hunters are required to interrupt hunting efforts during the presence of LNG carriers, however existing shipping traffic into and out of Prince Rupert already manifests in these impacts. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect hunting effort but may increase effort if it leads Aboriginal people to shift their hunting locations. Reductions in the quantity of seals and sea lions within preferred harvesting locations (due to temporary changes in distribution as a result of construction noise) may result in increased harvesting effort if harvesters are required to travel further and spend more time hunting the resource.

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Information relating to the effort involved for Gitxaala Nation members to hunt marine species was not provided. The Project is expected to interfere to a limited degree with marine access to hunting locations (terrestrial and marine) during all project phases as a result of project related vessel traffic. The resulting effect on effort is expected to be negligible as project-related presence of marine vessels will not require hunters to substantially alter travel routes. Gitxaala member's currently hunting deer around Porpoise Channel may need to increase effort to obtain these resources from alternative locations. Members may also need to increase effort to hunt seals and sea lion due to temporary changes in distribution as a result of construction noise.

21.8.5.2.4 Success of Current Hunting and Trapping Practices

Changes in access to and quantity of sites available for hunting and trapping during construction and operations could reduce the success of Aboriginal peoples' efforts. Hunting and trapping success may be also be reduced to the extent that interference with routes of access to marine and terrestrial hunting and trapping locations reduces the total amount of time available for hunting and trapping activities. If Aboriginal hunters and trappers move to alternative locations due to interference with access, reduced site availability, or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative hunting and trapping sites for particular individuals and/or families.

Key resources harvested by Gitxaala include deer near Porpoise Channel, and seals and sea lion elsewhere within the RAA (near Smith Island and Kitson Island). Information on current harvesting quantities, internal governance and resource management frameworks pertaining to terrestrial and marine hunting and trapping were not provided.

Project-related interference with Gitxaala members' access to terrestrial and marine hunting locations is not expected to reduce overall hunting time and therefore success rates.

21.8.5.2.5 Satisfaction with Current Hunting and Trapping Practices

Changes in access to preferred hunting and trapping locations, quantity of lands, waters and resources used for hunting and trapping purposes, and visual quality may affect the extent to which Aboriginal hunting and trapping practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred hunting and trapping locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to hunt and trap for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in hunting and trapping success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

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Gitxaala Nation has expressed concerns about the potential effects of the Project on members' aesthetic experiences, sense of place, feelings of solitude, and ability to commune with the natural environment (Calliou Group 2014b). Specific information relating to Gitxaala Nation members' expectations about Traditional Ecological Knowledge (TEK), cultural distinctiveness, and social cohesion were not provided.

The Project is not expected to affect the ability of the Gitxaala Nation to collect TEK and transmit cultural knowledge, given expected limited interference with hunting practices resulting from changes in access to and quantity of hunting resources. Changes in visual quality are not expected to be substantial enough to interfere with the ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction and feeling of cultural distinctiveness while hunting in the vicinity of the Project. How this effect is experienced is difficult to predict and will vary from individual to individual.

21.8.5.3 Potential Effects on Gitxaala Current Gathering Practices

21.8.5.3.1 Location of Current Gathering Practices

Changes in the quantity of, lands, waters, and resources used for terrestrial gathering purposes may result in displacement of Aboriginal peoples from preferred gathering locations. Interference with marine access to preferred terrestrial gathering sites may also result in locational change. Key locations include Lelu Island and gathering sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

The Gitxaala TUS identified berry gathering practices on Lelu Island and seaweed gathering in the waters surrounding Lelu Island (Section 21.8.1.3). Preferred gathering locations were not identified, however berry picking was also noted to occur near Port Edward, Smith Island, and along the coast of the Tsimshian Peninsula among others. Seaweed gathering also occurs along the west coast of Stephens Island, the Rachel and Lucy Islands, and Greentop Inlet.

The Project is expected to affect the location of Gitxaala First Nation members' terrestrial gathering practices in relation to Lelu Island.

21.8.5.3.2 Timing of Current Gathering Practices

Changes in access to land and resources for terrestrial gathering may result in changes to the preferred timing of Aboriginal peoples' terrestrial gathering activities. Aboriginal peoples may avoid gathering in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with marine access to gathering sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

The Gitxaala TUS identified berry gathering practices on Lelu Island (Section 21.8.1.3) and the ability to continue berry picking on Lelu Island will be eliminated if the Project goes ahead. Preferred gathering locations at non-Lelu Island sites were not identified; however, berry picking was also noted to occur near Port Edward, Smith Island, and along the coast of the Tsimshian Peninsula among others.

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The Project is not expected to affect the timing of Gitxaala members' gathering practices at locations other than Lelu Island.

21.8.5.3.3 Effort Involved in Current Gathering Practices

Interference with access to lands and resources for gathering may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred terrestrial gathering locations. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect gathering effort but may increase effort if it leads Aboriginal people to shift their gathering locations.

The Gitxaala TUS identified berry gathering practices on Lelu Island (Section 21.8.1.3). Preferred gathering locations were not identified, however berry picking was also noted to occur near Port Edward, Smith Island, and along the coast of the Tsimshian Peninsula among others.

The Project is expected to increase the effort involved in Gitxaala First Nation's terrestrial gathering practices for members currently using Lelu Island as a preferred site.

21.8.5.3.4 Success of Current Gathering Practices

Changes in the quantity of lands and resources available for gathering during construction and operations could reduce the overall success of Aboriginal peoples' gathering efforts. Gathering success may also be reduced to the extent that interference with routes of access to gathering locations reduces the total amount of time available for gathering activities. If Aboriginal peoples move to alternative gathering locations due to interference with access or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Reductions in gathering success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative gathering sites for particular individuals and/or families.

The Gitxaala TUS identified berry gathering practices on Lelu Island (Section 21.8.1.3). Preferred gathering locations were not identified, however berry picking was also noted to occur near Port Edward, Smith Island, and along the coast of the Tsimshian Peninsula among others.

The Project is expected to affect the success of Gitxaala First Nation members' terrestrial gathering practices by a small amount, given the removal of Lelu Island as a gathering location.

21.8.5.3.5 Satisfaction with Current Gathering Practices

Changes in access to preferred gathering locations, quantity of lands and resources used for gathering purposes, and visual quality may affect the extent to which Aboriginal gathering practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred terrestrial gathering locations may affect Aboriginal peoples' ability to collect TEK and to transmit

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such knowledge to other members. Reduced opportunities to gather for particular individuals and/or families may reduce opportunities for social and familial bonding.

The Gitxaala TUS identified berry gathering practices on Lelu Island (Section 21.8.1.3). Preferred gathering locations were not identified, however berry picking was also noted to occur near Port Edward, Smith Island, and along the coast of the Tsimshian Peninsula among others.

Gitxaala First Nation members' aesthetic satisfaction while gathering in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to undertake gathering activities on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who use Lelu Island for gathering purposes, if those members do not have access to alternative gathering sites. To the extent that members experience reduced gathering success, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity.

21.8.5.4 Potential Effects on Gitxaala Current Use of Spiritual Sites and Cultural Landscapes

21.8.5.4.1 Location of Current uses of Spiritual Sites and Cultural Landscapes

Removal of spiritual sites and cultural landscape resources on or near Lelu Island will displace Aboriginal peoples' use of these sites and features. Interference with marine access to spiritual sites and cultural landscapes, and disruption of sensory environment (visual quality), is not expected to result in locational change, as access will not be precluded and affinities for particular spiritual and ceremonial sites are assumed to be strong. Key locations within the LAA include sacred Gitxaala places around Stapledon Island and the east coast of Lelu Island. Other sacred places within the RAA include the Prince Rupert Harbour and Butze Rapids (Table 21.8-5).

Gitxaala First Nation identifies spiritual sites and cultural landscapes in the following locations: on the Northern point of Porcher Island; Kloiya; at the Butze Rapids; in the Prince Rupert Harbour; around Stapledon Island and the East coast of Lelu Island; at Casey Point, on the West coast of Kaien Island; in Sourdough Bay; in Tsum Tsudai Inlet; by Veitch Point; and through the Telegraph Passage and the Inverness Passage (Section 21.8.1.4). Information on the use and frequency of sacred places was not provided to PNW LNG.

Project activities during construction, operations, and decommissioning will restrict Gitxaala First Nation member's use of a spiritual site on the east coast of Lelu Island.

21.8.5.4.2 Timing of Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to spiritual sites and cultural landscapes may result in changes to the preferred timing of Aboriginal peoples' use of these sites and features. Aboriginal peoples may avoid using spiritual sites and cultural landscapes during times (of the day, month, and year) when project activities interfere with marine access to these sites (i.e., during construction activities and associated marine traffic).

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Gitxaala First Nation has identified spiritual sites and cultural landscapes accessed via waters in Chatham Sound (Section 21.8.1.4). Interference with access to these sites due to project-related shipping (one ship per day) is not expected to be sufficient to alter the timing of members' use of these sites.

21.8.5.4.3 Effort Required for Current Use of Spiritual Sites and Cultural Landscapes

Interference with access to spiritual sites and cultural landscapes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach key sites and features. Removal of traditional use sites may result in increased effort for Aboriginal peoples currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to be sufficient to prompt Aboriginal people to shift the locations where they use spiritual sites and cultural landscapes, due to the unique significance of such sites and features. Interference with access to these sites due to project-related shipping (one ship per day) is not expected to be sufficient to increase members' effort to access these sites.

Gitxaala First Nation has identified spiritual sites and cultural landscapes accessed via waters in Chatham Sound (Section 21.8.1.4). Interference with access to these sites due to project-related shipping (one ship per day) is not expected to be sufficient to alter the timing of members' use of these sites.

21.8.5.4.4 Success of Current Use of Spiritual Sites and Cultural Landscapes

Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.

21.8.5.4.5 Satisfaction with Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to, availability of, and sensory environment for spiritual sites and cultural landscapes may affect the extent to which Aboriginal use of these sites and features satisfy expectations relating to aesthetic and spiritual experiences, TEK, and cultural distinctiveness and continuity. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural and cultural environment. Interference with access to and availability of spiritual sites and cultural landscapes may affect Aboriginal peoples' ability to collect TEK and to transmit cultural knowledge to other members.

Gitxaala Nation member's aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use a spiritual site on the east coast of Lelu Island.

21.8.6 Mitigation Measures for Current Aboriginal Use

PNW LNG will apply the following mitigation measures to minimize project-related effects on Current Aboriginal Use described in Section 21.8.5).

Specific to the assessment concerns regarding pathway components and mitigations, Table 21-31 describes how Current Aboriginal Use practices and project components will be mitigated.

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Table 21-31 Measures to Mitigate Potential Effects to Gitxaala’s Current Aboriginal Use

Potential Effect	Mitigations
Current Fishing Practices	<p>The project changes, including a suspension bridge and relocated trestle and berth, result in no infrastructure located on Flora Bank and eliminate the need for dredging on Agnew Bank.</p> <p>The project changes reduce the effects of infrastructure construction and dredging upon navigation. The jetty length (including the suspension bridge and trestle) will be approximately 300 m longer; however vessels will continue to be able to pass underneath it.</p> <p>The project changes will result in a much reduced volume of sediment for ocean disposal. The resulting dispersal area is significantly reduced, reducing the impact, or perceived impact, on Brown Passage.</p> <p>Section 13 contains a description of mitigation measures relating to marine resources, including those for:</p> <ul style="list-style-type: none"> • The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2) • Changes to fish habitat (Section 13.5.3.2) • The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2) • Changes in behaviour of fish and marine mammals (Section 13.5.5.2).
Current Hunting and Trapping Practices	<p>Mitigations related to impacts to current hunting and trapping practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Gitxaala Nation regarding restricted access to Lelu Island and the resulting effects on Gitxaala Nation cultural practices.</p> <p>PNW LNG plans shift rotation during construction as well as recreational facilities at work camps to help reduce the impacts of increased workers on local recreation and resources.</p>

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Potential Effect	Mitigations
Current Gathering Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Gitxaala Nation regarding restricted access to Lelu Island and the resulting effects on Gitxaala Nation cultural practices.</p>
Current Use of Spiritual Sites and Cultural Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Gitxaala Nation regarding restricted access to Lelu Island and the resulting effects on Gitxaala Nation’s cultural practices.</p>

Discussions are under way with Gitxaala Nation to identify appropriate means with which to accommodate effects to project effects that cannot be completely mitigated (see Section 27).

21.8.7 Residual Effects on Current Aboriginal Use

Following the mitigation measures described and referenced in Section 21.8.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island as the entire island will be leased to the Project by the federal Prince Rupert Port Authority.

However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources, except for limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting location may be reduced during construction due to alteration of movement associated

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with noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-32 describes expected residual effects following implementation of the above mitigation measures.

Table 21-32 Residual Effects to Current Aboriginal Use

Effect	Project Phase	Description of Residual Effect
Current Fishing Practices		
Location	C, O, D	Gitxaala harvesters may temporarily shift the location of salmon, clams, and crab harvesting in the waters around Lelu Island, Flora Bank and Porpoise Channel during construction. Increased marine traffic during construction and perhaps, any Port-approved decommissioning may result in temporary site avoidance for fishers in waters surrounding Lelu Island. Harvesters may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route.
Timing	O	Gitxaala First Nations members may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.
Effort	C, D	Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of and access to preferred fishing sites.
Success	C, O	No predicted residual effects
Satisfaction	C, O, D	A residual effect is predicted as visual quality changes may affect the degree of members' aesthetic satisfaction and feeling of cultural distinctiveness while fishing in the vicinity of the Project.
Current Hunting and Trapping Practices		
Location	C, O, D	Gitxaala hunters who currently hunt deer around Porpoise Channel are expected to shift the location of hunting activities during construction, operations, and decommissioning. The location of seal and sea lion harvests may shift, if these species alter their behaviour in response to construction-related noise and noise related to shipping traffic.
Timing	C, O, D	Members may alter the timing of marine hunting to avoid noise during construction and any Port-required decommissioning (time of week and/or month) and interactions with shipping during operations (time of day). Seasonal changes are not expected.
Effort	C, O, D	Gitxaala member's currently hunting deer around Porpoise Channel may need to increase effort to obtain these resources from alternative locations. Members may also need to increase effort to hunt seals and sea lion due to temporary changes in distribution as a result of construction noise.
Success	C, O, D	Project-related interference with Gitxaala members' access to terrestrial and marine hunting locations is not expected to reduce overall hunting time and therefore success rates.
Satisfaction	C, O, D	Visual quality changes may affect the degree of members' aesthetic satisfaction and feeling of cultural distinctiveness while hunting in the vicinity of the Project.

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Effect	Project Phase	Description of Residual Effect
Current Gathering Practices		
Location	C, O, D	The Project is expected to affect the location of Gitxaala First Nation member's terrestrial gathering practices in relation to Lelu Island.
Timing	n/a	No predicted residual effects.
Effort	n/a	The Project is expected to increase the effort involved in Gitxaala First Nation's terrestrial gathering practices for members currently using Lelu Island as a preferred site.
Success	n/a	The Project is expected to affect the success of Gitxaala First Nation members' terrestrial gathering practices by a small amount, given the removal of Lelu Island as a gathering location.
Satisfaction	n/a	Gitxaala First Nation members' aesthetic satisfaction while gathering in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able undertake gathering activities on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who use Lelu Island for gathering purposes, if those members do not have access to alternative gathering sites. To the extent that members experience reduced gathering success, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity.
Current Use of Spiritual Sites and Cultural Landscapes		
Location	C, O, D	Project activities will restrict Gitxaala First Nation members' use of a spiritual site on the east coast of Lelu Island.
Timing	n/a	No predicted residual effects.
Effort	n/a	No predicted residual effects.
Success	n/a	Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes.
Satisfaction	C, O, D	Gitxaala Nation members' aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use a spiritual site on the East coast of Lelu Island.

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21.8.8 Assessment of Residual Effects on Gitxaala Current Aboriginal Use

21.8.8.1 Assessment of Residual Effects on Current Fishing Practices

21.8.8.1.1 Characterization of Residual Effects on Fishing Practices

The residual effect on preferred locations for fishing practices is rated as **low**. The Project will only affect small portions of wider fishing areas and other portions of the fishing areas will remain available. Fishers are expected to move to different locations within existing fishing areas, rather than move to new fishing areas, resulting in a small change from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur as a **multiple regular event** during construction, operations and decommissioning shipping activities (if required by the Port). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Gitxaala Nation fishers are rated as moderately vulnerable to changes in fishing locations (**moderate context**).

The residual effect on timing of fishing practices is rated as **low**. Alteration of the timing of fishing activities in relation to project shipping schedules is expected to take place for only some fishers and would only occur at one period during the day. The residual effect is expected to be limited to operations (**medium-term**) and would be a **multiple regular event**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Gitxaala Nation fishers are rated as moderately vulnerable to changes in the timing of fishing practices (**moderate context**).

The residual effect fishing effort is rated as **low**. The extent of locational change is expected to be small and will result in only a small change from existing baseline conditions for fishing effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Gitxaala First Nation fishers are rated as moderately vulnerable to changes in fishing effort (**moderate context**).

The residual effect on satisfaction with fishing practices related to aesthetic experiences while fishing in the vicinity of the Project is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala Nation fishers are rated as moderately vulnerable to changes in fishing satisfaction (**moderate context**).

21.8.8.1.2 Significance of Residual Effects on Fishing Practices

Residual effects on Gitxaala Nation's fishing practices are assessed as **not significant**: The residual effects have low magnitude, local geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Gitxaala Nations' overall fishing practices.

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21.8.8.1.3 Likelihood and Confidence for Residual Effects Conclusions on Fishing Practices

The likelihood that residual effects on fishing locations, timing, effort, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific data about Gitxaala Nation's Current Aboriginal Use.

21.8.8.2 Assessment of Residual Effects on Current Hunting and Trapping Practices

21.8.8.2.1 Characterization of Residual Effects on Hunting and Trapping Practices

The residual effect on preferred locations for hunting and trapping practices is rated as **low**. The Project is expected to result in the relocation of hunting efforts for only a small number of individuals, notably deer hunters. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala Nation hunters are rated as moderately vulnerable to changes in hunting locations (**moderate context**).

The residual effect on timing of hunting and trapping practices is rated as **low**. Alteration of the timing of hunting and trapping activities in relation to construction activities and project shipping schedules is expected to take place for only some hunters; timing effects related to shipping would only occur at one period during the day. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**) and would be **continuous** during construction and a **multiple regular event** during operations. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala Nation fishers are rated as moderately vulnerable to changes in the timing of hunting and gathering practices (**moderate context**).

The residual effect for hunting effort is rated as **low**. The extent of locational change for deer, sea lion and seal hunting is expected to be small and will result in only a small change from existing baseline conditions for hunting effort. Increased effort to hunt seals and sea lion is not expected to be substantial, given the ability of hunters to plan on the basis of predictable periods of project-related underwater noise. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala Nation fishers are rated as moderately vulnerable to changes in hunting and trapping effort (**moderate context**).

The residual effect on hunting and trapping success is rated as **low**. The Project is not predicted to affect the population viability of these species can be harvested at similar rates in alternative locations. The success rate for hunting seals and sea lion is not expected to deviate to a large degree from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala Nation fishers are rated as moderately vulnerable to changes in hunting and trapping success (**moderate context**).

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The residual effect on satisfaction with hunting and trapping practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. Lelu Island has not been identified as particularly important site for the collection and transmission of TEK. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala Nation harvesters are rated as moderately vulnerable to changes in hunting and trapping satisfaction (**moderate context**).

21.8.8.2.2 Significance of Residual Effects on Hunting and Trapping Practices

Residual effects on Gitxaala Nation's hunting and trapping practices are assessed as **not significant**: The residual effects have low to medium magnitude, local geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in overall hunting and trapping practices.

21.8.8.2.3 Likelihood and Confidence for Residual Effects Conclusions on Hunting and Trapping Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific data about Gitxaala Nation's Current Aboriginal Use.

21.8.8.3 Assessment of Residual Effects on Current Gathering Practices

21.8.8.3.1 Characterization of Residual Effects on Current Gathering Practices

The residual effect on preferred locations for gathering practices is rated as **moderate**. The Project is expected to result in the relocation of gathering efforts for only small number of individuals. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning if Lelu Island is returned to a natural state. Gitxaala First Nation members are rated as moderately vulnerable to changes in gathering locations (**moderate context**).

The residual effect on gathering effort is rated as **low**. The extent of locational change gathering is expected to be small and will result in only a small change from existing baseline conditions for gathering effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning if Lelu Island is returned to a natural state. Gitxaala First Nation members are rated as moderately vulnerable to changes in gathering effort (**moderate context**).

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The residual effect on gathering success is rated as **low**. Removal of Lelu Island as a gathering site is expected to result in a small reduction in the overall quantity of gathered resources within the LAA. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning if Lelu Island is returned to a natural state. Gitxaala First Nation members are rated as moderately vulnerable to changes in gathering success (**moderate context**).

The residual effect on satisfaction with gathering practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. TEK in LAA is not expected to be highly specific to Lelu Island. Reduced opportunities for social bonding in relation to gathering practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning if Lelu Island is returned to a natural state. Gitxaala First Nation members are rated as moderately vulnerable to changes in gathering satisfaction (**moderate context**).

21.8.8.3.2 Significance of Residual Effects on Current Gathering Practices

Residual effects on Gitxaala First Nation's gathering practices are assessed as **not significant**: The residual effects have low to medium magnitude, local geographic extent, medium-term duration, and are reversible if, however unlikely, the Port permits full restoration of industrial lands (e.g., Lelu Island) to a natural state. The residual effects are predicted to result in little discernable change in Gitxaala First Nations' overall gathering practices.

21.8.8.3.3 Likelihood and Confidence for Residual Effects Conclusions on Current Gathering Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific data about Gitxaala Nation's Current Aboriginal Use.

21.8.8.4 Assessment of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.8.8.4.1 Characterization of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

The residual effect on preferred locations for use of spiritual sites and cultural landscapes is rated as **moderate**. Lelu Island will no longer provide a location for the use of a spiritual site on the east shore of Lelu Island. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA**

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and may be **irreversible**. Gitxaala Nation members are rated as highly vulnerable to changes in locations for the use of spiritual sites and cultural landscapes (**high context**).

The residual effect on timing of use of spiritual sites and cultural landscapes is rated as **moderate**. Alteration of the timing of activities in the vicinity of the Project in relation to construction activities is expected to vary from baseline conditions. The residual effect is expected to occur through the duration of construction and decommissioning (**medium-term**) and would be **continuous**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Gitxaala First Nation members are rated as moderately vulnerable to changes in the timing of use of spiritual sites and cultural landscapes (**moderate context**).

The residual effect on satisfaction with use of spiritual sites and cultural landscapes practices is rated as **moderate**. Alteration of aesthetic experiences and the ability to collect and teach TEK in the vicinity of the Project are predicted to be limited. However, use of such sites is assumed to be highly important to Gitxaala First Nation members. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will be **irreversible** after decommissioning. Gitxaala Nation members are rated as highly vulnerable to changes in satisfaction with the use of spiritual sites and cultural landscapes (**high context**).

21.8.8.4.2 Significance of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes
Residual effects on Gitxaala First Nation's current use of spiritual sites and cultural landscapes are assessed as **not significant**: The residual effects have moderate magnitude, LAA extent, medium-term duration, will occur continuously, and range from reversible to irreversible. The residual effects are predicted to result in discernible but not consequential changes to Gitxaala Nation's overall uses of spiritual sites and cultural landscapes.

21.8.8.4.3 Likelihood and Confidence for Residual Effects Conclusions on Current Use of Spiritual Sites and Cultural Landscapes

The likelihood that residual effects on location, timing, and satisfaction with respect to current use of spiritual sites and cultural landscapes will occur is rated as **high**. There is a high probability of effects relating to the loss of a spiritual site on Lelu Island, and the removal of CMTs on Lelu Island.

Confidence in the predictions is rated as **high**. The assessments are based on detailed site-specific data about Gitxaala Nation's Current Aboriginal Use.

21.8.9 Summary of Residual Effects on Current Aboriginal Use

Table 21-33 summarizes the residual effects characterization for Gitxaala Nation Current Aboriginal Use VCs.

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Table 21-33 Gitxaala Nation: Summary of Current Aboriginal Use Residual Effects Characterization, Significance, Likelihood and Confidence

Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Fishing Practices									
Location	L	LAA	MT	R	MR	M	N	M	H
Timing	L	LAA	MT	R	MR	M	N	M	H
Effort	L	LAA	MT	R	C	M	N	M	H
Success	-	-	-	-	-	-	-	-	-
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Hunting and Trapping Practices									
Location	L	LAA	MT	R	C	M	N	M	H
Timing	L	LAA	MT	R	C, MR	M	N	M	H
Effort	L	LAA	MT	R	C	M	N	M	H
Success	L	LAA	MT	R	C	M	N	M	H
Satisfaction	L	LAA	MT	R	C	M	N	M	H
Current Gathering Practices									
Location	M	LAA	MT	R	C	M	N	M	H
Timing	L	LAA	MT	R	C	M	N	M	H
Effort	L	LAA	MT	R	C	M	N	M	H
Success	L	LAA	MT	R	C	M	N	M	H
Satisfaction	L	LAA	MT	R	C	M	N	M	H

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Use of Spiritual Sites and Cultural Landscapes									
Location	M	LAA	MT	I	C	H	N	H	H
Timing	M	LAA	MT	R	C	H	N	H	H
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	M	LAA	MT	I	C	H	N	H	H
<p>KEY</p> <p>Context: L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment H = High resilience: occurs in viable ecosystem and/or undisturbed environment</p> <p>Magnitude: N = Negligible: no detectable change on individuals of a regional wildlife population or hectares of habitat L = Low: change detectable on a few individuals or hectares of habitat (i.e., < 10 ha) in a regional population M = detectable change on many individuals or hectares of habitat (i.e., 10 to 250 ha) in a regional population H = High: detectable change on the majority of individuals or hectares of habitat (> 250 ha) in a the regional population</p> <p>Extent: PDA = project development area LAA = local assessment area RAA = regional assessment area</p> <p>Duration: ST = Short-term: effect less than one breeding season/generation MT = Medium-term: effect occurs for several breeding seasons/generations or a project phase LT = Effect occurs across multiple breeding seasons/generations or project phases P = Permanent: Effect permanent and unlikely to recover following project decommissioning and reclamation</p> <p>Reversibility: R = Reversible: will recover during lifetime of the Project or after project decommissioning and reclamation I = Irreversible: effects will persist after project decommissioning and reclamation</p> <p>Frequency: S = Single event MI = Multiple, irregular event MR = Multiple, regular event C = Continuous</p> <p>Likelihood: <i>Based on professional judgment.</i> L = Low probability of occurrence M = Medium probability of occurrence H = High probability of occurrence</p> <p>Significance: S = Significant N = Not significant</p> <p>Confidence: <i>Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation, and assumptions made.</i> L = Low level of confidence M = Moderate level of confidence H = High level of confidence</p>									

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**21.9 ASSESSMENT OF EFFECTS ON KITSUMKALUM FIRST NATION'S
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21.9.1 Baseline Conditions Baseline Conditions for Current Aboriginal Use

Information regarding Kitsumkalum First Nation's Current Aboriginal Use described below is derived from the *Kitsumkalum First Nation Traditional Use Study for the Pacific Northwest Liquefied Natural Gas Project* (Crossroads CRM 2014) and the *Kitsumkalum Community Marine Use Plan* (Kitsumkalum First Nation 2014).

21.9.1.1 Current Fishing Practices

Kitsumkalum First Nation identifies the following traditional fishing and marine gathering resources in the study area:

- Halibut
- Black cod
- Ling cod
- Herring
- Herring Eggs
- Herring Eggs on Hemlock Branches
- Coho Salmon
- Chum Salmon
- Pink Salmon
- Sockeye Salmon
- Spring Salmon
- Steelhead
- Eulachon
- Red Snapper
- Abalone
- Crab
- Spider Crab
- Mussels
- Clams
- Cockles
- Sea Cucumber
- Sea Prune
- Seaweed/Kelp.

Traditionally, Kitsumkalum First Nation utilized an ownership and resource management framework associated with the hereditary chief, house, and potlatch systems. For example, cod and halibut banks, sea lion and seal rocks, kelp beds, sea bird sites, and specific stretches of beach were owned by various house groups. Kitsumkalum First Nation continues to adhere to this system.

Kitsumkalum First Nation members have noted their harvesting of salmon and eulachon between Lelu Island and Inverness Passage. Traditionally, sockeye, coho, chum, spring, pink, and steelhead were fished in the Skeena River and its tributaries. PNW LNG assumes that Kitsumkalum First Nation continues to fish for these species. The Kitsumkalum First Nation fishes for eulachon in the Skeena near tidal limits below Kwinitza and in other tributaries of the Skeena such as the Khyex, Ecstall, Kasiks, and Scotia Rivers. There are eulachon fishing spots closer to Kitsumkalum; however these sites are not often fished anymore due to high levels of industrial pollution that has led to a decline in quantity and quality.

The Kitsumkalum have identified the area around Flora Bank and Horsey Banks as being critical salmon habitat that could be impacted by the Project, but also may impact salmon returns in the Skeena watershed.

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PNW LNG has not been provided with information relating to Kitsumkalum First Nation’s AFS fisheries licenses, as this information is no longer currently available (see Section 21.4.2.3). The *Kitsumkalum Community Marine Use Plan* (Kitsumkalum First Nation 2014) includes fisheries management categories for salmon, eulachon, roe-on-kelp, crab, abalone, bivalves (clams and cockles), groundfish trawl, and recreational fisheries.

21.9.1.2 Current Hunting and Trapping Practices

Kitsumkalum First Nation identifies the following traditional hunting and trapping resources in the study area:

- Sea Otter
- Sea Lion
- Fur Seal
- Harbour Seal
- Beaver
- Duck
- Geese
- Grouse
- Deer
- Porcupine.

Traditionally, the Kitsumkalum hunted primarily within the Kitsumkalum, Skeena, and Ecstall Valleys and certain coastal islands. As with the fishing resources, different house groups owned their respective house territories and hunting and trapping resources. Traditionally, Kitsumkalum First Nation utilized an ownership and resource management framework associated with the hereditary chief, house, and potlatch systems.

Kitsumkalum First Nation express concerns about potential effects of the Project on wildlife and wildlife habitat on Lelu Island, the ability of members to use Lelu Island as a base from which to hunt marine mammals such as seal, sea lion, otter, and avifauna, and on access to hunting grounds within the RAA and LAA.

PNW LNG has not been provided with specific information about Kitsumkalum First Nation’s preferred hunting and trapping sites and the species harvested at those sites.

21.9.1.3 Current Gathering Practices

Kitsumkalum First Nation identifies the following traditional terrestrial logging, gathering, and berry picking resources in the study area:

- Yellow Cedar
- Red Cedar
- Cedar Bark
- Cedar Strips
- Shredded Cedar
- Woven Cedar
- Cedar Pitch
- Pine
- Juniper
- Bog Cranberry
- Salal Berries
- Red Huckleberry
- Saskatoon
- Labrador Tea
- Bog Laurel
- Skunk Cabbage
- Moss
- Juniper

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- Spruce
- Hemlock
- Hemlock Bark
- Bunchberry
- Deer Fern
- Fern
- Fern Root.

Kitsumkalum First Nation peoples traditionally utilized forest resources primarily for building materials, and continue to utilize forest resources for medicines, firewood, clothing, and art materials. Berries were a staple of the diet and were collected throughout the summer and fall. Many different types of berries were harvested from the land throughout the summer and fall. In the summer months, salal, salmonberry, soapberry, strawberry, saskatoons, raspberries, thimbleberries, and blueberries can be picked. In the late summer and fall, pacific crabapple, chokecherry, bearberry, rosehips, bunchberry, low and high bush cranberries were harvested. Cloudberry can be found within the study area. Medicinal resources identified on Lelu Island include Labrador Tea, Juniper, and Fern.

Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island.

21.9.1.4 Current Use of Spiritual Sites and Cultural Landscapes

Kitsumkalum First Nation considers culture and knowledge to be an ideological space composed of social and spiritual connections between animals, environments, and humans. The Nation considers lands and waters to be foundational to worldview and define a “sense of place.” Kitsumkalum stories, songs, and symbols are connected to particular locations.

Kitsumkalum First Nation has expressed concerns about potential impacts on Lelu Island as an important cultural and spiritual place, and about interference with access to other important places.

21.9.1.5 Current Transportation Practices

Kitsumkalum First Nation has emphasized the importance of Chatham Sound, Skeena River, the Ecstall River, and Port Essington (Kitsumkalum Band 2012). Passage and their use of Inverness Passage as an important travel route (Kitsumkalum Indian Band, pers. comm. 2013).

Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on members’ access to preferred Current Aboriginal Use sites, including access through Inverness Passage and Lelu Slough, access to the Skeena River across Flora Bank, and areas of the shipping route.

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21.9.2 Assessment of Effects on Pathway Valued Components

21.9.2.1 Access to Lands, Waters, and Resources Used for Traditional Purposes

Marine-based access to traditional use sites for fishing, hunting, trapping, gathering, spiritual and ceremonial practices, and temporary dwellings may be affected to the extent that access routes overlap with project components and activities (see Section 15). Project components and activities are not expected to interfere with land-based access to preferred traditional use sites.

Access through Lelu Slough is limited to high tide events and may be limited periodically during construction of the bridge between Lelu Island and the mainland. North-south navigation between Lelu Island and Flora Bank is limited to high tide events and may be periodically limited during construction of the suspended bridge-trestle. Associated construction activities with respect to the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound may also temporarily impede normal access to the north-south channel just west of Lelu Island. Project-related vessel traffic during construction may occasionally alter preferred traditional access, particularly in and out of Porpoise Channel and through Lelu Slough. Activities related to dredging and disposal at sea may occasionally interfere with traditional marine navigation. Marine navigation is regulated by the Port of Prince Rupert and therefore project construction-related disruptions will be managed so they do not unduly inconvenience traditional aboriginal navigation use in and around Porpoise Channel.

During operations, local traditional navigation will not be affected through Lelu Slough since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. The suspended bridge-trestle extending over Flora Bank will have a clearance of approximately 11 metres under a portion of the suspended bridge-trestle near Lelu Island to allow high tide access to the current north-south channel and local traditional navigation travel route just west of Lelu Island.

Large ship navigation from the Pacific and into Chatham Sound may be temporarily affected when LNG carriers are being piloted into Port although only one LNG carrier per day/350 per year are estimated to berth at the terminal. Local navigation may also be affected by temporary weather-related LNG carriers using Port of Prince Rupert temporary anchorages. The anchorage locations will be identified by the PRPA and be within the Prince Rupert Inner Harbour and Chatham Sound.

During decommissioning, in the unlikely event the Port approves the removal of project infrastructure on industrial port lands and waters, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may temporarily affect Aboriginal marine users.

Kitsumkalum First Nations members currently travel through waters in the vicinity of the Project, including Inverness Passage, Flora Bank, and surrounding areas (Section 21.9.1.5).

Kitsumkalum First Nation members' marine-based access to traditional use sites may experience a degree of temporary interference, but will not at any time be eliminated.

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21.9.2.2 Quantity of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction, operations, and decommissioning hold the potential to affect the quantity of lands, waters, and resources used for fishing, hunting and trapping, gathering, spiritual and ceremonial activities.

Construction of project components such as the road access bridge between Lelu Island and the mainland, the MOF and turning basin in Porpoise Channel, as well as the suspended bridge-trestle over Flora Bank, the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound will temporarily render these locations unavailable for fishing, marine gathering, and marine hunting and trapping. Upon completion of construction, passage under the road access bridge and the suspended bridge-trestle across Flora Bank will be possible at high tide throughout operations, however, it is envisioned that regulatory authorities may require marine safety exclusion zones to be put in place along and underneath the suspended bridge-trestle and along the pipe pile supported jetty on Agnew Bank. Marine traffic will likely only be possible right near Lelu Island where the suspended bridge-trestle allows for safe vessel passage for ships up to a gill netter in size at high tide.

Kitsumkalum First Nation members fish for salmon and eulachon between Lelu Island and Inverness Passage (Section 21.9.1.1)

Consequently, the quantity of marine waters available for Kitsumkalum First Nation members' salmon, and eulachon fishing and seaweed gathering sites may be somewhat reduced during construction in the waters around Lelu Island. Most of the project marine infrastructure is constructed on the west, north and north sides of Lelu Island.

Project components and activities during construction, operations, and perhaps, at decommissioning will remove Lelu Island as a location for terrestrial hunting, trapping, gathering, and spiritual and ceremonial activities. Lelu Island is approximately 192 ha, and the PDA (the area within the project development area on Lelu Island and security 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 (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island). Thirty two ha (17%) of Lelu Island will remain outside of the fence line.

Kitsumkalum First Nation have expressed concerns about potential effects of the Project on wildlife and wildlife habitat on Lelu Island, the ability of members to use Lelu Island as a base from which to hunt marine mammals such as seal, sea lion, otter, and avifauna, and on access to hunting grounds within the RAA and LAA (Section 21.9.1.2). Kitsumkalum First Nation has expressed an interest in using Lelu Island as a base from which to hunt marine mammals such as seal, sea lion, and otter. Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island (Section 21.9.1.3). Kitsumkalum First Nation has expressed concerns about potential impacts

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on Lelu Island as an important cultural and spiritual place, and about interference with access to other important places (Section 21.9.1.4)

PNW LNG has not been provided with site-specific information about Kitsumkalum First Nations' use of Lelu Island. However, given concerns raised by the Nation with respect to Lelu Island, the Project is expected to have the potential to reduce the quantity of land available for Kitsumkalum First Nation members' terrestrial hunting (deer and potentially other species), terrestrial gathering (species and practices to be confirmed), spiritual and ceremonial practices on Lelu Island.

Construction and operations activities will, with respect to the use of Lelu Island, reduce the quantity of terrestrial resources within Aboriginal peoples' preferred use locations due to direct mortality and alteration of movement. Mortality of birds, amphibians, and small mammals on Lelu Island will be limited to a small number of individuals since vegetation clearing will optimally be completed outside of breeding periods when wildlife are more likely to be occupying nests, dens, or breeding ponds (Section 11.5.3.4).

Mortality of grizzly bear and wolverine *luscus* subspecies caused by vehicle collisions and human-wildlife interactions is expected to be negligible because these species are not found on Lelu Island and are unlikely to occur in the LAA. Marine birds may die due to collisions with LNG facility structures after they are constructed and regularly lighted for safety reasons during operations. Project-related effects on wildlife movement from site preparation and construction of the LNG facility, operation of construction equipment, and installation of the mainland road access bridge and access road, will affect some individuals (Section 11.5.4.3) although it is anticipated that most wildlife will move away from an active, noisy and lighted large industrial site. Project-related effects on marine bird movement from the marine terminal, MOF, and bridge are expected to be negligible.

The Kitsumkalum First Nation have expressed concerns about potential effects of the Project on wildlife and wildlife habitat on Lelu Island, the ability of members to use Lelu Island as a base from which to hunt marine mammals such as seal, sea lion, otter, and avifauna, and on access to hunting grounds within the RAA and LAA (Section 21.9.1.2).

The quantity of terrestrial resources available to Kitsumkalum First Nation members' within their preferred use locations is expected to be reduced to a small extent. Specifically, members may experience a small reduction in the number of ducks and geese available for harvesting. Movement of animals from Lelu Island during construction is immaterial with respect to effects on the quantity of terrestrial resources available to Kitsumkalum First Nation as Lelu Island will be removed as a use site.

Construction and operations activities hold the potential to reduce the quantity of marine resources used by Aboriginal peoples within preferred locations due to direct mortality and alteration of movement. Injury and mortality of fish due to blasting during construction is expected to be limited in extent (Section 13.5.4.3). Blasting activities during marine construction will be undertaken in accordance with DFO blasting guidelines in order to avoid harm to marine mammals. In addition, most species of commercial importance are expected to be rarely present or absent from the blast area. Resident Dungeness crabs will be relocated prior to blasting. Injury or mortality due to 'Disposal At Sea' deposition at Brown Passage associated with dredging

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the MOF and Turning Basin is expected to affect only immobile species in close proximity to these activities. Increases in TSS levels associated with vessel manoeuvring, dredging at the MOF, and disposal at sea are not expected to result in injury or mortality to fish as marine organisms (including juvenile salmon) are adapted to seasonal variations in TSS levels, levels are below those that cause lethal effects to salmon and other species, and will be limited in extent and duration. In any event TSS will be monitored during dredging and deposition.

Any existing sediment chemical compounds (e.g., dioxins and furans) exposed during MOF dredging during construction or vessel berthing and departure during operations are not expected to pose to any toxicological risks to marine biota (Section 13.5.2.5) or to human health from the consumption of marine animals as these sediments have levels of contamination well below regulatory thresholds. Underwater noise from impact pile driving can be mitigated using a bubble curtain, therefore, the underwater noise is not expected to result in injury or mortality to fish or marine mammals. In the rare case that an impact hammer is used to install piles, and a bubble curtain is used, cetaceans within 1.0 km of the sound source may be exposed to sound levels capable of causing permanent auditory injury. Potentially affected species include harbour porpoise, Dall's porpoise, Northern resident and Bigg's killer whales, humpback whale, Loughlin's Northern sea lion, harbour seal, and Pacific white-sided dolphin. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The relative number of marine resources available in preferred hunting sites in the project marine infrastructure areas around Lelu Island may be reduced due to altered distribution of fish and marine mammal populations (Section 13.5.5.3). There is potential for fish (e.g., eulachon, herring, rockfish) to react to construction noises; however, if such reactions occur, they are likely to be spatially and temporally limited. Salmon may show local avoidance of particularly noisy zones (Feist et al. 1996), but this reaction is expected to be limited in spatial extent and short-lived. Pipe pile installation during construction may result in potential residual effects to marine mammal's behavior at distances of up to 15 km. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The transit of LNG carriers into Port and berthing during operations could also affect some marine species' behaviours. Areas of avoidance for Harbour Porpoise may occur within Porpoise Channel and a portion of Prince Rupert Harbour. Because harbour porpoise and other marine mammals in the LAA are important prey species for Bigg's killer whale; potential displacement of these species during pile driving could indirectly result in displacement of Bigg's killer whale. Killer whales might exhibit behavioural response over large areas of the LAA. Modelling results indicate the humpback whales could experience behavioural responses over a radius of 8.9 km at the Triple Island area during ship transits into the Port of Prince Rupert, and, at the marine terminal in Chatham Sound, when the LNG carriers are berthing supported by 4 tugs.

Effects on Loughlin's sea lion may also be a concern near any rookeries (i.e., breeding areas) though none are identified within the project marine infrastructure areas. The severity of threat from LNG carriers coming to, and leaving Port, and to any rookeries along already existing large vessel transit routes from Triple Island to Port at the population-level is "likely low", as this species is described as being able to habituate to chronic disturbances.

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Kitsumkalum First Nation members currently fish for a wide variety of species for commercial and food, social, and ceremonial purposes through the LAA, including salmon and eulachon in the waters around Lelu Island (Section 21.9.1.1). Members fish for a variety of species of salmon, groundfish, crustaceans, and molluscs (Section 21.9.1.1) and hunt for seal, sea lion, and sea otter. PNW LNG has not been provided with specific information regarding Kitsumkalum First Nation's harvesting of these resources, but they may occur in areas potentially impacted by project components and activities.

Project-related reductions in the quantity of fish currently harvested by Kitsumkalum First Nation members within their preferred fishing locations are expected to be negligible. Absolute reductions in the population sizes of harvestable fish species are not expected. Some limited fish movement out of preferred fishing locations may take place during construction activities. The absolute quantity of marine mammals harvested by Kitsumkalum First Nation members is not expected to be reduced by project activities. Kitsumkalum First Nations members may find reduced numbers of sea lions, in preferred harvesting areas during construction due to noise-related alteration of movement.

21.9.2.3 Quality of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction and operations hold the potential to affect the quality of lands, waters and resources for used fishing, hunting, trapping, and gathering. The Project is not expected to result in any adverse effects to the quality of terrestrial country foods.

Dredging during construction of the MOF and turning basin could expose marine species to sediments containing historical deposits of non-toxic (as the levels of contamination in these sediments have been tested as being well below any toxicological thresholds) chemicals (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans - PCDD/Fs) (Section 19.5.2). Although country foods have been tested for any existing dioxin and furan contamination, and the results have shown they are not contaminated, there is perceived potential that MOF dredging could expose additional dioxins and furans and that these chemical contaminants could be further exposed so that they may be at higher concentrations and then accumulate in the tissues of marine country food species and affect human health from the consumption of marine country foods.

The project assessment of these potential effects meets or exceeds the standards imposed by the appropriate regulatory authorities. The overall potential for PCDD/Fs in marine country foods to increase in concentrations is negligible to low. With that said, the Project has committed to on-going country food monitoring over the marine construction phase of the Project to confirm this prediction.

Kitsumkalum First Nations members harvest a wide variety of fish species and marine mammals throughout the LAA, including within the vicinity of Lelu Island (the marine waters between Lelu and Stapledon Islands, over Flora Bank, through Inverness Slough). Kitsumkalum First Nation members fish for groundfish. PNW LNG has not been provided with site specific information about the locations of these fishing activities (Section 21.9.1.1).

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The Project is not expected to affect the quality of resources harvested by Kitsumkalum First Nation members.

21.9.2.4 Sensory Environment for Current Aboriginal Use

Construction, operations, and decommissioning of the Project have the potential to affect the sensory environment within which Aboriginal peoples undertake traditional use activities. Project activities will result in changes to sound levels, ambient light, air quality, and quality of the visual landscape. The Project also has the potential to change perceived safety and solitude for Aboriginal people who frequent areas near the PDA and shipping lanes.

Modelled noise levels during construction are predicted to be below the threshold of human hearing perception on Rachel Islands, Lucy Islands, and Triple Island (Section 8.5.2.3). Construction noise will be audible on Kitson Island, Kinahan Islands, Digby Island, and Smith Island. During operations, project-related noise will be audible on Kitson Island, Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Digby Island, and Smith Island. Noise related to construction and operations is not predicted to exceed Health Canada noise limits (%HA) at any of the modelled sites (Section 8.5.2.3 and 19.5.2.3).

Changes to light levels will occur during all phases of the project activities during daytime and night-time (Section 19.5.2.3) as construction and operational safety is directly related to adequate lighting. A qualitative assessment of the potential effects of changes in ambient light during construction phase indicates that, with mitigation, adverse effects will be avoided. Most construction activities occur during the daytime with limited night-time lighting required. During operations, exterior lighting associated with some project components (e.g., storage tanks, flares) will be visible. Due to the positioning of the marine terminal component of the Project, for the most part, the exterior lighting associated with the terminal itself and the ships will likely not be visible from mainland locations. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment.

Project components and construction and operations activities are expected to affect visual quality as they will alter the topography and vegetation patterns of the project site and the marine areas in which the suspended bridge trestle, pipe-pile supported trestle and marine terminal will be built (Section 17.5.2.2). The Project will also introduce new industrial human interventions that, pending the viewing angle, will be out of scale and not characteristic of the current landscape character of VSUs within the LAA. The project facility and marine terminal will be visible from Kitson Island and Kinahan Islands. LNG carrier ships will be visible from Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Stephens Island, and Melville Island. Effects to visual quality related to the facility and marine terminal are expected to be high magnitude. Effects to visual quality related to shipping operations are predicted to be low to moderate magnitude.

No changes to human health are anticipated from air quality during construction (Section 19.5.2.3). The modelled changes to air quality during operations shows that no criteria air contaminants (CACs) exceed applicable BC Ministry of Environment air quality objectives at any time. This indicates that for the general population, there would be no changes to human health to people exposed to CACs in the air from project

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activities. With that said, the project air emissions will be regulated by the province's Oil and Gas Commission and ambient air, soil and water monitoring in the surrounding area will be monitored during the life cycle of the Project to ensure ambient air and any acidic deposition remains below any regulatory thresholds.

The sensory environment for Kitsumkalum First Nation members' traditional use activities is expected to be affected by changes in visual quality, but not by changes in noise, light, or air quality. In addition, members' perceptions of safety and solitude may be affected due to the presence of project components and activities, and increased presence of marine traffic.

21.9.3 Mitigation Measures for Pathway Valued Components

Mitigation measures for access to traditional use sites include:

- Measures to reduce changes to aboriginal marine navigation (Section 15.5.2.2).

Mitigation measures for potential effects on quantity of lands, waters, and resources for traditional purposes include measures to reduce:

- The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2)
- Changes to fish habitat (Section 13.5.3.2)
- The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2)
- Changes in behaviour of fish and marine mammals (Section 13.5.5.2)
- Terrestrial habitat for wildlife and marine birds, including wetland compensation and fish habitat offsetting (Section 11.5.2.2)
- Mortality risk to terrestrial wildlife and marine birds (Section 11.5.3.3)
- Alteration of movement of terrestrial wildlife and marine (Section 11.5.4.2)
- Or identify, record, and recover data for heritage features, including culturally modified trees (Sections 20.5.2.2 and 20.5.3.2).

Mitigation measures for potential effects on quality of lands, waters and resources for traditional purposes include:

- Measures to reduce changes to marine resources due to changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2).

Mitigation measures for potential effects on the sensory environment for traditional activities include measures to reduce changes to:

- Air quality (Section 6.5.2.2)
- Acoustic environment (Section 8.5.2.2)
- Ambient light (Section 9.5.2.2)
- Visual quality (Section 17.5.2.4).

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21.9.4 Residual Effects on Pathway Valued Components

Following the mitigation measures described and referenced in Section 21.6.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a relatively short temporal amount of interference due to construction activities and water vessel traffic (including LNG carrier movements in and out of Port). Project mitigations will be unable to minimize the loss of the use of lands on Lelu Island as the entire island will be leased to the Project. However, other non-Lelu Island terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of Lelu Island peat bogs and wetlands to some degree. Marine waters impacted by the project marine infrastructure will be temporarily unavailable for reasonably short durations during construction and decommissioning, while complete alteration and removal of some marine waters from traditional use during operations will be limited in extent where regulatory authorities require marine traffic exclusion zones for safety reasons. The Port of Prince Rupert will manage the temporary loss of use during construction.

Project mitigations avoid reductions in the absolute quantity of terrestrial and marine resources, except for potential limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting locations may be reduced during construction due to alteration of movement associated with construction activity and associated noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-34 identifies residual effects remaining after the application of mitigation measures for the Kitsumkalum First Nation.

Table 21-34 Residual Effects to Pathway Valued Components

Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Access to lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	Kitsumkalum First Nation’s marine-based access to current fishing sites may experience a degree of temporary interference.
Current Hunting and Trapping Practices	C, O, D	Kitsumkalum First Nation members’ marine-based access to current hunting and trapping sites may experience a degree of temporary interference.
Current Gathering Practices	C, O, D	Kitsumkalum First Nation members’ marine-based access to current marine and terrestrial gathering sites may experience a degree of temporary interference.
Current Spiritual and Ceremonial Practices	C, O, D	Kitsumkalum First Nation members’ marine-based access to current spiritual and ceremonial sites may experience a degree of temporary interference.
Quantity of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C	The quantity of marine waters available for Kitsumkalum First Nation members’ salmon and eulachon fishing sites are expected to be reduced in the waters around Lelu Island.

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Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Current Hunting and Trapping Practices	C, O	The quantity of land available for Kitsumkalum First Nation members' terrestrial hunting is expected to be reduced due to the removal of Lelu Island as a use site. The quantity of ducks and geese resources available to Kitsumkalum First Nation members' within their preferred use locations is expected to be reduced to a small extent. Kitsumkalum First Nations members may find reduced numbers of sea lions in preferred harvesting areas during construction due to noise-related alteration of movement.
Current Gathering Practices	C, O	The quantity of land available for Kitsumkalum First Nation members' terrestrial gathering is expected to be reduced due to the removal of Lelu Island as a use site.
Current Spiritual and Ceremonial Practices	C, O	The quantity of land available for Kitsumkalum First Nation members' spiritual and ceremonial practices is expected to be reduced due to the removal of Lelu Island as a use site.
Quality of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	No predicted residual effects.
Current Hunting and Trapping Practices	C, O, D	No predicted residual effects.
Current Gathering Practices	C, O, D	No predicted residual effects.
Current Spiritual and Ceremonial Practices	C, O, D	No predicted residual effects.
Sensory environment for the Current Aboriginal Use		
Current Fishing Practices	C, O, D	Kitsumkalum First Nation fishers are expected to be affected by changes in visual quality. Fishers' perceptions of safety and solitude may be affected due to the presence of project components and activities and increased presence of marine traffic.
Current Hunting and Trapping Practices	C, O, D	Kitsumkalum First Nation hunters and trappers are expected to be affected by changes in visual quality.
Current Gathering Practices	C, O, D	Kitsumkalum First Nation members engaging in gathering practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.
Current Spiritual and Ceremonial Practices	C, O, D	Kitsumkalum First Nation members engaging in spiritual and ceremonial practices are expected to be affected by changes in visual quality, if any such practices are within view of project components.

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21.9.5 Assessment of Effects on Current Aboriginal Use

21.9.5.1 Potential Effects on Current Fishing Practices

21.9.5.1.1 Location of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in displacement of Aboriginal fishers from some preferred fishing locations. Key locations include the waters around Lelu Island, the suspended trestle-bridge, along the Pacific Pilot Authority's existing large ocean going vessel transit/shipping route from Triple Island to the Port of Prince Rupert, and the 'Disposal at Sea' site (Brown Passage). As the marine jetty will be located along the transition between Flora Bank and Agnew Bank, it is not expected to interfere with fishing from larger vessels. Further, the design of the bridge between Lelu Island and the mainland and the redesigned marine jetty will allow fishers in smaller vessels to transit between fishing areas to the north and south without additional travel time. Areas that are used in the vicinity of Inverness Passage, Horsey Bank west of Kitson Island and Agnew Bank will all remain accessible for fishing. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port designated under Canada's *Marine Act* and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key fishing sites are likely to outweigh effects to sensory environment associated with visual quality.

Kitsumkalum First Nation members fish in the waters around Lelu Island, Flora Bank and in Chatham Sound (Section 21.9.1.1). Potentially-affected fisheries include salmon, eulachon, groundfish, and shellfish.

Kitsumkalum First Nation fishers are expected to shift the location of salmon and eulachon fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. If Kitsumkalum First Nation engages in crab fisheries on Flora Bank, they are expected to alter harvesting locations during construction and operations. Some Kitsumkalum fishers are expected alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Increased marine traffic during decommissioning may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.

21.9.5.1.2 Timing of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in changes to the preferred timing of Aboriginal peoples' fishing activities. Fishers may avoid fishing in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, fishing sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping traffic.

PNW LNG has not been provided with information about the seasonality of Kitsumkalum First Nation's current fishing activities.

Project activities during construction are not expected to affect the seasonality of Kitsumkalum First Nation members' fishing practices, as this is largely tied to the biology and behavior of fisheries resources. Project activities during operations will occur through the year, so are not expected to affect the seasonality of

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members' fishing practices. Members may alter the time of day for fishing practices to avoid interaction with LNG carries in the shipping route.

21.9.5.1.3 Effort Involved in Current Fishing Practices

Interruptions in access may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred fishing locations. Temporary limitations in availability of fishing sites that are in the direct path of shipping lanes may also increase effort, if fishers are required to shift their fishing location during the presence of LNG carrier ships. Changes to sensory environment (visual quality) are not expected to directly affect fishing effort but may increase effort if it leads Aboriginal people to shift their fishing locations. Reductions in fish quantity are not expected to affect fishing effort as the reductions will be minimal, not likely to affect commercial species, and limited to the immediate vicinity of project components and activities.

Kitsumkalum First Nation peoples residing in Prince Rupert and Port Edward are situated in close proximity to preferred fishing locations in the vicinity of the Project. PNW LNG has not been provided with information about members' current level of effort with respect to their fishing activities.

Interference with Kitsumkalum First Nation members' access to preferred fishing sites during construction and decommissioning is expected to increase the effort required by members to reach preferred sites. This effect is expected to be negligible as project-related presence of marine vessels will not require fishers to substantially alter travel routes while traveling to fishing sites. Temporary reductions in the availability of fishing sites due to LNG carrier traffic is expected to increase the amount of time that members spend actively fishing in those locations. This effect can be mitigated with appropriate communications (see Section 21.9.3). Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of and access to preferred fishing sites.

21.9.5.1.4 Success of Current Fishing Practices

Changes in access to and quantity of waters available for fishing during construction and operations could reduce the success of Aboriginal peoples' fishing practices. Fishing success may be also be reduced to the extent that temporary restriction of fishing within shipping lanes and interference with access to preferred fishing reduces the total amount of time available for active fishing. Additionally, if Aboriginal fishers fish in alternative locations due to interference with access or reduced site availability, success rates could change, depending on the nature of fishing resources in alternative locations.

No information has been provided to PNW LNG regarding Kitsumkalum First Nation members' current catch quantities for AFS fisheries (see Section 21.3).

Effects on fishing success for Kitsumkalum First Nation fishers is not expected as a result of changes in access and quantity, given the localized and temporally-limited nature of expected changes. Effects on fishing success due to locational change are expected to be negligible as fishers are not expected to shift fishing efforts to substantially different locations.

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21.9.5.1.5 Satisfaction with Current Fishing Practices

Changes in access to preferred fishing locations, quantity of waters and resources used for fishing purposes, and visual quality may affect the extent to which Aboriginal fishing practices satisfy expectations relating to aesthetic experiences, Traditional Ecological Knowledge (TEK), cultural distinctiveness and continuity, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred fishing locations may affect Aboriginal fishers' ability to collect traditional ecological knowledge and to transmit such knowledge to other members. Reductions in fishing success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Kitsumkalum First Nation has expressed concerns about the potential effects of the Project on members' "sense of place" in relation to cultural knowledge and spiritual connection with lands and waters (Section 21.9.1.4).

The Project is not expected to affect the ability of Kitsumkalum First Nations to collect TEK and transmit cultural knowledge, given expected limited interference with fishing practices resulting from changes in access to and quantity of fishing resources. Changes in visual quality are not expected to be substantial enough to interfere with Kitsumkalum First Nations' ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.

21.9.5.2 Potential Effects on Current Hunting and Trapping Practices

21.9.5.2.1 Location of Current Hunting and Trapping Practices

Changes in the quantity of, lands, waters, and resources used for hunting and trapping purposes may result in displacement of Aboriginal hunters and trappers from preferred harvesting locations. Key locations include Lelu Island and Islands and waters in the vicinity of the shipping route and disposal at sea site (Brown Passage).

Changes in marine access to hunting and trapping locations is not expected to be sufficient to prompt locational change for these activities, as project-related presence of marine vessels will not require members to substantially alter marine travel routes while traveling to hunting and trapping sites. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key hunting and trapping sites are likely to outweigh effects to sensory environment associated with visual quality.

Kitsumkalum First Nation members have expressed concerns about potential project-related impacts to hunting and trapping of terrestrial and marine resources on and around Lelu Island and in the shipping route (Section 21.9.1.2). Key resources harvested include otter, sea lion, fur seal, harbour seal, duck, geese, grouse, deer, porcupine, and beaver.

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Kitsumkalum First Nation hunters who may currently hunt on Lelu Island are expected to shift the location of these hunting activities during construction, operations, and decommissioning. Hunting of aquatic birds in the vicinity of the shipping route is not expected to be affected. The location of seal harvests may shift, if seals alter their behaviour in response to construction-related noise and noise related to shipping traffic.

21.9.5.2.2 Timing of Current Hunting and Trapping Practices

Changes in access to waters for marine hunting, changes in marine access to terrestrial hunting sites, and changes in the quantity of waters available for hunting activities (Section 21.6.2) may result in changes to the preferred timing of Aboriginal peoples' hunting activities. Hunters may avoid hunting in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, hunting sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

PNW LNG has not been provided with information about the timing of Kitsumkalum First Nation's current hunting and trapping practices.

Kitsumkalum First Nation members may alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day). Seasonal changes are not expected as hunting seasonality is tied to the biology and behaviour of harvested resources. In addition, operations will be continuous throughout the year.

21.9.5.2.3 Effort Involved in Current Hunting and Trapping Practices

Interference with access to lands, waters, and resources for hunting and trapping purposes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred hunting and trapping locations. Temporary limitations in availability of marine hunting sites that are in the direct path of shipping lanes may also increase effort, if hunters are required to interrupt hunting efforts during the presence of LNG carriers, however existing shipping traffic into and out of Prince Rupert already manifests in these impacts. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect hunting effort but may increase effort if it leads Aboriginal people to shift their hunting locations.

Kitsumkalum First Nation peoples residing in Prince Rupert and Port Edward are situated in close proximity to preferred hunting and trapping locations in the vicinity of the Project. PNW LNG has not been provided with information about members' current level of effort with respect to their hunting activities.

The Project is expected to interfere to a limited degree with Kitsumkalum First Nation members' marine access to hunting locations (terrestrial and marine) during all project phases. The resulting effect on effort is expected to be negligible as project-related presence of marine vessels will not require hunters and trappers to substantially alter travel routes while traveling to hunting and trapping sites. Kitsumkalum First Nation members currently hunting on Lelu Island may need to increase effort to obtain these resources from alternative locations. Members may need to increase effort to hunt sea lion due to temporary changes in sea lion distribution as a result of construction noise.

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21.9.5.2.4 Success of Current Hunting and Trapping Practices

Changes in access to and quantity of sites available for hunting and trapping during construction and operations could reduce the success of Aboriginal peoples' efforts. Hunting and trapping success may be also be reduced to the extent that interference with routes of access to marine and terrestrial hunting and trapping locations reduces the total amount of time available for hunting and trapping activities. If Aboriginal hunters and trappers move to alternative locations due to interference with access, reduced site availability, or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative hunting and trapping sites for particular individuals and/or families.

Kitsumkalum First Nation members have expressed concerns about potential project-related impacts to hunting and trapping of terrestrial and marine resources on and around Lelu Island and in the shipping route (Section 21.9.1.2). Key resources harvested include otter, sea lion, fur seal, harbour seal, duck, geese, grouse, deer, porcupine, and beaver. PNW LNG has not obtained information about current harvesting quantities. PNW LNG has not obtained information about Kitsumkalum First Nation's internal governance and resource management frameworks pertaining to terrestrial hunting and trapping on Lelu Island.

Project-related interference with Kitsumkalum First Nation members' access to terrestrial and marine hunting and trapping locations is not expected to be substantial enough to reduce overall hunting and trapping time and therefore success rates at those locations. Alteration of sea lion movement due to project-related noise may reduce the success rate of hunters if they experience difficulty locating the resources. The success of Kitsumkalum First Nation harvesters who are no longer be able to hunt and trap on Lelu Island is not expected to be limited by reductions in the overall abundance of these species in other locations (Section 11). However, Kitsumkalum First Nation's internal governance and resource management frameworks may limit the availability of alternative hunting locations for particular individuals and/or families, thereby potentially reducing hunting success for these individuals and/or families. Changes in hunting and trapping success are not expected for members who choose to shift harvesting locations to avoid project-related changes in visual quality.

21.9.5.2.5 Satisfaction with Current Hunting and Trapping Practices

Changes in access to preferred hunting and trapping locations, quantity of lands, waters and resources used for hunting and trapping purposes, and visual quality may affect the extent to which Aboriginal hunting and trapping practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred hunting and trapping locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to hunt and trap for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in hunting and trapping success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

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Kitsumkalum First Nation has expressed concerns about the potential effects of the Project on members' "sense of place" in relation to cultural knowledge and spiritual connection with lands and waters (Section 21.9.1.4). PNW LNG has not been provided with information relating to Kitsumkalum First Nation members' expectations about aesthetic experiences and social cohesion.

Kitsumkalum First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to hunt and trap on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who hunt on Lelu Island, if those members do not have access to alternative hunting sites (see Success of Current Hunting and Trapping Practices above). To the extent that members experience reduced success hunting for seal and deer in alternative locations to Lelu Island (see Success of Current Hunting and Trapping Practices above), members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.

21.9.5.3 Potential Effects on Current Gathering Practices

21.9.5.3.1 Location of Current Gathering Practices

Changes in the quantity of, lands, waters, and resources used for terrestrial gathering purposes may result in displacement of Aboriginal peoples from preferred gathering locations. Interference with marine access to preferred terrestrial gathering sites may also result in locational change. Key locations include Lelu Island and gathering sites accessed via the waters around Lelu Island, Flora Bank, and Inverness Passage.

Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island.

The Project is expected to affect the location of Kitsumkalum First Nation members' terrestrial gathering practices in relation to Lelu Island as the Island will be unavailable to Kitsumkalum if the Project proceeds.

21.9.5.3.2 Timing of Current Gathering Practices

Changes in access to land and resources for terrestrial gathering may result in changes to the preferred timing of Aboriginal peoples' terrestrial gathering activities. Aboriginal peoples may avoid gathering in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with marine access to gathering sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island. This site will not be available if the Project proceeds.

The Project is not expected to affect the timing of Kitsumkalum First Nation members' terrestrial gathering practices.

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21.9.5.3.3 Effort Involved in Current Gathering Practices

Interference with access to lands and resources for terrestrial gathering may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred terrestrial gathering locations. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect gathering effort but may increase effort if it leads Aboriginal people to shift their gathering locations.

Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island. This site will not be available if the Project proceeds.

The Project is expected to increase the effort involved in Kitsumkalum First Nation's terrestrial gathering practices for members currently using Lelu Island as a preferred site.

21.9.5.3.4 Success of Current Gathering Practices

Changes in the quantity of lands and resources available for terrestrial gathering during construction and operations could reduce the overall success of Aboriginal peoples' gathering efforts. Terrestrial gathering success may also be reduced to the extent that interference with routes of access to terrestrial gathering locations reduces the total amount of time available for gathering activities. If Aboriginal peoples move to alternative gathering locations due to interference with access or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative terrestrial gathering sites for particular individuals and/or families.

Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island. The Lelu Island site will no longer be available for this use if the Project proceeds.

The Project is expected to affect the success of Kitsumkalum First Nation members' terrestrial gathering practices by a small amount, given the removal of Lelu Island as a gathering location.

21.9.5.3.5 Satisfaction with Current Gathering Practices

Changes in access to preferred terrestrial gathering locations, quantity of lands and resources used for gathering purposes, and visual quality may affect the extent to which Aboriginal gathering practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred terrestrial gathering locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to gather for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in gathering success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

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Kitsumkalum First Nation has expressed concerns about potential impacts of the Project on traditional logging, gathering and berry picking on Lelu Island. This site will not be available if the Project proceeds.

Kitsumkalum First Nation members' aesthetic satisfaction while gathering in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able undertake gathering activities on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who use Lelu Island for gathering purposes, if those members do not have access to alternative gathering sites. To the extent that members experience reduced gathering success, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity.

21.9.5.4 Potential Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.9.5.4.1 Location of Current uses of Spiritual Sites and Cultural Landscapes

Removal of spiritual sites and cultural landscape resources on Lelu Island will displace Aboriginal peoples' use of these sites and features. Interference with marine access to spiritual sites and cultural landscapes, and disruption of sensory environment (visual quality), is not expected to result in locational change, as access will not be precluded and affinities for particular spiritual and ceremonial sites are assumed be strong. Key locations include Lelu Island and spiritual and ceremonial sites accessed via the waters around Lelu Island, Flora Bank and through Inverness Passage.

Kitsumkalum First Nation has expressed concerns about potential impacts on Lelu Island as an important cultural and spiritual place, and about interference with access to other important places (Section 21.9.1.4).

Kitsumkalum First Nation members using Lelu Island as a location for spiritual sites and cultural landscapes will be required to shift the location of these uses during construction, operations, and decommissioning as Lelu Island will be entirely leased to the Project and the site will not be available for these activities.

Kitsumkalum First Nation members' use of spiritual sites and cultural landscapes in other locations is not expected to be affected by the Project.

21.9.5.4.2 Timing of Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to spiritual sites and cultural landscapes may result in changes to the preferred timing of Aboriginal peoples' use of these sites and features. Aboriginal peoples may avoid using spiritual sites and cultural landscapes during times (of the day, month, and year) when project activities interfere with marine access to these sites (i.e., during construction activities and associated marine traffic).

Kitsumkalum First Nation has expressed concerns about potential impacts on Lelu Island as an important cultural and spiritual place, and about interference with access to other important places (Section 21.9.1.4). PNW LNG has not been provided with information about the timing of members' use of spiritual sites and/or cultural resources on Lelu Island.

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Interference with access associated with increased marine traffic during construction and decommissioning is expected to prompt some Kitsumkalum First Nation members to change their timing for use of non-Lelu Island spiritual sites and cultural landscapes in the vicinity of the Project during construction.

21.9.5.4.3 Effort Required for Current Use of Spiritual Sites and Cultural Landscapes

Interference with access to spiritual sites and cultural landscapes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach key sites and features. Removal of traditional use sites may result in increased effort for Aboriginal peoples currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to be sufficient to prompt Aboriginal people to shift the locations where they use spiritual sites and cultural landscapes, due to the unique significance of such sites and features.

Kitsumkalum First Nation has expressed concerns about potential impacts on Lelu Island as an important cultural and spiritual place, and about interference with access to other important places (Section 21.9.1.4). PNW LNG has not been provided with information about Kitsumkalum First Nation's level of effort to access non-Lelu Island spiritual sites and cultural landscapes in the vicinity of the Project.

Kitsumkalum First Nation members' effort to access spiritual sites and cultural landscapes in the vicinity of Lelu Island, if any, may increase by a small amount due to construction activities and associated marine traffic. This effect can be mitigated through appropriate communication (see Section 21.9.3).

21.9.5.4.4 Success of Current Use of Spiritual Sites and Cultural Landscapes

Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.

21.9.5.4.5 Satisfaction with Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to, availability of, and sensory environment for spiritual sites and cultural landscapes may affect the extent to which Aboriginal use of these sites and features satisfy expectations relating to aesthetic and spiritual experiences, TEK, and cultural distinctiveness and continuity. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural and cultural environment. Interference with access to and availability of spiritual sites and cultural landscapes may affect Aboriginal peoples' ability to collect TEK and to transmit cultural knowledge to other members.

Kitsumkalum First Nation has expressed concerns about potential impacts on Lelu Island as an important cultural and spiritual place, and about interference with access to other important places (Section 21.9.1.4). PNW LNG has not been provided with information about Kitsumkalum First Nation's level of effort to access Lelu Island or non-Lelu island spiritual sites and cultural landscapes in the vicinity of the Project.

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Kitsumkalum First Nation members’ aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use spiritual sites and cultural landscapes on Lelu Island.

21.9.6 Mitigation Measures for Current Aboriginal Use

PNW LNG will apply the following mitigation measures to minimize project-related effects on Current Aboriginal Use described in Section 21.9.5).

Specific to the assessment concerns regarding pathway components and mitigations, Table 21-35 describes how Current Aboriginal Use practices and project components will be mitigated.

Table 21-35 Measures to Mitigate Potential Effects to Kitsumkalum’s Current Aboriginal Use

Potential Effect	Mitigations
Current Fishing Practices	The project changes, including a suspension bridge and relocated trestle and berth, result in no infrastructure located on Flora Bank and eliminate the need for dredging on Agnew Bank.
	The project changes reduce the effects of infrastructure construction and dredging upon navigation. The jetty length (including the suspension bridge and trestle) will be approximately 300 m longer; however vessels will continue to be able to pass underneath it.
	The project changes will result in a much reduced volume of sediment for ocean disposal. The resulting dispersal area is significantly reduced, reducing the impact, or perceived impact, on Brown Passage.
	Section 13 contains a description of mitigation measures relating to marine resources, including those for: <ul style="list-style-type: none"> • The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2) • Changes to fish habitat (Section 13.5.3.2) • The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2) • Changes in behaviour of fish and marine mammals (Section 13.5.5.2).
Current Hunting and Trapping Practices	Mitigations related to impacts to current hunting and trapping practices included those related to: <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). In addition to these, PNW LNG has consulted with Kitsumkalum First Nations regarding restricted access to Lelu Island and the resulting effects on Kitsumkalum cultural practices.
	PNW LNG plans shift rotation during construction as well as recreational facilities at work camps to help reduce the impacts of increased workers on local recreation and resources.

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Potential Effect	Mitigations
Current Gathering Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Kitsumkalum First Nations regarding restricted access to Lelu Island and the resulting effects on Kitsumkalum cultural practices.</p>
Current Use of Spiritual Sites and Cultural Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Kitsumkalum First Nations regarding restricted access to Lelu Island and the resulting effects on Kitsumkalum cultural practices.</p>

Discussions are under way with Kitsumkalum First Nation to identify appropriate means with which to accommodate effects to project effects that cannot be completely mitigated (see Section 27).

21.9.7 Residual Effects on Current Aboriginal Use

Following the mitigation measures described and referenced in Section 21.9.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a relatively short temporal amount of interference due to construction activities and water vessel traffic (including LNG carrier movements in and out of Port). Project mitigations will be unable to minimize the loss of the use of lands on Lelu Island as the entire island will be leased to the Project. However, other non-Lelu Island terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of Lelu Island peat bogs and wetlands to some degree. Marine waters impacted by the project marine infrastructure will be temporarily unavailable for reasonably short durations during construction and decommissioning, while complete alteration and removal of some marine waters from traditional use during operations will be limited in extent where regulatory authorities require marine traffic exclusion zones for safety reasons. The Port of Prince Rupert will manage the temporary loss of use during construction.

Project mitigations avoid reductions in the absolute quantity of terrestrial and marine resources, except for potential limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting locations may be reduced during construction due to alteration of movement associated with construction activity and associated noise. The quality of resources is not expected to be affected.

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Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-36 describes expected residual effects following implementation of the above mitigation measures for the Kitsumkalum First Nation.

Table 21-36 Residual Effects to Current Aboriginal Use

Effect	Project Phase	Description of Residual Effect
Current Fishing Practices		
Location	C, O, D	Kitsumkalum First Nation fishers are expected to shift the location of salmon and eulachon fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. If Kitsumkalum First Nation engages in crab fisheries on Flora Bank, they are expected to alter harvesting locations during construction and operations. Some Kitsumkalum fishers are expected alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Increased marine traffic during any decommissioning required by the Port may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.
Timing	O	Fishers may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.
Effort	C, O, D	Increased effort to access alternative fishing locations is expected for fishers who shift fishing location due to project-related changes in availability of, and access to, preferred fishing sites.
Success	n/a	No predicted residual effects.
Satisfaction	C, O, D	Visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.
Current Hunting and Trapping Practices		
Location	C, O, D	Kitsumkalum First Nation hunters who may currently hunt on Lelu Island are expected to shift the location of these hunting activities during construction, operations, and decommissioning. Hunting of aquatic birds in the vicinity of the shipping route is not expected to be affected. The location of seal harvests may shift, if seals alter their behaviour in response to construction-related noise and noise related to shipping traffic.
Timing	C, O, D	Kitsumkalum First Nation members may alter the timing of marine hunting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day).
Effort	C, O, D	Kitsumkalum First Nation members may need to increase effort to hunt sea lion due to temporary changes in sea lion distribution as a result of construction noise.
Success	C, O, D	Alteration of sea lion movement due to project-related noise may reduce the success rate of hunters if they experience difficulty locating the resources. The success of Kitsumkalum First Nation harvesters who are no longer be able to hunt and trap on Lelu Island is not expected to be limited by reductions in the overall abundance of these species in other locations. However, Kitsumkalum First Nation's internal governance and resource management frameworks may limit the availability of alternative hunting locations for particular individuals and/or families, thereby potentially reducing hunting success for these individuals and/or families.

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Effect	Project Phase	Description of Residual Effect
Satisfaction	C, O, D	Kitsumkalum First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to hunt and trap on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who hunt on Lelu Island, if those members do not have access to alternative hunting sites. To the extent that members experience reduced success hunting for seal and deer in alternative locations to Lelu, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.
Current Terrestrial Gathering Practices		
Location	C, O, D	The Project is expected to affect the location of Kitsumkalum First Nation member's terrestrial gathering practices on Lelu Island.
Timing	n/a	No predicted residual effects.
Effort	C, O, D	The Project is expected to increase the effort involved in Kitsumkalum First Nation's terrestrial gathering practices for members currently using Lelu Island as a preferred site.
Success	C, O, D	The Project is expected to affect the success of Kitsumkalum First Nation members' terrestrial gathering practices by a small amount, given the removal of Lelu Island as a gathering location.
Satisfaction	C, O, D	Kitsumkalum First Nation members' aesthetic satisfaction while gathering in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced for members who are no longer able to undertake gathering activities on Lelu Island. The Project is expected to reduce opportunities for social bonding for members' who use Lelu Island for gathering purposes, if those members do not have access to alternative gathering sites. To the extent that members experience reduced gathering success, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity and trust.
Current Use of Spiritual Sites and Cultural Landscapes		
Location	C, O, D	Kitsumkalum First Nation members using Lelu Island as a location for spiritual sites and cultural landscapes will be required to shift the location of these uses during construction, operations, and decommissioning.
Timing	C, D	Interference with access associated with increased marine traffic during construction and decommissioning is expected to prompt some Kitsumkalum First Nation members to change their timing for use of spiritual sites and cultural landscapes in the vicinity of the Project, if any, during construction.
Effort	C	No predicted residual effects.
Success	n/a	Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.
Satisfaction	C, O, D	Kitsumkalum First Nation members' aesthetic satisfaction while using spiritual sites and cultural landscapes in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is expected to be reduced due to the prevention or alteration of use spiritual sites and cultural landscapes on Lelu Island.

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21.9.8 Assessment of Residual Effects on Current Aboriginal Use

21.9.8.1 Assessment of Residual Effects on Fishing Practices

21.9.8.1.1 Characterization of Residual Effects on Fishing Practices

The residual effect on preferred locations for fishing practices is rated as **low**. The Project will only affect small portions of wider fishing areas and other portions of the fishing areas will remain available. Fishers are expected to move to different locations within existing fishing areas, rather than move to new fishing areas, resulting in a small change from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning in the event the Port requires decommissioning of the marine infrastructure. Kitsumkalum First Nation fishers are rated as moderately vulnerable to changes in fishing locations (**moderate context**).

The residual effect on timing of fishing practices is rated as **low**. Alteration of the timing of fishing activities in relation to project shipping schedules is expected to take place for only some fishers and would only occur at one period during the day. The residual effect is expected to be limited to operations (**medium-term**) and would be a **multiple regular event**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning in the event the Port requires decommissioning of the marine infrastructure. Kitsumkalum First Nation fishers are rated as moderately vulnerable to changes in the timing of fishing practices (**moderate context**).

The residual effect fishing effort is rated as **low**. The extent of locational change is expected to be small and will result in only a small change from existing baseline conditions for fishing effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning in the event the Port requires decommissioning of the marine infrastructure. Kitsumkalum First Nation fishers are rated as moderately vulnerable to changes in fishing effort (**moderate context**).

The residual effect on satisfaction with fishing practices related to aesthetic experiences while fishing in the vicinity of the Project is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning in the event the Port requires decommissioning of the marine infrastructure. Kitsumkalum First Nation fishers are rated as moderately vulnerable to changes in fishing satisfaction (**moderate context**).

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21.9.8.1.2 Significance of Residual Effects on Fishing Practices

Residual effects on Kitsumkalum First Nation's fishing practices are assessed as **not significant**: The residual effects have low magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Kitsumkalum First Nations' overall fishing practices.

21.9.8.1.3 Likelihood and Confidence for Residual Effects Conclusions on Fishing Practices

The likelihood that residual effects on fishing locations, timing, effort, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **medium**. The assessments are based on general information about Kitsumkalum First Nation's Current Aboriginal Use as described in the Nation's TUS (Crossroads CRM 2014); however, PNW LNG has not obtained site-specific information about Kitsumkalum First Nation's Current Aboriginal Use.

21.9.8.2 Assessment of Residual Effects Hunting and Trapping Practices

21.9.8.2.1 Characterization of Residual Effects on Hunting and Trapping Practices

The residual effect on preferred locations for hunting and trapping practices is rated as **moderate**. The Project is expected to result in the relocation of hunting efforts for only small number of individuals. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitsumkalum First Nation hunters and trappers are rated as moderately vulnerable to changes in hunting locations (**moderate context**).

The residual effect on timing of hunting and trapping practices is rated as **low**. Alteration of the timing of hunting and trapping activities in relation to construction activities and project shipping schedules is expected to take place for only some hunters; timing effects related to shipping would only occur at one period during the day. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**) and would be **continuous** during construction and a **multiple regular event** during operations. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in the timing of hunting and gathering practices (**moderate context**).

The residual effect hunting and trapping effort is rated as **low**. The extent of locational change sea lion hunting is expected to be small and will result in only a small change from existing baseline conditions for hunting effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in hunting and trapping effort (**moderate context**).

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The residual effect on hunting and trapping success is rated as **low**. The Project is not predicted to affect the population viability of sea lion and this species can be harvested at similar rates in alternative locations. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in hunting and trapping success (**moderate context**).

The residual effect on satisfaction with hunting and trapping practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. TEK in LAA is not expected to be highly specific to Lelu Island. Reduced opportunities for social bonding in relation to hunting and trapping practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal.

The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in hunting and trapping satisfaction (**moderate context**).

21.9.8.2.2 Significance of Residual Effects on Hunting and Trapping Practices

Residual effects on Kitsumkalum First Nation's hunting and trapping practices are assessed as **not significant**: The residual effects have low to medium magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Kitsumkalum First Nations' overall hunting and trapping practices.

21.9.8.2.3 Likelihood and Confidence for Residual Effects Conclusions on Hunting and Trapping Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **medium**. The assessments are based on general information about Kitsumkalum First Nation's Current Aboriginal Use as described in the Nation's TUS (Crossroads CRM 2014); however, PNW LNG has not been provided with site-specific information about Kitsumkalum First Nation's Current Aboriginal Use.

21.9.8.3 Assessment of Residual Effects on Current Gathering Practices

21.9.8.3.1 Characterization of Residual Effects on Current Gathering Practices

The residual effect on preferred locations for gathering practices is rated as **moderate**. The Project is expected to result in the relocation of gathering efforts for only small number of individuals. The residual

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effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will **not** be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in gathering locations (**moderate context**).

The residual effect on gathering effort is rated as **low**. The extent of locational change gathering is expected to be small and will result in only a small change from existing baseline conditions for gathering effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will not be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in gathering effort (**moderate context**).

The residual effect on gathering success is rated as **low**. Removal of Lelu Island as a gathering site is expected to result in a small reduction in the overall quantity of gathered resources within the LAA. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will not be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in gathering success (**moderate context**).

The residual effect on satisfaction with gathering practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. TEK in LAA is not expected to be highly specific to Lelu Island. Reduced opportunities for social bonding in relation to gathering practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal.

The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA** and will not be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in gathering satisfaction (**moderate context**).

21.9.8.3.2 Significance of Residual Effects on Current Gathering Practices

Residual effects on Kitsumkalum First Nation's gathering practices are assessed as **not significant**: The residual effects have low to medium magnitude, LAA geographic extent (e.g., only the PDA Lelu Island), medium-term duration, and are not reversible (on Lelu Island). The residual effects are predicted to result in little discernable change in Kitsumkalum First Nations' overall gathering practices.

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21.9.8.3.3 Likelihood and Confidence for Residual Effects Conclusions on Current Gathering Practices

The likelihood that residual effects on gathering locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as **medium**. The assessments are based on general information about Kitsumkalum First Nation's Current Aboriginal Use as described in the Nation's TUS (Crossroads CRM 2014); however, PNW LNG has not obtained site-specific information about Kitsumkalum First Nation's Current Aboriginal Use.

21.9.8.4 Assessment of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.9.8.4.1 Characterization of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

The residual effect on preferred locations for use of spiritual sites and cultural landscapes is rated as **moderate**. Lelu Island will no longer provide a location for the use of spiritual sites and cultural landscapes, due to project activities. However, there is no available evidence of current use of these sites. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **PDA (Lelu Island)** and will be **irreversible**. Kitsumkalum First Nation members are rated as highly vulnerable to changes in locations for the use of spiritual sites and cultural landscapes (**high context**).

The residual effect on timing of use of spiritual sites and cultural landscapes is rated as **moderate**. Alteration of the timing of activities in the vicinity of the Project in relation to construction activities is expected to vary from baseline conditions. The residual effect is expected to occur through the duration of construction and decommissioning (**medium-term**) and would be **continuous**. The extent of the effect is restricted to the **LAA** and may be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in the timing of use of spiritual sites and cultural landscapes (**moderate context**).

The residual effect on satisfaction with use of spiritual sites and cultural landscapes practices is rated as **moderate**. Alteration of aesthetic experiences and the ability to collect and teach TEK in the vicinity of the Project are predicted to be limited. However, use of such sites is assumed to be highly important to Kitsumkalum First Nation members. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and may be **irreversible** after decommissioning. Kitsumkalum First Nation members are rated as highly vulnerable to changes in satisfaction with the use of spiritual sites and cultural landscapes (**high context**).

21.9.8.4.2 Significance of Residual Effects on Current Use of Spiritual Sites and Cultural Landscapes

Residual effects on Kitsumkalum First Nation's current use of spiritual sites and cultural landscapes are assessed as **not significant**: The residual effects have moderate magnitude, LAA geographic extent except for the loss of use of Lelu Island, medium-term duration, will occur continuously, and range from reversible to

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irreversible. The residual effects are predicted to result in consequential changes to Kitsumkalum First Nation's overall uses of spiritual sites and cultural landscapes.

21.9.8.4.3 Likelihood and Confidence for Residual Effects Conclusions on Current Use of Spiritual Sites and Cultural Landscapes

The likelihood that residual effects on location, timing, and satisfaction with respect to current use of spiritual sites and cultural landscapes will occur is rated as **high**. There is a high probability of effects relating to the removal of Lelu Island as a place containing spiritual sites and cultural landscapes.

Confidence in the predictions is rated as **medium**. The assessments are based on general information about Kitsumkalum First Nation's Current Aboriginal Use as described in the Nation's TUS (Crossroads CRM 2014); however, PNW LNG has not obtained site-specific information about Kitsumkalum First Nation's Current Aboriginal Use. Summary of Significant Residual Effects on Current Aboriginal Use

Table 21-37 summarizes the residual effects characterization for Kitsumkalum First Nation Current Aboriginal Use VCs.

21.9.9 Summary of Significant Residual Effects on Current Aboriginal Use

Table 21-37 summarizes the residual effects characterization for Kitsumkalum First Nation Current Aboriginal Use VCs.

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Table 21-37 Kitsumkalum First Nation: Summary of Current Aboriginal Use Residual Effects Characterization, Significance, Likelihood and Confidence

Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Fishing Practices									
Location	L	LAA	MT	R	C, MR	M	N	M	M
Timing	L	LAA	MT	R	MR	M	N	M	M
Effort	L	LAA	MT	R	C	M	N	M	M
Success	-	-	-	-	-	-	-	-	-
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Hunting and Trapping Practices									
Location	M	LAA	MT	R	C	M	N	M	M
Timing	L	LAA	MT	R	C, MR	M	N	M	M
Effort	L	LAA	MT	R	C	M	N	M	M
Success	L	LAA	MT	R	C	M	N	M	M
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Gathering Practices									
Location	M	LAA	MT	R	C	M	N	M	M
Timing	-	-	-	-	-	-	-	-	-
Effort	L	LAA	MT	R	C	M	N	M	M
Success	L	LAA	MT	R	C	M	N	M	M
Satisfaction	L	LAA	MT	R	C	M	N	M	M

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Use of Spiritual Sites and Cultural Landscapes									
Location	M	LAA	MT	I	C	H	N	H	M
Timing	M	LAA	MT	R	C	M	N	M	M
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	M	LAA	MT	I	C	H	N	H	M
<p>KEY Context: L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment H = High resilience: occurs in viable ecosystem and/or undisturbed environment</p> <p>Magnitude: N = Negligible: no detectable change on individuals of a regional wildlife population or hectares of habitat L = Low: change detectable on a few individuals or hectares of habitat (i.e., < 10 ha) in a regional population M = detectable change on many individuals or hectares of habitat (i.e., 10 to 250 ha) in a regional population H = High: detectable change on the majority of individuals or hectares of habitat (> 250 ha) in a the regional population</p> <p>Extent: PDA = project development area LAA = local assessment area RAA = regional assessment area</p> <p>Duration: ST = Short-term: effect less than one breeding season/generation MT = Medium-term: effect occurs for several breeding seasons/generations or a project phase LT = Effect occurs across multiple breeding seasons/generations or project phases P = Permanent: Effect permanent and unlikely to recover following project decommissioning and reclamation</p> <p>Reversibility: R = Reversible: will recover during lifetime of the Project or after project decommissioning and reclamation I = Irreversible: effects will persist after project decommissioning and reclamation</p> <p>Frequency: S = Single event MI = Multiple, irregular event MR = Multiple, regular event C = Continuous</p> <p>Likelihood: <i>Based on professional judgment.</i> L = Low probability of occurrence M = Medium probability of occurrence H = High probability of occurrence</p> <p>Significance: S = Significant N = Not significant</p> <p>Confidence: <i>Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation, and assumptions made.</i> L = Low level of confidence M = Moderate level of confidence H = High level of confidence</p>									

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21.10 ASSESSMENT OF EFFECTS ON KITSELAS FIRST NATION’S CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

21.10.1 Baseline Conditions for Current Aboriginal Use

This section is informed by the *Kitselas First Nation Traditional Use Study Analysis: Lelu Island and the North Coast of British Columbia* (Pulla 2014). The report draws on archival data and interview data from 1998-1999 to provide information about Kitselas First Nation’s traditional and current uses within the boundaries of the Project, including in the areas of Digby Island, Lelu Island, Smith Island, Kennedy Island, Port Essington, and the area around Metlakatla Passage.

Kitselas First Nation based their traditional *seasonal round* on the Nass River eulachon fishery, common to Tsimshian peoples, and maintained relations with coastal Tsimshian tribes (See Section 21.10.1 for a description of the seasonal round). Lelu Island was along the seasonal transit route used by Kitselas during travel from their territories near the Skeena River to their village site at Red Bluff on the Nass River. The Smith, De Horsey and Kennedy Islands were also important cultural harvesting sites for Kitselas people. This suggests that Lelu Island may also have been traditionally used given its proximity to those islands. Kitselas people continue to use the areas around the Smith and Lelu Islands for harvesting coastal resources (Pulla 2014).

21.10.1.1 Current Fishing Practices

Kitselas First Nation members engage in commercial and First Nations fisheries for a variety of species in the waters around Lelu Island and within Chatham sound. Information regarding Kitselas First Nation’s AFS fishing licenses is not publicly available (Section 21.3). Table 21-38 provides a summary of Kitselas fish harvesting including the location and species harvested.

Table 21-38 Kitselas: Fish Harvest Species and Locations

Fishing Locations	Fish Species
Smith Island	Halibut, Cockles, Clams, Abalone, Sockeye salmon, Crab, Crab eggs, Herring eggs
Entrance to Eddy Pass	Halibut, cockles, clams and abalone
Lucy Island	Halibut, Grey cod
Lelu Island	Salmon (commercial fishing), other coastal resources
Kennedy Island	Crab eggs, Herring eggs

Source: Pulla (2014)

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21.10.1.2 Current Hunting and Trapping Practices

Kitselas First Nation members hunt for deer, seal and sea lion in on islands and the mainland within the vicinity of Lelu Island. Table 21-39 provides a summary of Kitselas wildlife and marine harvesting including the location and species harvested.

Table 21-39 Kitselas: Wildlife Species and Harvest Locations

Hunting Locations	Wildlife Species
Port Essington to Smith Island to Port Edward	Seal, Sea lion
Mud Bay	Deer
Smith Island	Seal
Port Edward	Deer

Source: Pulla (2014)

21.10.1.3 Current Gathering Practices

Kitselas harvesters reported gathering seagull eggs at Smith Island. Other resources gathered include berries and carving wood. Table 21-40 reports the location of resources gathered and type of resource gathered by Kitselas members.

Table 21-40 Kitselas: Resources Gathered and Locations

Location	Resource Gathered
From Port Essington to Smith Island to Port Edward	Berries
Smith Island	Seagull Eggs
Prince Rupert Area, along the coast	Carving wood
Lelu Island	Coastal resources (not specified)

Source: Pulla (2014)

21.10.1.4 Current Spiritual and Ceremonial Practices

Kennedy Island is a spiritual site used by all Tsimshian tribes. PNW LNG has not been provided with information about Kitselas First Nation’s current use of spiritual sites and cultural landscapes.

21.10.1.5 Current Transportation and Habitation Practices

Traditionally, Kitselas First Nation travelled by canoe from their Skeena River territories along a seasonal transit route from their village site at Red Bluff to village sites at the Digby and Kaien Islands. Kitselas people travelled annually to Lucy Island by boat. Camping spots along this route included Metlakatla Pass, De Horsey Island, Kennedy, and Smith Island.

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PNW LNG has not been provided with information about Kitselas First Nation's current transportation and habitation practices.

21.10.2 Assessment of Effects on Pathway Valued Components

21.10.2.1 Access to Lands, Waters, and Resources Used for Traditional Purposes

Marine-based access to traditional use sites for fishing, hunting, trapping, gathering, and spiritual and cultural practices may be affected to the extent that access routes overlap with project components and activities (see Section 15). Project components and activities are not expected to interfere with land-based access to preferred traditional use sites.

Access through Lelu Slough is limited to high tide events and may be limited periodically during construction of the bridge between Lelu Island and the mainland. North-south navigation between Lelu Island and Flora Bank is limited to high tide events and may be periodically limited during construction of the suspended bridge-trestle. Associated construction activities with respect to the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound may also temporarily impede normal access to the north-south channel just west of Lelu Island. Project-related vessel traffic during construction may occasionally alter preferred traditional access, particularly in and out of Porpoise Channel and through Lelu Slough. Activities related to dredging and disposal at sea may occasionally interfere with traditional marine navigation. Marine navigation is regulated by the Port of Prince Rupert and therefore project construction-related disruptions will be managed so they do not unduly inconvenience traditional aboriginal navigation use in and around Porpoise Channel.

During operations, local traditional navigation will not be affected through Lelu Slough since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. The suspended bridge-trestle extending over Flora Bank will have a clearance of approximately 11 metres under a portion of the suspended bridge-trestle near Lelu Island to allow high tide access to the current north-south channel and local traditional navigation travel route just west of Lelu Island.

Large ship navigation from the Pacific and into Chatham Sound may be temporarily affected when LNG carriers are being piloted into Port although only one LNG carrier per day/350 per year are estimated to berth at the terminal. Local navigation may also be affected by temporary weather-related LNG carriers using Port of Prince Rupert temporary anchorages. The anchorage locations will be identified by the PRPA and be within the Prince Rupert Inner Harbour and Chatham Sound.

During decommissioning, in the unlikely event the Port approves the removal of project infrastructure on industrial port lands and waters, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may temporarily affect Aboriginal marine users.

Kitselas First Nation members currently travel through waters in the vicinity of the Project, including around Lelu Island and Chatham Sound.

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Kitselas First Nation members' marine-based access to traditional use sites may experience a degree of temporary interference, but will not at any time be eliminated.

21.10.2.2 Quantity of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction, operations, and decommissioning hold the potential to affect the quantity of lands, waters, and resources used for fishing, hunting and trapping, gathering, spiritual and ceremonial activities.

Construction of project components such as the road access bridge between Lelu Island and the mainland, the MOF and turning basin in Porpoise Channel, as well as the suspended bridge-trestle over Flora Bank, the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound will temporarily render these locations unavailable for fishing, marine gathering, and marine hunting and trapping. Upon completion of construction, passage under the road access bridge and the suspended bridge-trestle across Flora Bank will be possible at high tide throughout operations, however, it is envisioned that regulatory authorities may require marine safety exclusion zones to be put in place along and underneath the suspended bridge-trestle and along the pipe pile supported jetty on Agnew Bank. Marine traffic will likely only be possible right near Lelu Island where the suspended bridge-trestle allows for safe vessel passage for ships up to a gill netter in size at high tide.

Kitselas First Nation members currently fish for salmon, hunt for marine species (e.g., seals), and gather of traditional resources (e.g., seaweed) around in the vicinity of the Project, including in the areas of Smith Island and Flora Bank (Section 21.10.1.1).

The quantity of marine water available for Kitselas First Nation member's salmon and other fishing and marine gathering sites are expected to be reduced during construction in the waters around Lelu Island. Kitselas First Nations members' marine hunting sites are not expected to be affected by the Project.

Project components and activities during construction, operations, and perhaps, at decommissioning will remove Lelu Island as a location for terrestrial hunting and trapping, gathering, and spiritual and ceremonial activities. Lelu Island is approximately 192 ha, and the PDA (the area within the project development area on Lelu Island and security 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 (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island). Thirty two ha (17%) of Lelu Island will remain outside of the fence line.

Kitselas First Nation members have not provided information to confirm that they currently hunt, trap, gather, or use spiritual sites or cultural landscapes on Lelu Island (Section 21.10.1).

The quantity of land available for Kitselas First Nation members' terrestrial hunting and gathering, spiritual and ceremonial practices is not expected to be reduced by project activities or components.

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Construction and operations activities will, with respect to the use of Lelu Island, reduce the quantity of terrestrial resources within Aboriginal peoples' preferred use locations due to direct mortality and alteration of movement. Mortality of birds, amphibians, and small mammals on Lelu Island will be limited to a small number of individuals since vegetation clearing will optimally be completed outside of breeding periods when wildlife are more likely to be occupying nests, dens, or breeding ponds (Section 11.5.3.4).

Mortality of grizzly bear and wolverine *luscus* subspecies caused by vehicle collisions and human-wildlife interactions is expected to be negligible because these species are not found on Lelu Island and are unlikely to occur in the LAA. Marine birds may die due to collisions with LNG facility structures after they are constructed and regularly lighted for safety reasons during operations. Project-related effects on wildlife movement from site preparation and construction of the LNG facility, operation of construction equipment, and installation of the mainland road access bridge and access road, will affect some individuals (Section 11.5.4.3) although it is anticipated that most wildlife will move away from an active, noisy and lighted large industrial site. Project-related effects on marine bird movement from the marine terminal, MOF, and bridge are expected to be negligible.

Kitselas First Nation members currently hunt deer at Mud Bay and at locations near Port Edward (Section 21.10.1.2).

The quantity of terrestrial resources available to Kitselas First Nation members' within their preferred use locations is not expected to be reduced by the Project.

Construction and operations activities hold the potential to reduce the quantity of marine resources used by Aboriginal peoples within preferred locations due to direct mortality and alteration of movement. Injury and mortality of fish due to blasting during construction is expected to be limited in extent (Section 13.5.4.3). Blasting activities during marine construction will be undertaken in accordance with DFO blasting guidelines in order to avoid harm to marine mammals. In addition, most species of commercial importance are expected to be rarely present or absent from the blast area. Resident Dungeness crabs will be relocated prior to blasting. Injury or mortality due to 'Disposal At Sea' deposition at Brown Passage associated with dredging the MOF and Turning Basin is expected to affect only immobile species in close proximity to these activities. Increases in TSS levels associated with vessel manoeuvring, dredging at the MOF, and disposal at sea are not expected to result in injury or mortality to fish as marine organisms (including juvenile salmon) are adapted to seasonal variations in TSS levels, levels are below those that cause lethal effects to salmon and other species, and will be limited in extent and duration. In any event TSS will be monitored during dredging and deposition.

Any existing sediment chemical compounds (e.g., dioxins and furans) exposed during MOF dredging during construction or vessel berthing and departure during operations are not expected to pose to any toxicological risks to marine biota (Section 13.5.2.5) or to human health from the consumption of marine animals as these sediments have levels of contamination well below regulatory thresholds. Underwater noise from impact pile driving can be mitigated using a bubble curtain, therefore, the underwater noise is not expected to result in injury or mortality to fish or marine mammals. In the rare case that an impact hammer is used to install piles, and a bubble curtain is used, cetaceans within 1.0 km of the sound source may be exposed to sound levels

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capable of causing permanent auditory injury. Potentially affected species include harbour porpoise, Dall's porpoise, Northern resident and Bigg's killer whales, humpback whale, Loughlin's Northern sea lion, harbour seal, and Pacific white-sided dolphin. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The relative number of marine resources available in preferred hunting sites in the project marine infrastructure areas around Lelu Island may be reduced due to altered distribution of fish and marine mammal populations (Section 13.5.5.3). There is potential for fish (e.g., eulachon, herring, rockfish) to react to construction noises; however, if such reactions occur, they are likely to be spatially and temporally limited. Salmon may show local avoidance of particularly noisy zones (Feist et al. 1996), but this reaction is expected to be limited in spatial extent and short-lived. Pipe pile installation during construction may result in potential residual effects to marine mammal's behavior at distances of up to 15 km. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The transit of LNG carriers into Port and berthing during operations could also affect some marine species' behaviours. Areas of avoidance for Harbour Porpoise may occur within Porpoise Channel and a portion of Prince Rupert Harbour. Because harbour porpoise and other marine mammals in the LAA are important prey species for Bigg's killer whale; potential displacement of these species during pile driving could indirectly result in displacement of Bigg's killer whale. Killer whales might exhibit behavioural response over large areas of the LAA. Modelling results indicate the humpback whales could experience behavioural responses over a radius of 8.9 km at the Triple Island area during ship transits into the Port of Prince Rupert, and, at the marine terminal in Chatham Sound, when the LNG carriers are berthing supported by 4 tugs.

Effects on Loughlin's sea lion may also be a concern near any rookeries (i.e., breeding areas) though none are identified within the project marine infrastructure areas. The severity of threat from LNG carriers coming to, and leaving Port, and to any rookeries along already existing large vessel transit routes from Triple Island to Port at the population-level is "likely low", as this species is described as being able to habituate to chronic disturbances.

Kitselas First Nation members currently fish for salmon, hunt for marine species (e.g., seals), and gather traditional resources (e.g., seaweed) at areas in the vicinity of the Project, including in the areas of Smith Island and Flora Bank (Section 21.9.1).

Project-related reduction in the quantity of fish currently harvested by Kitselas First Nation members within their preferred fishing locations are expected to be negligible. Overall reductions in the population sizes of harvestable fish species are not expected. Some limited fish movement out preferred fishing locations may take place during construction activities. The overall quantity of marine mammals harvested by Kitselas First Nation members is not expected to be reduced by project activities. Kitselas First Nation members may find reduced numbers of marine mammals in preferred harvesting areas during construction due to noise-related alteration of movement.

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21.10.2.3 Quality of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction and operations hold the potential to affect the quality of lands, waters and resources for used fishing, hunting, trapping, and gathering. The Project is not expected to result in any adverse effects to the quality of terrestrial country foods.

Dredging during construction of the MOF and turning basin could expose marine species to sediments containing historical deposits of non-toxic (as the levels of contamination in these sediments have been tested as being well below any toxicological thresholds) chemicals (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans - PCDD/Fs) (Section 19.5.2). Although country foods have been tested for any existing dioxin and furan contamination, and the results have shown they are not contaminated, there is perceived potential that MOF dredging could expose additional dioxins and furans and that these chemical contaminants could be further exposed so that they may be at higher concentrations and then accumulate in the tissues of marine country food species and affect human health from the consumption of marine country foods.

The project assessment of these potential effects meets or exceeds the standards imposed by the appropriate regulatory authorities. The overall potential for PCDD/Fs in marine country foods to increase in concentrations is negligible to low. With that said, the Project has committed to on-going country food monitoring to confirm this prediction.

Kitselas First Nation members may harvest fish species and marine mammals within the LAA, including within the vicinity of Lelu Island.

The Project is not expected to affect the quality of resources harvested by Kitselas First Nations members.

21.10.2.4 Sensory Environment for Current Aboriginal Use

Construction, operations, and decommissioning of the Project have the potential to affect the sensory environment within which Aboriginal peoples undertake traditional use activities. Project activities will result in changes to sound levels, ambient light, air quality, and quality of the visual landscape. The Project also has the potential to change perceived safety and solitude for Aboriginal people who frequent areas near the PDA and shipping lanes.

Modelled noise levels during construction are predicted to be below the threshold of human hearing perception on Rachel Islands, Lucy Islands, and Triple Island (Section 8.5.2.3). Construction noise will be audible on Kitson Island, Kinahan Islands, Digby Island, and Smith Island. During operations, project-related noise will be audible on Kitson Island, Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Digby Island, and Smith Island. Noise related to construction and operations is not predicted to exceed Health Canada noise limits (%HA) at any of the modelled sites (Section 8.5.2.3 and 19.5.2.3).

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Changes to light levels will occur during all phases of the project activities during daytime and nighttime (Section 19.5.2.3). A qualitative assessment of the potential effects of changes in ambient light during construction phase indicates that, with mitigation, adverse effects will be avoided. Most construction activities occur during the daytime with limited nighttime lighting required. During operations, there is potential that the exterior lighting associated with some project components (e.g., storage tanks, flares) will be visible. Due to the positioning of the marine terminal component of the Project, for the most part, the exterior lighting associated with the terminal itself and the ships will likely not be visible. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment.

Project components and construction and operations activities are expected to affect visual quality as they will alter the topography and vegetation patterns of the project site and the marine areas in which the trestle will be built (Section 17.5.2.2). The Project will also introduce new industrial human interventions that, pending the viewing angle, will be out of scale and not characteristic of the current landscape character of VSUs within the LAA. The project facility and marine terminal will be visible from Kitson Island and Kinahan Islands. LNG carrier ships will be visible from Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Stephens Island, and Melville Island. Effects to visual quality related to the facility and marine terminal are expected to be high magnitude. Effects to visual quality related to shipping operations are predicted to be low to moderate magnitude.

No changes to human health are anticipated from air quality during construction (Section 19.5.2.3). The modelled changes to air quality during operations shows that no criteria air contaminants (CACs) exceed applicable BC Ministry of Environment air quality objectives at any time. This indicates that for the general population, there would be no changes to human health to people exposed to CACs in the air from project activities.

The sensory environment for Kitselas First Nation members' traditional use activities is expected to be affected by changes in visual quality, but not by changes in noise, light, or air quality. Perception of safety of solitude may be affected due to the present of project components and activities and increased presence of marine traffic.

21.10.3 Mitigation Measures for Pathway Valued Components

Mitigation measures for access to traditional use sites include:

- Measures to reduce changes to aboriginal marine navigation (Section 15.5.2.2).

Mitigation measures for potential effects on quantity of lands, waters, and resources for traditional purposes include measures to reduce:

- The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2)
- Changes to fish habitat (Section 13.5.3.2)
- The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2)

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- Changes in behaviour of fish and marine mammals (Section 13.5.5.2)
- Terrestrial habitat for wildlife and marine birds, including wetland compensation and fish habitat offsetting (Section 11.5.2.2)
- Mortality risk to terrestrial wildlife and marine birds (Section 11.5.3.3)
- Alteration of movement of terrestrial wildlife and marine (Section 11.5.4.2)
- Or identify, record, and recover data for heritage features, including culturally modified trees (Sections 20.5.2.2 and 20.5.3.2).

Mitigation measures for potential effects on quality of lands, waters and resources for traditional purposes include:

- Measures to reduce changes to marine resources due to changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2).

Mitigation measures for potential effects on the sensory environment for traditional activities include measures to reduce changes to:

- Air quality (Section 6.5.2.2)
- Acoustic environment (Section 8.5.2.2)
- Ambient light (Section 9.5.2.2)
- Visual quality (Section 17.5.2.4).

21.10.4 Residual Effects on Pathway Valued Components

Following the mitigation measures described and referenced in Section 21.10.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a relatively short temporal amount of interference due to construction activities and water vessel traffic (including LNG carrier movements in and out of Port). Project mitigations will be unable to minimize the loss of the use of lands on Lelu Island as the entire island will be leased to the Project. However, other non-Lelu Island terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of Lelu Island peat bogs and wetlands. Marine waters impacted by the project marine infrastructure will be temporarily affected for short durations during construction and decommissioning, while complete alteration and removal of some marine waters from traditional use during operations will be limited in extent to where regulatory authorities require marine traffic exclusion zones for safety reasons. The Port of Prince Rupert will manage the temporary loss of use during construction.

Project mitigations avoid reductions in the absolute quantity of terrestrial and marine resources. The relative number of sea lions in preferred harvesting locations may be reduced during construction due to alteration of movement associated with construction activity and associated noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-41 identifies residual effects remaining after the application of mitigation measures.

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Table 21-41 Kitselas First Nation: Residual Effects to Pathway Valued Components

Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Access to lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	Kitselas First Nation members' marine-based access to current fishing sites near Lelu Island may experience a degree of temporary interference.
Current Hunting and Trapping Practices	C, O, D	Kitselas First Nation members' marine-based access to current hunting and trapping sites may experience a degree of temporary interference.
Current Gathering Practices	C, O, D	Kitselas First Nation members' marine-based access to current marine and terrestrial gathering sites may experience a degree of temporary interference (location and practice to be determined).
Current Spiritual and Ceremonial Practices	C, O, D	Kitselas First Nation members' marine-based access to current spiritual and ceremonial sites may experience a degree of temporary interference (location and practice to be determined).
Quantity of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C	The quantity of marine waters available for Kitselas First Nation members' salmon fishing and resource gathering sites are expected to be reduced in the waters around Lelu Island.
Current Hunting and Trapping Practices	C, O	No predicted residual effects.
Current Gathering Practices	C, O	No predicted residual effects.
Current Spiritual and Ceremonial Practices	C, O	No predicted residual effects
Quality of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	No predicted residual effects
Current Hunting and Trapping Practices	C, O, D	No predicted residual effects
Current Gathering Practices	C, O, D	No predicted residual effects
Current Spiritual and Ceremonial Practices	C, O, D	No predicted residual effects
Sensory environment for the Current Aboriginal Use		
Current Fishing Practices	C, O, D	Kitselas First Nation members' who participate in fishing activities are expected to be affected by changes in visual quality. Perceptions of safety and solitude may be affected due to the presence of project components and activities and increased presence of marine traffic.
Current Hunting and Trapping Practices	C, O, D	Kitselas First Nation hunters and trappers are expected to be affected by changes in visual quality during construction, operations, and decommission.
Current Gathering Practices	C, O, D	Kitselas First Nation members engaging in gathering practices in the vicinity of the Project are expected to be affected by changes in visual quality, if any such practices are within view of project components.
Current Spiritual and Ceremonial Practices	C, O, D	Kitselas First Nation members engaging in spiritual and ceremonial practices in the vicinity of the Project are expected to be affected by changes in visual quality, if any such practices are within view of project components.

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21.10.5 Assessment of Effects on Current Aboriginal Use

21.10.5.1 Potential Effects on Current Fishing Practices

21.10.5.1.1 Location of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in displacement of Aboriginal fishers from some preferred fishing locations. Key locations include the waters around Lelu Island, the suspended trestle-bridge, along the Pacific Pilot Authority's existing large ocean going vessel transit/shipping route from Triple Island to the Port of Prince Rupert, and the 'Disposal at Sea' site (Brown Passage). As the marine jetty will be located along the transition between Flora Bank and Agnew Bank, it is not expected to interfere with fishing from larger vessels. Further, the design of the bridge between Lelu Island and the mainland and the redesigned marine jetty will allow fishers in smaller vessels to transit between fishing areas to the north and south without additional travel time. Areas that are used in the vicinity of Inverness Passage, Horsey Bank west of Kitson Island, and Agnew Bank will all remain accessible for fishing. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port designated under the *Canada Marine Act* and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key fishing sites are likely to outweigh effects to sensory environment associated with visual quality.

Kitselas First Nation members fish in the waters around Lelu Island and in Chatham Sound (Section 21.10.1.1). Potentially-affected fisheries include salmon and unspecified fisheries.

Kitselas First Nation fishers expected to shift the location of salmon fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. Members may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Increased marine traffic during decommissioning may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.

21.10.5.1.2 Timing of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in changes to the preferred timing of Aboriginal peoples' fishing activities. Fishers may avoid fishing in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, fishing sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping traffic.

Kitselas First Nation members may participate in fishing activities throughout the year, but likely fish more intensively in the spring and summer months for salmon. Annual, monthly, weekly, and daily variation in fishing times is not currently known.

Project activities during construction are not expected to affect the seasonality of Kitselas First Nation members' fishing practices, as this is largely tied to the biology and behavior of fisheries resources. Project activities during operations will occur through the year, so are not expected to affect the seasonality

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of members' fishing practices. Members may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.

21.10.5.1.3 Effort Involved in Current Fishing Practices

Interruptions in access may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred fishing locations. Temporary limitations in availability of fishing sites that are in the direct path of shipping lanes may also increase effort, if fish harvesters are required to shift their fishing location during the presence of LNG carrier ships. Changes to sensory environment (visual quality) are not expected to directly affect fishing effort but may increase effort if it leads Aboriginal people to shift their fishing locations. Reductions in fish quantity are not expected to affect fishing effort as the reductions will be minimal, not likely to affect commercial species, and limited to the immediate vicinity of project components and activities.

Kitselas First Nation members fish in the waters around Lelu Island and in Chatham Sound (Section 21.10.1.1). Potentially-affected fisheries include salmon and other unspecified fisheries. Kitselas First Nation peoples who access areas around the Project during construction and decommissioning to fish may be required to increase the amount of effort required by members to reach preferred sites. This effect is expected to be negligible as project-related presence of marine vessels will not require fishers to substantially alter travel routes while traveling to fishing sites. Temporary reductions in the availability of fishing sites due to LNG carrier traffic is expected to increase the amount of time that members spend actively fishing in other locations. This effect can be mitigated with appropriate communications (see Section 21.9.12). Increased effort to access alternative fishing locations is expected for members who shift fishing locations due to project-related changes in availability of and access to fishing sites.

21.10.5.1.4 Success of Current Fishing Practices

Changes in access to and quantity of waters available for fishing during construction and operations could reduce the success of Aboriginal peoples' fishing practices. Fishing success may also be reduced to the extent that temporary restriction of fishing within shipping lanes and interference with access to preferred fishing sites reduces the total amount of time available for active fishing. Additionally, if Aboriginal fish harvesters alter the location of their activities due to interference with access or reduced site availability, success rates could change, depending on the nature of fishing resources in alternative locations.

No information has been provided to PNW LNG regarding Kitselas First Nation members' current catch quantities for AFS fisheries (see Section 21.3).

Effects on fishing success for Kitselas First Nation fishers is not expected as a result of changes in access and quantity, given the localized and temporally limited nature of expected changes. Effects on fishing success due to locational change are expected to be negligible as fishers are not expected to shift fishing efforts to substantially different locations.

21.10.5.1.5 Satisfaction with Current Fishing Practices

Changes in access to preferred fishing locations, quantity of waters and resources used for fishing purposes, and visual quality may affect the extent to which Aboriginal fishing practices satisfy expectations relating to

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aesthetic experiences, Traditional Ecological Knowledge (TEK), cultural distinctiveness and continuity, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred fishing locations may affect Aboriginal fishers' ability to collect traditional ecological knowledge and to transmit such knowledge to other members. Reductions in fishing success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

PNW LNG has not been provided with information relating to Kitselas First Nation members' expectations with respect to fishing practices.

The Project is not expected to affect the ability of Kitselas First Nations to collect TEK and transmit cultural knowledge, given expected limited interference with fishing practices resulting from changes in access to and quantity of fishing resources. Changes in visual quality are not expected to be substantial enough to interfere with Kitselas First Nations' ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.

21.10.5.2 Potential Effects on Current Hunting and Trapping Practices

21.10.5.2.1 Location of Current Hunting and Trapping Practices

Changes in the quantity of, lands, waters, and resources used for hunting and trapping purposes may result in displacement of Aboriginal hunters and trappers from preferred harvesting locations. Key locations include Lelu Island and Islands and waters in the vicinity of the shipping route and disposal at sea site (Brown Passage). Changes in marine access to hunting and trapping locations is not expected to be sufficient to prompt locational change for these activities, as project-related presence of marine vessels will not require members to substantially alter marine travel routes while traveling to hunting and trapping sites. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key hunting and trapping sites are likely to outweigh effects to sensory environment associated with visual quality. Kitselas First Nation members currently hunt deer at Mud Bay and at locations near Port Edward (Section 21.10.1.2). Members currently hunt seal and sea lion in areas from Port Essington to Smith Island to Port Edward.

Kitselas First Nation members hunting seal on the north side of Smith Island may shift the location of these activities during construction due to construction-related noise.

21.10.5.2.2 Timing of Current Hunting and Trapping Practices

Changes in access to waters for marine hunting, changes in marine access to terrestrial hunting sites, and changes in the quantity of waters available for hunting activities may result in changes to the preferred timing of Aboriginal peoples' hunting activities. Hunters may avoid hunting in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, hunting sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

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Information regarding the timing of Kitselas First Nation's seasonal use of land and resources has not been provided to PNW LNG. Kitselas members may alter the timing of their marine and other harvesting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day). Seasonal changes are not expected as hunting seasonality is tied to the biology and behavior of harvested resources. In addition, operations will be continuous throughout the year.

21.10.5.2.3 Effort Involved in Current Hunting and Trapping Practices

Interference with access to lands, waters, and resources for hunting and trapping purposes (Section 21.6.2) may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred hunting and trapping locations. Temporary limitations in availability of marine hunting sites that are in the direct path of shipping lanes may also increase effort, if hunters are required to interrupt hunting efforts during the presence of LNG carriers, however existing shipping traffic into and out of Prince Rupert already manifests in these impacts. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect hunting effort but may increase effort if it leads Aboriginal people to shift their hunting locations.

Kitselas First Nation peoples do not reside in close proximity to the Project. PNW LNG has not been provided with information about members' current level of effort with respect to their hunting and trapping fishing activities.

The Project is expected to interfere to a limited degree with Kitselas First Nation members' marine access to hunting locations (terrestrial and marine) during all project phases. The resulting effect on effort is expected to be negligible as project-related presence of marine vessels will not require hunters and trappers to substantially alter travel routes while traveling to hunting and trapping sites.

21.10.5.2.4 Success of Current Hunting and Trapping Practices

Changes in access to and quantity of sites available for hunting and trapping during construction and operations could reduce the success of Aboriginal peoples' efforts. Hunting and trapping success may be also be reduced to the extent that interference with routes of access to marine and terrestrial hunting and trapping locations reduces the total amount of time available for hunting and trapping activities. If Aboriginal hunters and trappers move to alternative locations due to interference with access, reduced site availability, or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative hunting and trapping sites for particular individuals and/or families.

Kitselas First Nation members currently hunt deer at Mud Bay and at locations near Port Edward (Section 21.10.1.2). Members currently hunt seal and sea lion in areas from Port Essington to Smith Island to Port Edward.

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The Project is not expected to reduce the quantity of land and waters available for Kitselas First Nation members' terrestrial hunting (deer, seal, and sea lion). Project-related interference with Kitselas First Nation members' access to terrestrial and marine hunting and trapping locations is not expected to be substantial enough to reduce overall hunting and trapping time and therefore success rates at those locations. Changes in hunting and trapping success are not expected for members who choose to shift harvesting locations to avoid project-related changes in visual quality. The success of Kitselas First Nation harvesting of sea lion in the vicinity of the Project may be reduced, if sea lion alter their behaviour in response to construction-related noise.

21.10.5.2.5 Satisfaction with Current Hunting and Trapping Practices

Changes in access to preferred hunting and trapping locations, quantity of lands, waters and resources used for hunting and trapping purposes, and visual quality may affect the extent to which Aboriginal hunting and trapping practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred hunting and trapping locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to hunt and trap for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in hunting and trapping success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

PNW LNG has not been provided with information relating to Kitselas First Nation members' expectations with respect to hunting practices.

Kitselas First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality as well as by changes to noise conditions on Smith and Digby Islands during construction. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is not expected to be reduced as no identified hunting and trapping sites will be removed from use of the Kitselas First Nation. To the extent that members experience reduced success hunting of sea lion, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity.

21.10.5.3 Potential Effects on Current Gathering Practices

21.10.5.3.1 Location of Current Gathering Practices

Changes in the quantity of, lands, waters, and resources used for terrestrial gathering purposes may result in displacement of Aboriginal peoples from preferred gathering locations. Interference with marine access to preferred terrestrial gathering sites may also result in locational change. Key locations include Lelu Island and gathering sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound. Kitselas First Nation members gather berries from Port Essington to Smith Island to Port Edward, seagull eggs on Smith Island, and carving wood along the coast of the Prince Rupert area (Section 21.10.1.3). Should Kitselas First Nation members gather resources on Lelu Island, they will experience a reduction in total amount of gathering sites available to them and the consequent need to alter the location of these activities.

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21.10.5.3.2 Timing of Current Gathering Practices

Changes in access to land and resources for terrestrial gathering may result in changes to the preferred timing of Aboriginal peoples' terrestrial gathering activities. Aboriginal peoples may avoid gathering in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with marine access to gathering sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping. Kitselas First Nation members gather berries from Port Essington to Smith Island to Port Edward, seagull eggs on Smith Island, and carving wood along the coast of the Prince Rupert area (Section 21.10.1.3). The Project is not expected to affect the timing of Kitselas First Nation members' terrestrial gathering practices.

21.10.5.3.3 Effort Involved in Current Gathering Practices

Interference with access to lands and resources for terrestrial gathering may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred terrestrial gathering locations. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect gathering effort but may increase effort if it leads Aboriginal people to shift their gathering locations.

Kitselas First Nation members gather berries from Port Essington to Smith Island to Port Edward, seagull eggs on Smith Island, and carving wood along the coast of the Prince Rupert area (Section 21.10.1.3). The Project may affect the effort involved in Kitselas First Nation members' terrestrial gathering practices, if project activities interfere with members' access to gathering locations.

21.10.5.3.4 Success of Current Gathering Practices

Changes in the quantity of lands and resources available for terrestrial gathering during construction and operations could reduce the overall success of Aboriginal peoples' gathering efforts. Terrestrial gathering success may be also be reduced to the extent that interference with routes of access to terrestrial gathering locations reduces the total amount of time available for gathering activities. If Aboriginal peoples move to alternative gathering locations due to interference with access or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative terrestrial gathering sites for particular individuals and/or families.

Kitselas First Nation members gather berries from Port Essington to Smith Island to Port Edward, seagull eggs on Smith Island, and carving wood along the coast of the Prince Rupert area (Section 21.10.1.3). The Project may affect the success of Kitselas First Nation members' terrestrial gathering practices, if members currently gather on Lelu Island, and if project activities interfere with members' access to gathering locations.

21.10.5.3.5 Satisfaction with Current Gathering Practices

Changes in access to preferred terrestrial gathering locations, quantity of lands and resources used for gathering purposes, and visual quality may affect the extent to which Aboriginal gathering practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of

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solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred terrestrial gathering locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to gather for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in gathering success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Kitselas First Nation members gather berries from Port Essington to Smith Island to Port Edward, seagull eggs on Smith Island, and carving wood along the coast of the Prince Rupert area (Section 21.10.1.3). The Project may affect Kitselas First Nation members' satisfaction with terrestrial gathering practices, if members currently gather on Lelu Island and if the Project is within view of other gathering locations. Kitselas First Nations members may experience reduced opportunity to collect and transmit TEK, and trade and share country foods, should members currently gather resources on Lelu Island. Members may also experience reduced aesthetic satisfaction, if the Project is within view of other gathering locations.

21.10.5.4 Potential Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.10.5.4.1 Location of Current uses of Spiritual Sites and Cultural Landscapes

Removal of spiritual sites and cultural landscape resources will displace Aboriginal peoples' use of these sites and features. Interference with marine access to spiritual sites and cultural landscapes, and disruption of sensory environment (visual quality), is not expected to result in locational change, as access will not be precluded and affinities for particular spiritual and ceremonial sites are assumed be strong. Key locations include Lelu Island and spiritual and ceremonial sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

PNW LNG has not been provided with information about Kitselas First Nation's current use of spiritual sites and cultural landscapes. Kitselas First Nation has not raised any concerns about archaeological sites or cultural landscapes on Lelu Island. The Project is not expected to affect the location of Kitselas First Nation's current use of spiritual sites and cultural landscapes.

21.10.5.4.2 Timing of Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to spiritual sites and cultural landscapes may result in changes to the preferred timing of Aboriginal peoples' use of these sites and features. Aboriginal peoples may avoid using spiritual sites and cultural landscapes during times (of the day, month, and year) when project activities interfere with marine access to these sites (i.e., during construction activities and associated marine traffic).

PNW LNG has not been provided with information about Kitselas First Nation's current use of spiritual sites and cultural landscapes. Kitselas First Nation has not raised any concerns about archaeological sites or cultural landscapes on Lelu Island. The Project is not expected to affect the timing of Kitselas First Nation's current use of spiritual sites and cultural landscapes.

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21.10.5.4.3 Effort Required for Current Use of Spiritual Sites and Cultural Landscapes

Interference with access to spiritual sites and cultural landscapes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach key sites and features. Removal of traditional use sites may result in increased effort for Aboriginal peoples currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to be sufficient to prompt Aboriginal people to shift the locations where they use spiritual sites and cultural landscapes, due to the unique significance of such sites and features.

PNW LNG has not been provided with information about Kitselas First Nation's current use of spiritual sites and cultural landscapes. Kitselas First Nation has not raised any concerns about archaeological sites or cultural landscapes on Lelu Island. The Project is not expected to affect the effort required by Kitselas First Nation to use of spiritual sites and cultural landscapes.

21.10.5.4.4 Success of Current Use of Spiritual Sites and Cultural Landscapes

Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.

21.10.5.4.5 Satisfaction with Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to, availability of, and sensory environment for spiritual sites and cultural landscapes may affect the extent to which Aboriginal use of these sites and features satisfy expectations relating to aesthetic and spiritual experiences, TEK, and cultural distinctiveness and continuity. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural and cultural environment. Interference with access to and availability of spiritual sites and cultural landscapes may affect Aboriginal peoples' ability to collect TEK and to transmit cultural knowledge to other members.

PNW LNG has not been provided with information about Kitselas First Nation's current use of spiritual sites and cultural landscapes. Kitselas First Nation has not raised any concerns about archaeological sites or cultural landscapes on Lelu Island.

The Project is not expected to affect the Kitselas First Nation's satisfaction with its current use of spiritual sites and cultural landscapes.

21.10.6 Mitigation Measures for Current Aboriginal Use

PNW LNG will apply the following mitigation measures to minimize project-related effects on Current Aboriginal Use described in Section 21.10.5).

Specific to the assessment concerns regarding pathway components and mitigations, Table 21-42 describes how Current Aboriginal Use practices and project components will be mitigated.

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Table 21-42 Measures to Mitigate Potential Effects to Kitselas' Current Aboriginal Use

Potential Effect	Mitigations
Current Fishing Practices	<p>The project changes, including a suspension bridge and relocated trestle and berth, result in no infrastructure located on Flora Bank and eliminate the need for dredging on Agnew Bank.</p> <p>The project changes reduce the effects of infrastructure construction and dredging upon navigation. The jetty length (including the suspension bridge and trestle) will be approximately 300 m longer; however vessels will continue to be able to pass underneath it.</p> <p>The project changes will result in a much reduced volume of sediment for ocean disposal. The resulting dispersal area is significantly reduced, reducing the impact, or perceived impact, on Brown Passage.</p> <p>Section 13 contains a description of mitigation measures relating to marine resources, including those for:</p> <ul style="list-style-type: none"> • The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2) • Changes to fish habitat (Section 13.5.3.2) • The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2) • Changes in behaviour of fish and marine mammals (Section 13.5.5.2).
Current Hunting and Trapping Practices	<p>Mitigations related to impacts to current hunting and trapping practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Kitselas First Nations regarding restricted access to Lelu Island and the resulting effects on Kitselas cultural practices.</p> <p>PNW LNG plans shift rotation during construction as well as recreational facilities at work camps to help reduce the impacts of increased workers on local recreation and resources.</p>

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Potential Effect	Mitigations
Current Gathering Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Kitselas First Nations regarding restricted access to Lelu Island and the resulting effects on Kitselas cultural practices.</p>
Current Use of Spiritual Sites and Cultural Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Kitselas First Nations regarding restricted access to Lelu Island and the resulting effects on Kitselas cultural practices.</p>

Discussions are under way with Kitselas First Nation to identify appropriate means with which to accommodate effects to project effects that cannot be completely mitigated (see Section 27).

21.10.7 Residual Effects on Current Aboriginal Use

Following the mitigation measures described and referenced in Section 21.10.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island. However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources, except for limited reductions in ducks and geese numbers. The relative number of sea lions in preferred harvesting location may be reduced during construction due to alteration of movement associated with noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

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Table 21-43 identifies residual effects remaining after the application of mitigation measures.

Table 21-43 Kitselas First Nation: Residual Effects to Current Aboriginal Use

Effect	Project Phase	Description of Residual Effect
Current Fishing Practices		
Location	C, O, D	Kitselas First Nation fishers expected to shift the location of salmon fisheries in the waters around Lelu Island during construction, due to reduced availability of these sites. Members may alter fishing locations in Chatham Sound during operations to avoid interaction with LNG carriers in the shipping route. Increased marine traffic during decommissioning may also result in a degree of site avoidance for fishers in waters surrounding Lelu Island.
Timing	O	Kitselas First Nation members may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.
Effort	C, O, D	Increased effort to access alternative fishing locations is expected for fish harvesters who shift fishing location due to project-related changes in availability of, and access to, preferred fishing sites.
Success	n/a	No predicted residual effects.
Satisfaction	C, O, D	Visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.
Current Hunting and Trapping Practices		
Location	C, O, D	Kitselas First Nation members hunting seal on the north side of Smith Island may shift the location of these activities during construction due to construction-related noise.
Timing	C, O, D	Kitselas members may alter the timing of their marine and other harvesting to avoid noise during construction and decommissioning (time of week and/or month) and interactions with shipping during operations (time of day).
Effort	C, O, D	No predicted residual effects.
Success	C, O, D	The success of Kitselas First Nation harvesting of sea lion in the vicinity of the Project may be reduced, if sea lion alter their behaviour in response to construction-related noise.
Satisfaction	C, O, D	Kitselas First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality as well as by changes to noise conditions on Smith and Digby Islands during construction. To the extent that members experience reduced success hunting of sea lion, members are expected to have reduced opportunities to share and trade country foods, thereby affecting social networks and norms of reciprocity.
Current Terrestrial Gathering Practices		
Location	n/a	Should Kitselas First Nation members gather resources on Lelu Island, they will experience a reduction in total amount of gathering sites available to them and the consequent need to alter the location of these activities.
Timing	n/a	No predicted residual effects.
Effort	n/a	The Project may affect the effort involved in Kitselas First Nation members' terrestrial gathering practices, if project activities interfere with members' access to gathering locations.
Success	n/a	The Project may affect the success of Kitselas First Nation members' terrestrial gathering practices, if members currently gather on Lelu Island, and if project activities interfere with members' access to gathering locations.

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Effect	Project Phase	Description of Residual Effect
Satisfaction	n/a	Kitselas First Nations members may experience reduced opportunity to collect and transmit TEK, and trade and share country foods, should members currently gather resources on Lelu Island. Members may also experience reduced aesthetic satisfaction, if the Project is within view of other gathering locations.
Current Use of Spiritual Sites and Cultural Landscapes		
Location	C, O, D	No predicted residual effects.
Timing	C, D	No predicted residual effects.
Effort	n/a	No predicted residual effects.
Success	n/a	No predicted residual effects.
Satisfaction	C, O, D	No predicted residual effects.

21.10.8 Assessment of Residual Effects on Current Aboriginal Use

21.10.8.1 Assessment of Residual Effects on Fishing Practices

21.10.8.1.1 Characterization of Residual Effects on Fishing Practices

The residual effect on preferred locations for fishing practices is rated as **low**. The Project will only affect small portions of wider fishing areas and other portions of the fishing areas will remain available. Fishers are expected to move to different locations within existing fishing areas, rather than move to new fishing areas, resulting in a small change from baseline conditions. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation fish harvesters are rated as moderately vulnerable to changes in fishing locations (**moderate context**). The residual effect on timing of fishing practices is rated as **low**. Alteration of the timing of fishing activities in relation to project shipping schedules is expected to take place for only some fishers and would only occur at one period during the day. The residual effect is expected to be limited to operations (**medium-term**) and would be a **multiple regular event**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation fishers are rated as moderately vulnerable to changes in the timing of fishing practices (**moderate context**).

The residual effect fishing effort is rated as **low**. The extent of locational change is expected to be small and will result in only a small change from existing baseline conditions for fishing effort. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously** during construction and decommissioning activities, and regularly during shipping operations (**multiple regular event**). The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation fishers are rated as moderately vulnerable to changes in fishing effort (**moderate context**).

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The residual effect on satisfaction with fishing practices related to aesthetic experiences while fishing in the vicinity of the Project is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation fishers are rated as moderately vulnerable to changes in fishing satisfaction (**moderate context**).

21.10.8.1.2 Significance of Residual Effects on Fishing Practices

Residual effects on Kitselas First Nation's fishing practices are assessed as **not significant**: The residual effects have low magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Kitselas First Nations' overall fishing practices.

21.10.8.1.3 Likelihood and Confidence for Residual Effects Conclusions on Fishing Practices

The likelihood that residual effects on fishing locations, timing, effort, and satisfaction will occur is rated as **medium**. The variables involved are not well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind. Confidence in the predictions is rated as **medium**. The assessments are based recent information about Kitselas First Nation's Current Aboriginal Use; however, the Kitselas TUS provides little site-specific detail.

21.10.8.2 Assessment of Residual Effects Hunting and Trapping Practices

21.10.8.2.1 Characterization of Residual Effects on Hunting and Trapping Practices

The residual effect on preferred locations for hunting and trapping practices is rated as **moderate**. The Project has the potential to result in the relocation of hunting efforts for only small number of individuals. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation hunters are rated as moderately vulnerable to changes in hunting locations (**moderate context**).

The residual effect on timing of hunting and trapping practices is rated as **low**. Alteration of the timing of hunting and trapping activities in relation to construction activities and project shipping schedules is expected to take place for only some hunters if at all; timing effects related to shipping would only occur at one period during the day. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**) and would be **continuous** during construction and a **multiple regular event** during operations. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas hunters are rated as moderately vulnerable to changes in the timing of hunting and gathering practices (**moderate context**).

The residual effect on hunting and trapping success is rated as **low**. The Project is not predicted to affect the population viability and species can be harvested at similar rates in alternative locations. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after

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decommissioning. Kitselas First Nation hunters are rated as moderately vulnerable to changes in hunting and trapping success (**moderate context**).

The residual effect on satisfaction with hunting and trapping practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. Information that would enable review of whether or not Lelu Island is particularly important site for the collection and transmission of TEK is unavailable. Reduced opportunities for social bonding in relation to hunting and trapping practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation hunters are rated as moderately vulnerable to changes in hunting and trapping satisfaction (**moderate context**).

21.10.8.2.2 Significance of Residual Effects on Hunting and Trapping Practices

Residual effects on Kitselas First Nation's hunting and trapping practices are assessed as **not significant**: The residual effects have low to medium magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Kitselas First Nations' overall hunting and trapping practices.

21.10.8.2.3 Likelihood and Confidence for Residual Effects Conclusions on Hunting and Trapping Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are not well known and well-defined as site specific information is confidential and has not been included in this assessment. Confidence in the predictions is rated as **medium**. The assessments are based recent information about Kitselas First Nation's Current Aboriginal Use; however, the Kitselas TUS provides little site-specific detail.

21.10.8.3 Assessment of Effects on Current Gathering Practices

21.10.8.3.1 Characterization of Residual Effects on Current Gathering Practices

The residual effect on preferred locations for gathering practices is rated as **moderate**. The Project is expected to result in the relocation of gathering efforts for only small number of individuals, if any. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation members are rated as moderately vulnerable to changes in gathering locations (**moderate context**).

The residual effect on gathering effort is rated as **low**. The extent of locational change gathering is expected to be small and will result in only a small change from existing baseline conditions for gathering effort. The residual effect is expected to occur through the duration of construction, operations and

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decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitsumkalum First Nation members are rated as moderately vulnerable to changes in hunting and trapping effort (**moderate context**).

The residual effect on gathering success is rated as **low**. Removal of Lelu Island as a gathering site is expected to result in a small reduction in the overall quantity of gathered resources within the LAA. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation members are rated as moderately vulnerable to changes in gathering success (**moderate context**).

The residual effect on satisfaction with gathering practices is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. TEK in LAA is not expected to be highly specific to Lelu Island. Reduced opportunities for social bonding in relation to gathering practices on Lelu Island are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Kitselas First Nation members are rated as moderately vulnerable to changes in gathering satisfaction (**moderate context**).

21.10.8.3.2 Significance of Residual Effects on Current Gathering Practices

Residual effects on Kitselas First Nation's gathering practices are assessed as **not significant**: The residual effects have low to moderate magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Kitselas First Nations' overall gathering practices.

21.10.8.3.3 Likelihood and Confidence for Residual Effects Conclusions on Current Gathering Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as **medium**. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind. Confidence in the predictions is rated as **medium**. The assessments are based recent information about Kitselas First Nation's Current Aboriginal Use; however, the Kitselas TUS provides little site-specific detail.

21.10.9 Summary of Residual Effects on Current Aboriginal Use

Table 21-44 summarizes the residual effects characterization for Kitselas First Nation Current Aboriginal Use VCs.

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Table 21-44 Kitselas First Nation: Summary of Current Aboriginal Use Residual Effects Characterization, Significance, Likelihood and Confidence

Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Fishing Practices									
Location	L	LAA	MT	R	C, MR	M	N	M	M
Timing	L	LAA	MT	R	MR	M	N	M	M
Effort	L	LAA	MT	R	C	M	N	M	M
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Hunting and Trapping Practices									
Location	L	LAA	MT	R	C	M	N	M	M
Timing	L	LAA	MT	R	C, MR	M	N	M	M
Effort	-	-	-	-	-	-	-	-	-
Success	L	LAA	MT	R	C	M	N	M	M
Satisfaction	L	LAA	MT	R	C	M	N	M	M
Current Gathering Practices									
Location	M	LAA	MT	R	C	M	N	M	L
Timing	-	-	-	-	-	-	-	-	-
Effort	L	LAA	MT	R	C	M	N	M	L
Success	L	LAA	MT	R	C	M	N	M	L
Satisfaction	L	LAA	MT	R	C	M	N	M	L

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Use of Spiritual Sites and Cultural Landscapes									
Location	-	-	-	-	-	-	-	-	-
Timing	-	-	-	-	-	-	-	-	-
Effort	-	-	-	-	-	-	-	-	-
Success	-	-	-	-	-	-	-	-	-
Satisfaction	-	-	-	-	-	-	-	-	-
KEY Context: L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment H = High resilience: occurs in viable ecosystem and/or undisturbed environment		Magnitude: N = Negligible: no detectable change on individuals of a regional wildlife population or hectares of habitat L = Low: change detectable on a few individuals or hectares of habitat (i.e., < 10 ha) in a regional population M = detectable change on many individuals or hectares of habitat (i.e., 10 to 250 ha) in a regional population H = High: detectable change on the majority of individuals or hectares of habitat (> 250 ha) in a the regional population Extent: PDA = project development area LAA = local assessment area RAA = regional assessment area			Duration: ST = Short-term: effect less than one breeding season/generation MT = Medium-term: effect occurs for several breeding seasons/generations or a project phase LT = Effect occurs across multiple breeding seasons/generations or project phases P = Permanent: Effect permanent and unlikely to recover following project decommissioning and reclamation Reversibility: R = Reversible: will recover during lifetime of the Project or after project decommissioning and reclamation I = Irreversible: effects will persist after project decommissioning and reclamation Frequency: S = Single event MI = Multiple, irregular event MR = Multiple, regular event C = Continuous			Likelihood: <i>Based on professional judgment.</i> L = Low probability of occurrence M = Medium probability of occurrence H = High probability of occurrence Significance: S = Significant N = Not significant Confidence: <i>Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation, and assumptions made.</i> L = Low level of confidence M = Moderate level of confidence H = High level of confidence	

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21.11 ASSESSMENT OF EFFECTS ON GITGA’AT FIRST NATION’S CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

21.11.1 Baseline Conditions Baseline Conditions for Current Aboriginal Use

Information about Gitga’at First Nation’s Current Aboriginal Use is derived from the Gitga’at First Nation *Traditional Use and Occupancy Study Prince Rupert Region Preliminary Results Report* (Inglis 2014). The report describes Gitga’at First Nation’s past and current traditional use in the Prince Rupert region, including the Prince Rupert Harbour, and the area from the lower Skeena River to Porcher and Stephens Islands.

Gitga’at territory is centered on the Douglas Channel area to the south of the Skeena River region. However, three of the Gitga’at clans (wolf, raven and blackfish), have ancestral ties to the Skeena River and Prince Rupert region. Gitga’at people continue to use these regions.

Gitga’at First Nation traditionally followed a seasonal round similar to other Tsimshian peoples (see Section 27.1.2.2 for a description of the seasonal round).

21.11.1.1 Current Fishing Practices

Gitga’at First Nation currently fishes for the following marine species within the LAA:

- Salmon
- Halibut
- Herring
- Herring eggs
- Clams
- Cockles
- Mussels
- Chitons
- Abalone
- Sea cucumbers
- Seaweed.

Table 21-45 identifies fishing sites currently used by Gitga’at First Nation in the LAA and the fish species harvested in those locations.

Table 21-45 Fish Species Harvested and Fishing Locations

Fishing Location	Fish Species
Mouth of Skeena River	Salmon (Sockeye)
Marcus Passage	Halibut
Telegraph Passage	Halibut
Malacca Passage (off the mouth of the Skeena River and off the north end of Porcher Island and Stephens Island)	Halibut
Porcher Island (north end)	herring, herring, eggs, clams, cockles, mussels, chitons, abalone, sea cucumbers and seaweed
Stephens Island (south end and north end)	herring, herring eggs, clams, cockles, mussels, chitons, abalone, sea cucumbers and seaweed
Tree Nob Group	herring, herring eggs, clams, cockles, mussels, chitons, abalone, sea cucumbers and seaweed

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21.11.1.2 Current Hunting and Trapping Practices

Gitga'at First Nation currently hunts and traps for the following terrestrial and marine species within the LAA:

- Deer
- Bear
- Seal.

Deer were traditionally hunted along the shores of Kaien, Ridley, and Lelu Islands; some of these areas continue to be important for deer hunting. Bears are also hunted in some of these areas.

Seals are harvested on the bank off the mouth of the Skeena River and along the shores of the offshore Islands.

21.11.1.3 Current Terrestrial Gathering Practices

Seagull eggs are harvested from the small islands in Chatham Sound, Marcus Passage and Arthur Passage.

21.11.1.4 Current Spiritual and Ceremonial Practices

PNW LNG has not been provided with information about Gitga'at First Nations' current use of spiritual sites and cultural landscapes.

21.11.1.5 Current Transportation Practices

Gitga'at First Nation members primarily live in the communities of Hartley Bay and Prince Rupert. Most of Gitga'at resource harvesting takes place as day excursions from these communities. A number of members have houses in both communities travel between the communities by individually owned boats, Guardian Program boats, or twice weekly ferry service.

21.11.2 Assessment of Effects on Pathway Valued Components

21.11.2.1 Access to Lands, Waters, and Resources Used for Traditional Purposes

Access through Lelu Slough is limited to high tide events and may be limited periodically during construction of the bridge between Lelu Island and the mainland. North-south navigation between Lelu Island and Flora Bank is limited to high tide events and may be periodically limited during construction of the suspended bridge-trestle. Associated construction activities with respect to the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound may also temporarily impede normal access to the north-south channel just west of Lelu Island. Project-related vessel traffic during construction may occasionally alter preferred traditional access, particularly in and out of Porpoise Channel and through Lelu Slough. Activities related to dredging and disposal at sea may occasionally interfere with traditional marine navigation. Marine navigation is regulated by the Port of Prince Rupert and therefore project construction-related disruptions

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will be managed so they do not unduly inconvenience traditional aboriginal navigation use in and around Porpoise Channel.

During operations, local traditional navigation will not be affected through Lelu Slough since the bridge will be designed to allow continuation of current use for boats up to gillnetter size. The suspended bridge-trestle extending over Flora Bank will have a clearance of approximately 11 metres under a portion of the suspended bridge-trestle near Lelu Island to allow high tide access to the current north-south channel and local traditional navigation travel route just west of Lelu Island.

Large ship navigation from the Pacific and into Chatham Sound may be temporarily affected when LNG carriers are being piloted into Port although only one LNG carrier per day/350 per year are estimated to berth at the terminal. Local navigation may also be affected by temporary weather-related LNG carriers using Port of Prince Rupert temporary anchorages. The anchorage locations will be identified by the PRPA and be within the Prince Rupert Inner Harbour and Chatham Sound.

During decommissioning, in the unlikely event the Port approves the removal of project infrastructure on industrial port lands and waters, additional marine traffic associated with the dismantling and removal of the LNG facility, pipelines, storage tanks and associated supporting infrastructure may temporarily affect Aboriginal marine users.

Gitga'at travel from Prince Rupert and Hartley Bay to harvest resources. PNW LNG has not been provided specific information about Gitga'at First Nation's travel routes used when harvesting resources. Gitga'at First Nation members currently fish at the mouth the Skeena River and in sites within Chatham Sound. Members currently hunt deer, bear and seal on coastal islands in the vicinity of the Project and gather seagull eggs from the small islands in Chatham Sound, Marcus Passage and Arthur Passage.

Gitga'at members' marine-based access to traditional use sites may experience a degree of temporary interference, but will not at any time be eliminated.

21.11.2.2 Quantity of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction, operations, and decommissioning hold the potential to affect the quantity of lands, waters, and resources used for fishing, hunting and trapping, gathering, spiritual and ceremonial activities.

Construction of project components such as the road access bridge between Lelu Island and the mainland, the MOF and turning basin in Porpoise Channel, as well as the suspended bridge-trestle over Flora Bank, the pipe pile supported jetty on Agnew Bank and the marine terminal in Chatham Sound will temporarily render these locations unavailable for fishing, marine gathering, and marine hunting and trapping. Upon completion of construction, passage under the road access bridge and the suspended bridge-trestle across Flora Bank will be possible at high tide throughout operations, however, it is envisioned that regulatory authorities may require marine safety exclusion zones to be put in place along and underneath the suspended bridge-trestle and along the pipe pile supported jetty on Agnew Bank. Marine traffic will likely

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only be possible right near Lelu Island where the suspended bridge-trestle allows for safe vessel passage for ships up to a gill netter in size at high tide.

Gitga'at currently engage in fisheries at the mouth of Skeena River, Marcus Passage, Telegraph Passage, Malacca Passage, Porcher Island (north end), Stephens Island (south end and north end), and Tree Nob Group (Section 21.11.1.1). Members hunt for seal on the bank off the mouth of the Skeena River and along the shores of the offshore Islands. Members may hunt for deer on Lelu Island.

The quantity of marine waters available for Gitga'at First Nation members' fishing and marine harvesting areas are not expected to be reduced during construction or operations in the waters around Lelu Island. Gitga'at First Nation members' hunting areas for deer on Lelu Island, if any, will no longer be available for that purpose during construction, operations, and after decommissioning.

Project components and activities during construction, operations, and decommissioning will remove Lelu Island as a location for terrestrial hunting and trapping, gathering, and spiritual and ceremonial activities. 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 (fencing will generally be a minimum height of 2 m with barbwire at the top and will stretch around the whole island). Thirty two ha (17%) of Lelu Island will remain outside of the fence line.

Gitga'at First Nation members may hunt for deer and bear on Lelu Island (Section 21.11.1.2). PNW LNG has not been provided with information about Gitga'at First Nation's current use of Lelu Island for deer and bear hunting (Section 21.11.1.2).

The quantity of land available for Gitga'at First Nation members' current terrestrial hunting, should deer hunting currently take place on Lelu Island, is expected to be reduced during construction and operations of project components, due to removal of Lelu Island as a use site.

Construction and operations activities will, with respect to the use of Lelu Island, reduce the quantity of terrestrial resources within Aboriginal peoples' preferred use locations due to direct mortality and alteration of movement. Mortality of birds, amphibians, and small mammals on Lelu Island will be limited to a small number of individuals since vegetation clearing will optimally be completed outside of breeding periods when wildlife are more likely to be occupying nests, dens, or breeding ponds (Section 11.5.3.4).

Mortality of grizzly bear and wolverine *luscus* subspecies caused by vehicle collisions and human-wildlife interactions is expected to be negligible because these species are not found on Lelu Island and are unlikely to occur in the LAA. Marine birds may die due to collisions with LNG facility structures after they are constructed and regularly lighted for safety reasons during operations. Project-related effects on wildlife movement from site preparation and construction of the LNG facility, operation of construction equipment, and installation of the mainland road access bridge and access road, will affect some individuals (Section 11.5.4.3) although it is anticipated that most wildlife will move away from an active, noisy and

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lighted large industrial site. Project-related effects on marine bird movement from the marine terminal, MOF, and bridge are expected to be negligible.

The quantity of terrestrial resources available to Gitga'at First Nation for traditional hunting purposes is not expected to be reduced by the Project.

Construction and operations activities hold the potential to reduce the quantity of marine resources used by Aboriginal peoples within preferred locations due to direct mortality and alteration of movement. Injury and mortality of fish due to blasting during construction is expected to be limited in extent (Section 13.5.4.3). Blasting activities during marine construction will be undertaken in accordance with DFO blasting guidelines in order to avoid harm to marine mammals. In addition, most species of commercial importance are expected to be rarely present or absent from the blast area. Resident Dungeness crabs will be relocated prior to blasting. Injury or mortality due to 'Disposal At Sea' deposition at Brown Passage associated with dredging the MOF and Turning Basin is expected to affect only immobile species in close proximity to these activities. Increases in TSS levels associated with vessel manoeuvring, dredging at the MOF, and disposal at sea are not expected to result in injury or mortality to fish as marine organisms (including juvenile salmon) are adapted to seasonal variations in TSS levels, levels are below those that cause lethal effects to salmon and other species, and will be limited in extent and duration. In any event TSS will be monitored during dredging and deposition.

Any existing sediment chemical compounds (e.g., dioxins and furans) exposed during MOF dredging during construction or vessel berthing and departure during operations are not expected to pose to any toxicological risks to marine biota (Section 13.5.2.5) or to human health from the consumption of marine animals as these sediments have levels of contamination well below regulatory thresholds. Underwater noise from impact pile driving can be mitigated using a bubble curtain. Therefore, the underwater noise is not expected to result in injury or mortality to fish or marine mammals. In the rare case that an impact hammer is used to install piles, and a bubble curtain is used, cetaceans within 1.0 km of the sound source may be exposed to sound levels capable of causing permanent auditory injury. Potentially affected species include harbour porpoise, Dall's porpoise, Northern resident and Bigg's killer whales, humpback whale, Loughlin's Northern sea lion, harbour seal, and Pacific white-sided dolphin. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3).

The relative number of marine resources available in preferred hunting sites in the project marine infrastructure areas around Lelu Island may be reduced due to altered distribution of fish and marine mammal populations (Section 13.5.5.3). There is potential for fish (e.g., eulachon, herring, rockfish) to react to construction noises; however, if such reactions occur, they are likely to be spatially and temporally limited. Salmon may show local avoidance of particularly noisy zones (Feist et al. 1996), but this reaction is expected to be limited in spatial extent and short-lived. Pipe pile installation during construction may result in potential residual effects to marine mammal's behavior at distances of up to 15 km. A MMO program will monitor cetaceans in the area to reduce the potential for such exposure (Section 13.5.4.3)

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The transit of LNG carriers into Port and berthing during operations could also affect some marine species' behaviours. Areas of avoidance for Harbour Porpoise may occur within Porpoise Channel and a portion of Prince Rupert Harbour. Because harbour porpoise and other marine mammals in the LAA are important prey species for Bigg's killer whale; potential displacement of these species during pile driving could indirectly result in displacement of Bigg's killer whale. Killer whales might exhibit behavioural response over large areas of the LAA. Modelling results indicate the humpback whales could experience behavioural responses over a radius of 8.9 km at the Triple Island area during ship transits into the Port of Prince Rupert, and, at the marine terminal in Chatham Sound, when the LNG carriers are berthing supported by 4 tugs.

Effects on Loughlin's sea lion may also be a concern near any rookeries (i.e., breeding areas) though none are identified within the project marine infrastructure areas. The severity of threat from LNG carriers coming to, and leaving Port, and to any rookeries along already existing large vessel transit routes from Triple Island to Port at the population-level is "likely low", as this species is described as being able to habituate to chronic disturbances.

Gitga'at currently engage in fisheries at the mouth of Skeena River, Marcus Passage, Telegraph Passage, Malacca Passage, Porcher Island (north end), Stephens Island (south end and north end), and Tree Nob Group (Section 21.11.1.1). Members hunt for seal on the bank off the mouth of the Skeena River and along the shores of the offshore Islands.

Project-related reductions in the quantity of fish currently harvested by Gitga'at First Nation members within their preferred fishing locations are expected to be negligible. Absolute reductions in the population sizes of harvestable fish species are not expected. Some limited fish movement out of preferred fishing locations may take place during construction activities. The absolute quantity of marine mammals harvested by Gitga'at First Nation members is not expected to be reduced by project activities.

21.11.2.3 Quality of Lands, Waters, and Resources Used for Traditional Purposes

Project components and activities during construction and operations hold the potential to affect the quality of lands, waters and resources for used fishing, hunting, trapping, and gathering. The Project is not expected to result in any adverse effects to the quality of terrestrial country foods.

Dredging during construction of the MOF and turning basin could expose marine species to sediments containing historical deposits of non-toxic (as the levels of contamination in these sediments have been tested as being well below any toxicological thresholds) chemicals (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans - PCDD/Fs) (Section 19.5.2). Although country foods have been tested for any existing dioxin and furan contamination, and the results have shown they are not contaminated, there is perceived potential that MOF dredging could expose additional dioxins and furans and that these chemical contaminants could be further exposed so that they may be at higher concentrations and then accumulate in the tissues of marine country food species and affect human health from the consumption of marine country foods.

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The project assessment of these potential effects meets or exceeds the standards imposed by the appropriate regulatory authorities. The overall potential for PCDD/Fs in marine country foods to increase in concentrations is negligible to low. With that said, the Project has committed to on-going country food monitoring over the life of the project marine construction period to confirm this prediction.

Gitga'at harvest a variety of fish and marine resources in the LAA, including salmon, halibut, herring, herring eggs, clams, cockles, mussels, chitons, abalone, sea cucumbers, and seaweed (Section 21.11.1.1).

The Project is not expected to affect the quality of resources harvested by Gitga'at First Nation members.

21.11.2.4 Sensory Environment for Current Aboriginal Use

Construction, operations, and decommissioning of the Project have the potential to affect the sensory environment within which Aboriginal peoples undertake traditional use activities. Project activities will result in changes to sound levels, ambient light, air quality, and quality of the visual landscape. The Project also has the potential to change perceived safety and solitude for Aboriginal people who frequent areas near the PDA and shipping lanes.

Modelled noise levels during construction are predicted to be below the threshold of human hearing perception on Rachel Islands, Lucy Islands, and Triple Island (Section 8.5.2.3). Construction noise will be audible on Kitson Island, Kinahan Islands, Digby Island, and Smith Island. During operations, project-related noise will be audible on Kitson Island, Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Digby Island, and Smith Island. Noise related to construction and operations is not predicted to exceed Health Canada noise limits (%HA) at any of the modelled sites (Section 8.5.2.3 and 19.5.2.3).

Changes to light levels will occur during all phases of the project activities during daytime and night-time (Section 19.5.2.3) as construction and operational safety is directly related to adequate lighting. A qualitative assessment of the potential effects of changes in ambient light during construction phase indicates that, with mitigation, adverse effects will be avoided. Most construction activities occur during the daytime with limited night-time lighting required. During operations, exterior lighting associated with some project components (e.g., storage tanks, flares) will be visible. Due to the positioning of the marine terminal component of the Project, for the most part, the exterior lighting associated with the terminal itself and the ships will likely not be visible from mainland locations. Existing lighting in Port Edward will continue to be the greatest source of unnatural light in the area. Surrounding areas will remain characteristic of a rural/sub-rural and natural/rural environment.

Project components and construction and operations activities are expected to affect visual quality as they will alter the topography and vegetation patterns of the project site and the marine areas in which the suspended bridge trestle, pipe-pile supported trestle and marine terminal will be built (Section 17.5.2.2). The Project will also introduce new industrial human interventions that, pending the viewing angle, will be out of scale and not characteristic of the current landscape character of VSUs within the LAA. The project facility and marine terminal will be visible from Kitson Island and Kinahan Islands. LNG carrier ships will be visible from Kinahan Islands, Rachel Islands, Lucy Islands, Triple Island, Stephens Island, and Melville Island.

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Effects to visual quality related to the facility and marine terminal are expected to be high magnitude.
Effects to visual quality related to shipping operations are predicted to be low to moderate magnitude.

No changes to human health are anticipated from air quality during construction (Section 19.5.2.3).
The modelled changes to air quality during operations shows that no criteria air contaminants (CACs) exceed applicable BC Ministry of Environment air quality objectives at any time. This indicates that for the general population, there would be no changes to human health to people exposed to CACs in the air from project activities. With that said, the project air emissions will be regulated by the province's Oil and Gas Commission and ambient air, soil and water monitoring in the surrounding area will be monitored during the life cycle of the Project to ensure ambient air and any acidic deposition remains below any regulatory thresholds.

The sensory environment for Gitga'at First Nation members' traditional use activities is expected to be affected by changes in visual quality, but not by changes in noise, light, or air quality. In addition, members' perceptions of safety and solitude may be affected due to the presence of project components and activities, and increased presence of marine traffic.

21.11.3 Mitigation Measures for Pathway Valued Components

Mitigation measures for access to traditional use sites include:

- Measures to reduce changes to aboriginal marine navigation (Section 15.5.2.2).

Mitigation measures for potential effects on quantity of lands, waters, and resources for traditional purposes include measures to reduce:

- The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2)
- Changes to fish habitat (Section 13.5.3.2)
- The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2)
- Changes in behaviour of fish and marine mammals (Section 13.5.5.2)
- Terrestrial habitat for wildlife and marine birds, including wetland compensation and fish habitat offsetting (Section 11.5.2.2)
- Mortality risk to terrestrial wildlife and marine birds (Section 11.5.3.3)
- Alteration of movement of terrestrial wildlife and marine (Section 11.5.4.2)
- Or identify, record, and recover data for heritage features, including culturally modified trees (Sections 20.5.2.2 and 20.5.3.2).

Mitigation measures for potential effects on quality of lands, waters and resources for traditional purposes include:

- Measures to reduce changes to marine resources due to changes in water quality from the disturbance of existing marine sediments (Section 13.5.2.2).

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Mitigation measures for potential effects on the sensory environment for traditional activities include measures to reduce changes to:

- Air quality (Section 6.5.2.2)
- Acoustic environment (Section 8.5.2.2)
- Ambient light (Section 9.5.2.2)
- Visual quality (Section 17.5.2.4).

21.11.4 Residual Effects on Pathway Valued Components

Following the mitigation measures described and referenced in Section 21.11.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island. However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-46 identifies residual effects remaining after the application of mitigation measures.

Table 21-46 Residual Effects to Pathway Valued Components

Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Access to lands, waters, and resources used for traditional purposes		
Current Fishing Practices	C, O, D	Gitga’at First Nation members’ marine-based access to current fishing sites may experience a degree of temporary interference.
Current Hunting and Trapping Practices	C, O, D	Gitga’at First Nation members’ marine-based access to current deer and bear hunting sites on coastal islands in the vicinity of the Project may experience a degree of temporary interference.
Current Gathering Practices	C, O, D	Gitga’at First Nation members’ marine-based access to seagull egg gathering sites on the small islands in Chatham Sound, Marcus Passage, and Arthur Passage may experience a degree of temporary interference.
Current Spiritual and Ceremonial Practices	C, O, D	No predicted residual effects
Quantity of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	n/a	No predicted residual effects
Current Hunting and Trapping Practices	C, O, D	The quantity of land available for Gitga’at First Nation members’ deer and bear hunting is expected to be reduced, if members currently hunt for deer and bear on Lelu Island.

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Receptor VC Subcomponent	Project Phase	Pathway VC Residual Effect
Current Gathering Practices	n/a	No predicted residual effects
Current Spiritual and Ceremonial Practices	n/a	No predicted residual effects
Quality of lands, waters, and resources used for traditional purposes		
Current Fishing Practices	n/a	No predicted residual effects
Current Hunting and Trapping Practices	n/a	No predicted residual effects
Current Gathering Practices	n/a	No predicted residual effects
Current Spiritual and Ceremonial Practices	n/a	No predicted residual effects
Sensory environment for the Current Aboriginal Use		
Current Fishing Practices	C, O, D	Gitga'at First Nation members are expected to be affected by changes in visual quality while engaging in fishing practices. Fishers' perceptions of safety and solitude may be affected due to the presence of project components and activities and increased presence of marine traffic.
Current Hunting and Trapping Practices	C, O, D	Gitga'at First Nation members are expected to be affected by changes in visual quality while engaging in hunting and trapping practices.
Current Gathering Practices	C, O, D	Gitga'at First Nation members are expected to be affected by changes in visual quality while engaging in gathering practices.
Current Spiritual and Ceremonial Practices	n/a	No predicted residual effects

21.11.5 Assessment of Effects on Current Aboriginal Use

21.11.5.1 Potential Effects on Current Fishing Practices

21.11.5.1.1 Location of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in displacement of Aboriginal fishers from some preferred fishing locations. Key locations include the waters around Lelu Island, the suspended trestle-bridge, along the Pacific Pilot Authority's existing large ocean going vessel transit/shipping route from Triple Island to the Port of Prince Rupert, and the 'Disposal at Sea' site (Brown Passage). As the marine jetty will be located along the transition between Flora Bank and Agnew Bank, it is not expected to interfere with fishing from larger vessels. Further, the design of the bridge between Lelu Island and the mainland and the redesigned marine jetty will allow fishers in smaller vessels to transit between fishing areas to the north and south without additional travel time. Areas that are used in the vicinity of Inverness Passage, Horsey Bank, west of Kitson Island and Agnew Bank will all remain accessible for fishing. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt

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locational change outside of the zone of visual influence. Lelu Island is located within an industrial port designated under Canada's *Marine Act* and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key fishing sites are likely to outweigh effects to sensory environment associated with visual quality.

Gitga'at currently engage in fisheries at the mouth of Skeena River, Marcus Passage, Telegraph Passage, Malacca Passage, Porcher Island (north end), Stephens Island (south end and north end), and Tree Nob Group (Section 21.11.1.1).

Gitga'at First Nation fishers are not expected to shift the location of current fishing practices, as current locations are not expected to be directly affected by the Project.

21.11.5.1.2 Timing of Current Fishing Practices

Changes in access to waters for fishing activities and the quantity of waters available for fishing activities may result in changes to the preferred timing of Aboriginal peoples' fishing activities. Fishers may avoid fishing in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, fishing sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping traffic.

During the month of June, Gitga'at people catch halibut from a camp at Kiel. PNW LNG has not obtained other information about the timing of Gitga'at First Nation's fishing activities.

Project activities during construction are not expected to affect the seasonality of Gitga'at First Nation members' fishing practices, as this is largely tied to the biology and behavior of fisheries resources. Project activities during operations will occur through the year, so are not expected to affect the seasonality of members' fishing practices. Members may alter the time of day for fishing practices to avoid interaction with LNG carriers in the shipping route.

21.11.5.1.3 Effort Involved in Current Fishing Practices

Interruptions in access may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred fishing locations. Temporary limitations in availability of fishing sites that are in the direct path of shipping lanes may also increase effort, if fishers are required to shift their fishing location during the presence of LNG carrier ships. Changes to sensory environment (visual quality) are not expected to directly affect fishing effort but may increase effort if it leads Aboriginal people to shift their fishing locations. Reductions in fish quantity are not expected to affect fishing effort as the reductions will be minimal, not likely to affect commercial species, and limited to the immediate vicinity of project components and activities.

Gitga'at First Nation peoples have identified fishing areas within the LAA and RAA. PNW LNG has not been provided with information about members' current level of effort with respect to their fishing activities.

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Interference with Gitga'at First Nation members' access to preferred fishing sites during construction is expected to increase the effort required by members departing from the Prince Rupert area to reach preferred sites. This effect is expected to be negligible as project-related presence of marine vessels will not require fishers to substantially alter travel routes while traveling to fishing sites. Temporary reductions in the availability of fishing sites due to LNG carrier traffic is expected to increase the amount of time that members spend actively fishing in those locations. This effect can be mitigated with appropriate communications (see Section 21.11.3).

21.11.5.1.4 Success of Current Fishing Practices

Changes in access to and quantity of waters available for fishing during construction and operations (Section 15) could reduce the success of Aboriginal peoples' fishing practices. Fishing success may be also be reduced to the extent that temporary restriction of fishing within shipping lanes and interference with access to preferred fishing reduces the total amount of time available for active fishing. Additionally, if Aboriginal fishers fish in alternative locations due to interference with access or reduced site availability, success rates could change, depending on the nature of fishing resources in alternative locations.

No information has been provided to PNW LNG regarding Gitga'at First Nation members' current catch quantities for AFS fisheries (see Section 21.3).

Effects on fishing success for Gitga'at First Nation fishers is not expected as a result of changes in access and quantity, given the localized and temporally limited nature of expected changes. Effects on fishing success due to locational change are expected to be negligible as fishers are not expected to shift fishing efforts to substantially different locations.

21.11.5.1.5 Satisfaction with Current Fishing Practices

Changes in access to preferred fishing locations, quantity of waters and resources used for fishing purposes, and visual quality may affect the extent to which Aboriginal fishing practices satisfy expectations relating to aesthetic experiences, Traditional Ecological Knowledge (TEK), cultural distinctiveness and continuity, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred fishing locations may affect Aboriginal fishers' ability to collect traditional ecological knowledge and to transmit such knowledge to other members. Reductions in fishing success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

PNW LNG has not been provided with information relating to Gitga'at First Nation members' levels of satisfaction with current fishing activities.

The Project is not expected to affect the ability of Gitga'at First Nation to collect TEK and transmit cultural knowledge, given expected limited interference with fishing practices resulting from changes in access to and quantity of fishing resources. Changes in visual quality are not expected to be substantial enough to interfere with Gitga'at First Nations' ability to collect TEK and transmit cultural knowledge. However, visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.

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21.11.5.2 Potential Effects on Current Hunting and Trapping Practices

21.11.5.2.1 Location of Current Hunting and Trapping Practices

Changes in the quantity of lands, waters, and resources used for hunting and trapping purposes may result in displacement of Aboriginal hunters and trappers from preferred harvesting locations. Key locations include Lelu Island and Islands and waters in the vicinity of the shipping route and disposal at sea site (Brown Passage).

Changes in marine access to hunting and trapping locations is not expected to be sufficient to prompt locational change for these activities, as project-related presence of marine vessels will not require Gitga'at to substantially alter marine travel routes while traveling to hunting and trapping sites. Changes in visual quality, while predicted to occur, are not expected to be sufficient to prompt locational change outside of the zone of visual influence. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic (Section 17). Locational affinities to key hunting and trapping sites are likely to outweigh effects to sensory environment associated with visual quality.

Gitga'at First Nation members may hunt for deer and bear on Lelu Island (Section 21.11.1.2).

Gitga'at First Nation hunters who may currently hunt deer and bear on Lelu Island are expected to shift the location of these hunting activities away to other locations as Lelu Island will no longer be available for this use.

21.11.5.2.2 Timing of Current Hunting and Trapping Practices

Changes in access to waters for marine hunting, changes in marine access to terrestrial hunting sites, and changes in the quantity of waters available for hunting activities may result in changes to the preferred timing of Aboriginal peoples' hunting activities. Hunters may avoid hunting in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with access to, and availability of, hunting sites (i.e., during construction activities and associated marine traffic) and during the presence of LNG carriers and other large ocean going vessels sailing into and out of the Port of Prince Rupert.

PNW LNG has not been provided with information about the timing of Gitga'at First Nation's hunting and trapping activities.

Gitga'at First Nation members are not expected to alter the timing of terrestrial or marine hunting, as the behaviour of the prey are not expected to be affected by the Project. Seasonal changes are not expected as hunting seasonality is tied to the biology and behaviour of harvested resources. In addition, operations will be continuous throughout the year.

21.11.5.2.3 Effort Involved in Current Hunting and Trapping Practices

Interference with access to lands, waters, and resources for hunting and trapping purposes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred hunting and trapping locations. Temporary limitations in availability of marine hunting sites that are in the direct path of shipping lanes may also increase effort, if hunters are required to interrupt hunting efforts during the

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presence of LNG carriers, however existing shipping traffic into and out of Prince Rupert already manifests in these impacts. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect hunting effort but may increase effort if it leads Aboriginal people to shift their hunting locations.

Gitga'at First Nation may currently hunt deer and bear along the shores of Kaien and/or Lelu Islands (Section 21.11.1.2). Seals are harvested on the bank off the mouth of the Skeena River and along the shores of the offshore Islands.

The Project is expected to interfere to a limited degree with Gitga'at First Nation members' marine access to hunting locations (terrestrial and marine) during all project phases. The resulting effect on effort is expected to be negligible as project-related presence of marine vessels will not require hunters and trappers to substantially alter travel routes while traveling to hunting and trapping sites.

21.11.5.2.4 Success of Current Hunting and Trapping Practices

Changes in access to and quantity of sites available for hunting and trapping during construction and operations could reduce the success of Aboriginal peoples' efforts. Hunting and trapping success may be also be reduced to the extent that interference with routes of access to marine and terrestrial hunting and trapping locations reduces the total amount of time available for hunting and trapping activities. If Aboriginal hunters and trappers move to alternative locations due to interference with access, reduced site availability, or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative hunting and trapping sites for particular individuals and/or families.

Gitga'at First Nation may currently hunt deer and bear along the shores of Kaien and/or Lelu Islands (Section 21.11.1.2). Seals are harvested on the bank off the mouth of the Skeena River and along the shores of the offshore Islands.

Project-related interference with Gitga'at First Nation members' access to terrestrial hunting locations is not expected to be substantial enough to reduce overall hunting time and therefore success rates at those locations. The success of Gitga'at First Nation harvesters who are no longer be able to hunt deer and bear on Lelu Island, should such hunting occur there, is not expected to be limited by reductions in the overall abundance of these species in other locations (Section 11). Changes in hunting success are not expected for members who choose to shift harvesting locations to avoid project-related changes in visual quality.

21.11.5.2.5 Satisfaction with Current Hunting and Trapping Practices

Changes in access to preferred hunting and trapping locations, quantity of lands, waters and resources used for hunting and trapping purposes, and visual quality may affect the extent to which Aboriginal hunting and trapping practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with

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access to and availability of preferred hunting and trapping locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to hunt and trap for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in hunting and trapping success may reduce the ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

No information has been provided to PNW LNG by Gitga'at First Nation about the potential effects of the Project on members' ability to collect TEK and transmit cultural knowledge. PNW LNG has not obtained information relating to Gitga'at First Nation members' expectations about aesthetic experiences and social cohesion.

Gitga'at First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality. Collection of TEK in the vicinity of the Project, and cultural transmission of TEK specific to those sites, is not expected to be affected by the Project, as Lelu Island has not been identified as a key resource harvesting site for Gitga'at First Nation. The Project is not expected to reduce Gitga'at First Nation members' opportunities for social bonding while hunting and trapping, or interfere with members' ability to trade and share country foods.

21.11.5.3 Potential Effects on Current Gathering Practices

21.11.5.3.1 Location of Current Gathering Practices

Changes in the quantity of, lands, waters, and resources used for terrestrial gathering purposes may result in displacement of Aboriginal peoples from preferred gathering locations. Interference with marine access to preferred terrestrial gathering sites may also result in locational change. Key locations include Lelu Island and gathering sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

Gitga'at First Nation members collect seagull eggs at small islands in Chatham Sound, Marcus Passage and Author Passage.

The Project is not expected to affect the location of Gitga'at First Nation members' terrestrial gathering practices.

21.11.5.3.2 Timing of Current Gathering Practices

Changes in access to land and resources for terrestrial gathering may result in changes to the preferred timing of Aboriginal peoples' terrestrial gathering activities. Aboriginal peoples may avoid gathering in the vicinity of the Project during times (of the day, month, and year) when project activities interfere with marine access to gathering sites (i.e., during construction activities and associated marine traffic) and during the presence of shipping.

Gitga'at First Nation members collect seagull eggs at small islands in Chatham Sound, Marcus Passage and Author Passage (Section 21.11.1.3).

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The Project is not expected to affect the timing of Gitga'at First Nation members' terrestrial gathering practices.

21.11.5.3.3 Effort Involved in Current Gathering Practices

Interference with access to lands and resources for terrestrial gathering (Section XXX) may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach preferred terrestrial gathering locations. Removal of traditional use sites may result in increased effort for Aboriginal harvesters currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not expected to directly affect gathering effort but may increase effort if it leads Aboriginal people to shift their gathering locations.

Gitga'at First Nation members collect seagull eggs at small islands in Chatham Sound, Marcus Passage and Author Passage (Section 21.11.1.3).

The Project is not expected to affect the effort involved in Gitga'at First Nation members' terrestrial gathering practices.

21.11.5.3.4 Success of Current Gathering Practices

Changes in the quantity of lands and resources available for terrestrial gathering during construction and operations could reduce the overall success of Aboriginal peoples' gathering efforts. Terrestrial gathering success may also be reduced to the extent that interference with routes of access to terrestrial gathering locations reduces the total amount of time available for gathering activities. If Aboriginal peoples move to alternative gathering locations due to interference with access or changes in the sensory environment (visual quality), success rates could change depending on the nature of resources in alternative locations. Additionally, Aboriginal groups' internal governance and resource management frameworks may limit the availability of alternative terrestrial gathering sites for particular individuals and/or families.

Gitga'at First Nation members collect seagull eggs at small islands in Chatham Sound, Marcus Passage and Author Passage (Section 21.11.1.3).

The Project is not expected to affect the success of Gitga'at First Nation members' terrestrial gathering practices.

21.11.5.3.5 Satisfaction with Current Gathering Practices

Changes in access to preferred terrestrial gathering locations, quantity of lands and resources used for gathering purposes, and visual quality may affect the extent to which Aboriginal gathering practices satisfy expectations relating to aesthetic experiences, TEK, cultural distinctiveness and continuity, social cohesion, or related considerations. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural environment. Interference with access to and availability of preferred terrestrial gathering locations may affect Aboriginal peoples' ability to collect TEK and to transmit such knowledge to other members. Reduced opportunities to gather for particular individuals and/or families may reduce opportunities for social and familial bonding. Reductions in gathering success may reduce the

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ability of Aboriginal peoples to trade and share country foods, thereby affecting levels of reciprocity, trust, and social networks within and between First Nations.

Gitga'at First Nation members collect seagull eggs at small islands in Chatham Sound, Marcus Passage and Author Passage (Section 21.11.1.3).

The Project is not expected to affect the satisfaction of Gitga'at First Nation members' terrestrial gathering practices.

21.11.5.4 Potential Effects on Current Use of Spiritual Sites and Cultural Landscapes

21.11.5.4.1 Location of Current uses of Spiritual Sites and Cultural Landscapes

Removal spiritual sites and cultural landscape resources on Lelu Island (XXX) will displace Aboriginal people's use of these sites and features. Interference with marine access to spiritual sites and cultural landscapes, and disruption of sensory environment (visual quality), is not expected to result in locational change, as access will not be precluded and affinities for particular spiritual and ceremonial sites are assumed be strong. Key locations include Lelu Island and spiritual and ceremonial sites accessed via the waters around Lelu Island, Flora Bank, and the shipping route in Chatham Sound.

PNW LNG has not been provided with information about Gitga'at First Nations' current use of spiritual sites and cultural landscapes. Gitga'at First Nation has not raised any concerns about potential impacts of the Project on the Nation's current use of spiritual sites and cultural landscapes.

The Project is not expected to affect the location of Gitga'at First Nation members' use of spiritual sites and cultural landscapes.

21.11.5.4.2 Timing of Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to spiritual sites and cultural landscapes (Section 21.6.2) may result in changes to the preferred timing of Aboriginal peoples' use of these sites and features. Aboriginal peoples may avoid using spiritual sites and cultural landscapes during times (of the day, month, and year) when project activities interfere with marine access to these sites (i.e., during construction activities and associated marine traffic).

PNW LNG has not obtained information about Gitga'at First Nations' current use of spiritual sites and cultural landscapes. Gitga'at First Nation has not raised any concerns about potential impacts of the Project on the Nation's current use of spiritual sites and cultural landscapes.

The Project is not expected to affect the timing of Gitga'at First Nation members' use of spiritual sites and cultural landscapes.

21.11.5.4.3 Effort Required for Current Use of Spiritual Sites and Cultural Landscapes

Interference with access to spiritual sites and cultural landscapes may increase the amount of time and expense (e.g., fuel) required by Aboriginal peoples to reach key sites and features. Removal of traditional use sites may result in increased effort for Aboriginal peoples currently using the site, if alternative sites are located at a greater distance from staging places. Changes to sensory environment (visual quality) are not

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expected to be sufficient to prompt Aboriginal people to shift the locations where they use spiritual sites and cultural landscapes, due to the unique significance of such sites and features.

PNW LNG has not been provided with information about Gitga'at First Nations' current use of spiritual sites and cultural landscapes. Gitga'at First Nation has not raised any concerns about potential impacts of the Project on the Nation's current use of spiritual sites and cultural landscapes.

The Project is not expected to affect the effort involved in Gitga'at First Nation members' use of spiritual sites and cultural landscapes.

21.11.5.4.4 Success of Current Use of Spiritual Sites and Cultural Landscapes

Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.

21.11.5.4.5 Satisfaction with Current Use of Spiritual Sites and Cultural Landscapes

Changes in access to, availability of, and sensory environment for spiritual sites and cultural landscapes may affect the extent to which Aboriginal use of these sites and features satisfy expectations relating to aesthetic and spiritual experiences, TEK, and cultural distinctiveness and continuity. Changes in visual quality may affect Aboriginal peoples' sense of place, feelings of solitude, and ability to commune with the natural and cultural environment. Interference with access to and availability of spiritual sites and cultural landscapes may affect Aboriginal peoples' ability to collect TEK and to transmit cultural knowledge to other members.

PNW LNG has not been provided with information about Gitga'at First Nations' current use of spiritual sites and cultural landscapes. Gitga'at First Nation has not raised any concerns about potential impacts of the Project on the Nation's current use of spiritual sites and cultural landscapes.

The Project is not expected to affect Gitga'at First Nation members' satisfaction with respect to use of spiritual sites and cultural landscapes.

21.11.6 Mitigation Measures for Current Aboriginal Use

PNW LNG will apply the following mitigation measures to minimize project-related effects on Current Aboriginal Use described in Section 21.11.5).

Specific to the assessment concerns regarding pathway components and mitigations, Table 21-47 describes how Current Aboriginal Use practices and project components will be mitigated.

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Table 21-47 Measures to Mitigate Potential Effects to Gitga’at’s Current Aboriginal Use

Potential Effect	Mitigations
Current Fishing Practices	<p>The project changes, including a suspension bridge and relocated trestle and berth, result in no infrastructure located on Flora Bank and eliminate the need for dredging on Agnew Bank.</p> <p>The project changes reduce the effects of infrastructure construction and dredging upon navigation. The jetty length (including the suspension bridge and trestle) will be approximately 300 m longer; however vessels will continue to be able to pass underneath it.</p> <p>The project changes will result in a much reduced volume of sediment for ocean disposal. The resulting dispersal area is significantly reduced, reducing the impact, or perceived impact, on Brown Passage.</p> <p>Section 13 contains a description of mitigation measures relating to marine resources, including those for:</p> <ul style="list-style-type: none"> • The potential for project related changes in water quality from the disturbance of existing marine sediments(Section 13.5.2.2) • Changes to fish habitat (Section 13.5.3.2) • The potential for injury or mortality to fish and marine mammals (Section 13.5.4.2) • Changes in behaviour of fish and marine mammals (Section 13.5.5.2).
Current Hunting and Trapping Practices	<p>Mitigations related to impacts to current hunting and trapping practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Gitga’at First Nations regarding restricted access to Lelu Island and the resulting effects on Gitga’at cultural practices.</p> <p>PNW LNG plans shift rotation during construction as well as recreational facilities at work camps to help reduce the impacts of increased workers on local recreation and resources.</p>

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Potential Effect	Mitigations
Current Gathering Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Gitga’at First Nations regarding restricted access to Lelu Island and the resulting effects on Gitga’at cultural practices.</p>
Current Use of Spiritual Sites and Cultural Practices	<p>Mitigations related to impacts to cultural practices included those related to:</p> <ul style="list-style-type: none"> • Relative abundance, quality and geographic distribution of resources (Sections 10.4.2, 11.5.2.2, 11.5.3.3, 11.5.4.2, 13.5.2.2, 13.5.3.2, 13.5.4.2, 13.5.5.2) • Contamination of country foods (Section 13.5.2.2) • Acoustic quality (Section 8.5.2.2) • Air quality (Section 6.5.2.2) • Light quality (Section 9.5.2.2) • Visual quality (Section 17.5.2.4) • Archaeological resources (Section 20.4.2). <p>In addition to these, PNW LNG has consulted with Gitga’at First Nations regarding restricted access to Lelu Island and the resulting effects on Gitga’at cultural practices.</p>

Discussions are under way with Gitga’at First Nation to identify appropriate means with which to accommodate effects to project effects that cannot be completely mitigated (see Section 27).

21.11.7 Residual Effects on Current Aboriginal Use

Following the mitigation measures described and referenced in Section 21.11.3, project-related effects on pathway VCs are expected to be reduced, but not completely eliminated. Marine-based access to preferred harvesting sites will not be restricted, but will experience a small amount of interference due to construction activities and water vessel traffic (including shipping). Project mitigations will be unable to minimize the loss of lands on Lelu Island as the entire island will be leased to the Project by the federal Prince Rupert Port Authority.

However, other terrestrial and shoreline harvesting sites will remain unaffected and the wetland habitat compensation plan will compensate for loss of lands to some degree. Marine waters will be removed temporarily during construction and decommissioning, while removal of waters during operations will be limited in extent. Project mitigations will avoid reductions in the absolute quantity of terrestrial and marine resources, except for limited reductions in ducks and geese numbers. The relative number of sea lions in

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preferred harvesting location may be reduced during construction due to alteration of movement associated with noise. The quality of resources is not expected to be affected. Finally, mitigation measures will reduce effects on the sensory environment, but visual effects are expected to remain.

Table 21-48 describes expected residual effects following implementation of the above mitigation measures.

Table 21-48 Residual Effects to Current Aboriginal Use

Effect	Project Phase	Description of Residual Effect
Current Fishing Practices		
Location	n/a	No predicted residual effects
Timing	n/a	No predicted residual effects
Effort	n/a	No predicted residual effects
Success	n/a	No predicted residual effects
Satisfaction	C, O, D	Visual quality changes may affect the degree of members' aesthetic satisfaction while fishing in the vicinity of the Project.
Current Hunting and Trapping Practices		
Location	C, O, D	Gitga'at First Nation members who currently hunt deer and bear on Lelu Island, if any, are expected to shift the location of these hunting activities during construction, operations, and decommissioning.
Timing	n/a	No predicted residual effects
Effort	n/a	No predicted residual effects
Success	n/a	No predicted residual effects
Satisfaction	C, O, D	Gitga'at First Nation members' aesthetic satisfaction while hunting and trapping in the vicinity of the Project is expected to be affected due to changes in visual quality.
Current Terrestrial Gathering Practices		
Location	n/a	No predicted residual effects
Timing	n/a	No predicted residual effects
Effort	n/a	No predicted residual effects
Success	n/a	No predicted residual effects
Satisfaction	n/a	No predicted residual effects
Current Use of Spiritual Sites and Cultural Landscapes		
Location	C, O, D	No predicted residual effects
Timing	C, D	No predicted residual effects
Effort	n/a	No predicted residual effects
Success	n/a	Technical boundaries prevent assessment of degree of success in the use of spiritual sites and cultural landscapes. Aboriginal peoples' goals with respect to the use of such sites and features may be difficult to articulate and to understand for those outside of the Aboriginal practice communities. "Success" may be an inappropriate measure with respect to use of such sites and features.
Satisfaction	C, O, D	No predicted residual effects

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21.11.8 Assessment of Residual Effects on Current Aboriginal Use

21.11.8.1 Assessment of Residual Effects on Fishing Practices

21.11.8.1.1 Characterization of Residual Effects on Fishing Practices

The residual effect on satisfaction with fishing practices related to aesthetic experiences while fishing in the vicinity of the Project is rated as **low**. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic. The residual effect is expected to occur through the duration of construction, operations and decommissioning (**medium-term**), will occur **continuously**. The extent of the effect is restricted to the **LAA** and will be **reversible** after decommissioning. Gitga'at First Nation fishers are rated as moderately vulnerable to changes in fishing satisfaction (**moderate context**).

21.11.8.1.2 Significance of Residual Effects on Fishing Practices

Residual effects on Gitga'at First Nation's fishing practices are assessed as **not significant**: The residual effects have low magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Gitga'at First Nations' overall fishing practices.

21.11.8.1.3 Likelihood and Confidence for Residual Effects Conclusions on Fishing Practices

The likelihood that residual effects on fishing locations, timing, effort, and satisfaction will occur is rated as medium. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as high. The assessments are based on detailed site-specific data about Gitga'at First Nation's Current Aboriginal Use.

21.11.8.2 Assessment of Residual Effects Hunting and Trapping Practices

21.11.8.2.1 Characterization of Residual Effects on Hunting and Trapping Practices

The residual effect on preferred locations for hunting and trapping practices is rated as moderate. The Project is expected to result in the relocation of hunting efforts for only small number of individuals. The residual effect is expected to occur through the duration of construction, operations and decommissioning (medium-term), will occur continuously. The extent of the effect is restricted to the LAA and will be reversible after decommissioning. Gitga'at First Nation hunters and trappers are rated as moderately vulnerable to changes in hunting locations (moderate context).

The residual effect on satisfaction with hunting and trapping practices is rated as low. Lelu Island is located within an industrial port and the area currently experiences marine and shipping traffic; consequently effects on aesthetic experience are expected to be relatively low. Lelu Island has not been identified as particularly important site for the collection and transmission of TEK. Reduced opportunities for social bonding in relation to hunting and trapping practices on Lelu Island (if any) are expected to be limited to a small number of individuals/families. Opportunities for social bonding in relation to other hunting and trapping sites will continue to exist. Opportunities to trade and share country foods are expected to be diminished only to a small degree, as reductions in the successful harvest of resources is expected to be minimal. The residual effect is expected to occur through the duration of construction, operations and decommissioning (medium-

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term), will occur continuously. The extent of the effect is restricted to the LAA and will be reversible after decommissioning. Gitga'at First Nation fishers are rated as moderately vulnerable to changes in hunting and trapping satisfaction (moderate context).

21.11.8.2.2 Significance of Residual Effects on Hunting and Trapping Practices

Residual effects on Gitga'at First Nation's hunting and trapping practices are assessed as not significant: The residual effects have low to medium magnitude, LAA geographic extent, medium-term duration, and are reversible. The residual effects are predicted to result in little discernable change in Gitga'at First Nations' overall hunting and trapping practices.

21.11.8.2.3 Likelihood and Confidence for Residual Effects Conclusions on Hunting and Trapping Practices

The likelihood that residual effects on hunting and trapping locations, timing, effort, success, and satisfaction will occur is rated as medium. The variables involved are well known and well-defined; however, there is little existing experience or literature that establishes probability of effects of this kind.

Confidence in the predictions is rated as high. The assessments are based on detailed site-specific data about Gitga'at First Nation's Current Aboriginal Use.

21.11.9 Summary of Residual Effects on Current Aboriginal Use

Table 21- summarizes the residual effects characterization for Gitga'at First Nation Current Aboriginal Use VCs.

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Table 21-48 Gitga’at First Nation: Summary of Current Aboriginal Use Residual Effects Characterization, Significance, Likelihood and Confidence

Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence	
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence
Current Fishing Practices									
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
Satisfaction	L	LAA	MT	R	C	M	N	M	H
Current Hunting and Trapping Practices									
Location	L	LAA	MT	R	C	M	N	M	H
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
Satisfaction	L	LAA	MT	R	C	M	N	M	H
Current Gathering Practices									
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

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Residual Effects	Residual Effects Characterization Criteria						Significance of Adverse Residual Effects	Likelihood and Confidence			
	Magnitude	Extent	Duration	Reversibility	Frequency	Context	Significance	Likelihood	Confidence		
Current Use of Spiritual Sites and Cultural Landscapes											
-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-		
<p>KEY</p> <p>Context:</p> <p>L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment</p> <p>M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment</p> <p>H = High resilience: occurs in viable ecosystem and/or undisturbed environment</p>			<p>Magnitude:</p> <p>N = Negligible: no detectable change on individuals of a regional wildlife population or hectares of habitat</p> <p>L = Low: change detectable on a few individuals or hectares of habitat (i.e., < 10 ha) in a regional population</p> <p>M = detectable change on many individuals or hectares of habitat (i.e., 10 to 250 ha) in a regional population</p> <p>H = High: detectable change on the majority of individuals or hectares of habitat (> 250 ha) in a the regional population</p> <p>Extent:</p> <p>PDA = project development area</p> <p>LAA = local assessment area</p> <p>RAA = regional assessment area</p>			<p>Duration:</p> <p>ST = Short-term: effect less than one breeding season/generation</p> <p>MT = Medium-term: effect occurs for several breeding seasons/generations or a project phase</p> <p>LT = Effect occurs across multiple breeding seasons/generations or project phases</p> <p>P = Permanent: Effect permanent and unlikely to recover following project decommissioning and reclamation</p> <p>Reversibility:</p> <p>R = Reversible: will recover during lifetime of the Project or after project decommissioning and reclamation</p> <p>I = Irreversible: effects will persist after project decommissioning and reclamation</p> <p>Frequency:</p> <p>S = Single event</p> <p>MI = Multiple, irregular event</p> <p>MR = Multiple, regular event</p> <p>C = Continuous</p>			<p>KEY</p> <p>Context:</p> <p>L = Low resilience: occurs in a fragile ecosystem and/or highly disturbed environment</p> <p>M = Moderate resilience: occurs in a stable ecosystem and/or moderately disturbed environment</p> <p>H = High resilience: occurs in viable ecosystem and/or undisturbed environment</p>		

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21.12 CUMULATIVE EFFECTS ASSESSMENT

21.12.1 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 using spiritual sites and cultural landscapes.

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 operations 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%).

21.12.2 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. 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 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 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.

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Table 21-49 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 relating to the assessment of ten other VCs (see Section 21.1 for a list of these relevant VCs).

Table 21-49 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 residual effects of the Project.

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21.12.2.1 Cumulative Effects on Relevant Sub-components

As described in detail in Sections 21.6 through 21.11 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:

- Current fishing practices
- Current hunting and trapping practices
- Current gathering practices
- Current use of spiritual sites and cultural landscapes.

21.12.2.1.1 Cumulative Effects on Current Fishing Practices

The predicted residual effects of the Project on preferred location, timing, effort, and satisfaction with respect to fishing practices are expected to interact with similar effects of other projects to result in cumulative effects on Aboriginal peoples' current and future fishing practices.

Other marine-based projects are also expected to interfere with Aboriginal fishers' access to fishing sites, the timing of use, and the quantity of waters available for fishing. 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, but temporary barriers and inconvenience for Aboriginal people (while the pipelines are being constructed in marine waters) attempting to travel from Port Edward into Chatham Sound to fish and harvest marine resources.

Cumulative effects on fish habitat are not expected due to project-specific mitigation measures, including fish habitat offset measures (Section 13.6.2.2); consequently the overall quantity of fishing resources is not expected to constitute a cumulative effect.

The Project is expected to result in residual effects to fishing satisfaction for Aboriginal peoples, due to cumulative changes in the sensory environment (visual quality). The Project's LNG Plant facility on Lelu Island, the 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 boundaries of the Port of Prince Rupert which is under current and future industrial expansion (Section 17.6.3).

The ability of Aboriginal peoples to gather TEK with respect to fishing practices within their traditional territories and to transmit cultural knowledge to others is expected to be affected due to cumulative reductions in access and availability of fishing sites. Aboriginal social cohesion is also expected to experience cumulative effects with respect to fishing practices, due to cumulative reductions in opportunities for families and others to fish together and for Aboriginal peoples to trade and share country foods.

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Then magnitude of project-related cumulative effects on Aboriginal people's fishing practices is expected to be moderate. The Project will incrementally add to increasing interference with Aboriginal people's access to preferred fishing locations, timing of use, and to factors that will affect Aboriginal peoples' degree of satisfaction with fishing practices. The Project is located within an area planned for industrial development. Wider marine use planning processes (see Section 21.2) will help to mitigate effects on Aboriginal people's fishing practices through appropriate communication during construction and future water use planning and zoning. With improved communications and wider marine use planning processes in place to mitigate this effect, the effect is predicted to be not significant. However, there is a high degree of uncertainty with regard to how proposed projects listed in Table 21-49 may cumulatively affect some traditional use locations and access routes.

21.12.2.1.2 Cumulative Effects on Current Hunting and Trapping Practices

The predicted residual effects of the Project on preferred location, timing, effort, success and satisfaction with respect to hunting and trapping practices are expected to interact with similar effects of other projects to result in cumulative effects on Aboriginal peoples' current and future hunting and trapping practices.

Other marine-based projects are expected to interfere with Aboriginal peoples' marine-based access to terrestrial and marine hunting and trapping sites, the timing of use, as well as the quantity of lands and waters available for hunting and trapping. 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, but temporary barriers and inconvenience for Aboriginal people (while the pipelines are being constructed in marine waters) attempting to travel from Port Edward into Chatham Sound to fish and harvest marine resources.

Cumulative effects are expected to affect the quantity of marine mammals harvested by Aboriginal peoples. Potential increases in injury to marine mammals that may be caused by overlapping pipe pile installation schedules with other projects may be expected. It is anticipated that these impacts can be avoided/mitigated through marine construction mitigation techniques (e.g., Marine Mammal Observation Programs, low impact pipe pile installation techniques) and optimal project construction coordination by the PRPA.

Potential injuries to marine mammals are not expected to have an effect on population viability or general availability of these species for traditional harvesting within the RAA. The contribution of the Project 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 contribution of the Project 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.

Pipe pile and associated marine construction techniques, the transit of LNG carriers from Triple Island into the Port of Prince Rupert, 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 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.

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Given cumulative effects on the quantity of marine species available for hunting and trapping purposes, the Project is expected to contribute to cumulative effects on the success of hunting and trapping and the effort involved in hunting and trapping activities. However, as impacts on effort can be mitigated through optimal Port-required construction coordination, land and marine use planning and zoning, and as cumulative effects on marine species are not expected to affect population viability, the magnitude of these effects are expected to be low.

The Project is expected to result in residual effects to hunting and trapping satisfaction for Aboriginal peoples, due to cumulative changes in the sensory environment (visual quality). The Project's LNG Plant facility on Lelu Island, the 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 boundaries of the Port of Prince Rupert which is under current and future industrial expansion (Section 17.6.3).

The ability of Aboriginal peoples to gather TEK with respect to hunting and trapping practices within their traditional territories and to transmit cultural knowledge to others is expected to be affected due to cumulative reductions in access and availability of hunting and trapping sites. Aboriginal social cohesion is also expected to experience cumulative effects with respect to hunting and trapping practices, due to cumulative reductions in opportunities for families and others to hunt and trap together and for Aboriginal peoples to trade and share country foods.

The magnitude of predicted cumulative effects on Aboriginal peoples' hunting and trapping practices is rated as moderate. The Project is expected to result to contribute incrementally to cumulative effects on the ability of Aboriginal people to access preferred hunting and trapping locations, the timing of use, and to reductions in Aboriginal people's satisfaction with hunting and trapping activities. The contribution of the Project to effects on Aboriginal peoples' hunting and trapping effort and success is expected to be low. Optimal Port-required marine construction coordination and ongoing land and marine use planning processes will help to mitigate these cumulative effects with appropriate planning and zoning. Consequently, cumulative effects on Aboriginal peoples' hunting and trapping practices are predicted to be not significant. However, there is a high degree of uncertainty with regard to how proposed projects listed in Table 21-49 may cumulatively affect Current Aboriginal Use.

21.12.2.1.3 Cumulative Effects on Current Gathering Practices

The predicted residual effects of the Project on preferred location, timing, effort, success and satisfaction with respect to gathering practices are expected to interact with similar effects of other projects to result in cumulative effects on Aboriginal peoples' current and future gathering practices.

Other marine-based projects are expected to interfere with Aboriginal peoples' marine-based access to terrestrial gathering sites, as well as the quantity of lands available for terrestrial gathering. 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 temporary barriers and inconvenience for Aboriginal people attempting to travel from Port Edward into Chatham Sound to access hunting and trapping sites while these pipelines are being constructed in the marine environment. There is a degree of uncertainty with regard to how proposed projects listed in Table 21-49 may cumulatively affect traditional use gathering locations that are not on Lelu Island and the access routes to non-Lelu Island gathering locations.

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While the Project will result in the loss of traditional use plants and some ecological communities within the PDA, 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 residual effects of the Project 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.

The Project is expected to result in residual effects to gathering satisfaction for Aboriginal peoples, due to cumulative changes in the sensory environment (visual quality). The Project's LNG Plant facility, the 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 boundaries of the Port of Prince Rupert which is under future and current industrial expansion (Section 17.6.3).

The ability of Aboriginal peoples to gather TEK with respect to gathering practices within their traditional territories and to transmit cultural knowledge to others is expected to be affected due to cumulative reductions in access and availability of gathering sites. Aboriginal social cohesion is also expected to experience cumulative effects with respect to gathering practices, due to cumulative reductions in opportunities for families and others to gather together and for Aboriginal peoples to trade and share country foods.

The magnitude of predicted cumulative effects on Aboriginal peoples' terrestrial gathering practices is rated as moderate. The Project is expected to result to contribute incrementally to cumulative effects on the ability of Aboriginal people to access preferred gathering locations, the timing of use, and to reductions in Aboriginal people's satisfaction with gathering activities. The Project is not expected to result in cumulative effects on gathering success, as removal of Lelu Island as a traditional gathering site represents a negligible reduction in overall quantity of gathering resources available and will be partially mitigated through wetland habitat offset measures.

Ongoing land and marine use planning processes will help to mitigate these cumulative effects with appropriate planning and zoning. Consequently, cumulative effects on Aboriginal peoples' gathering practices are predicted to be not significant. However, there is a degree of uncertainty with regard to how proposed projects listed in Table 21-49 may cumulatively affect Current Aboriginal Use.

21.12.2.1.4 Cumulative Effects on Current Use of Spiritual Sites and Cultural Landscapes

The predicted residual effects of the Project on preferred location, timing, and satisfaction with respect to use of spiritual sites and cultural landscapes are expected to interact with similar effects of other projects to result in cumulative effects on Aboriginal peoples' current and future gathering practices.

Other marine-based projects are expected to interfere with Aboriginal peoples' marine-based access to spiritual sites and cultural landscapes, as well as the quantity of lands and waters containing these sites and features. 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

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temporary barriers and inconvenience for Aboriginal people attempting to travel from Port Edward into Chatham Sound to access spiritual sites and cultural landscapes while these pipelines are under construction.

The Project is expected to result in residual effects to satisfaction for Aboriginal peoples using spiritual sites and cultural landscapes, due to cumulative changes in the sensory environment (visual quality). The Project's LNG Plant facility, the 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 boundaries of the Port of Prince Rupert which is under current and future industrial expansion (Section 17.6.3). The ability of Aboriginal peoples to gather TEK with respect to spiritual sites and cultural landscapes within their traditional territories and to transmit cultural knowledge to others is expected to be affected due to cumulative reductions in access and availability of these sites and features.

The magnitude of predicted cumulative effects on Aboriginal peoples' use of spiritual sites and cultural landscapes is rated as moderate. The Project is expected to contribute incrementally to cumulative effects on the ability of Aboriginal people to access spiritual sites and cultural landscapes, the timing of use, and to reductions in Aboriginal people's satisfaction with uses of those sites and features. Ongoing land and water use planning processes will help to mitigate these cumulative effects with appropriate planning and zoning. Consequently, cumulative effects on Aboriginal peoples' gathering practices are predicted to be not significant.

21.12.2.2 Summary of Cumulative Effects

The Project is expected to interact with other past, present, and reasonable foreseeable projects to create cumulative effects on Aboriginal peoples' preferred location, timing, effort, success and satisfaction with respect to Current Aboriginal Uses, due to cumulative interaction with access, quantity, and sensory environment for lands, waters, and resources used for traditional purposes. The magnitude of these effects is expected to be moderate, but not significant. Aboriginal involvement in wider government-led land and marine use planning processes will help to mitigate these effects through appropriate planning and zoning. Optimal marine construction coordination as required of proponents by the PRPA will mitigate marine construction impacts on these values. The effects are predicted to be not significant: they are not predicted to affect the viability or sustainability of traditional use by Aboriginal people of lands and resources within the RAA.

21.13 FOLLOW-UP AND MONITORING

As described in Section 30 of the EIS Addendum, PNW LNG has committed to undertake follow-up programs to verify the accuracy of effects predictions and to determine the effectiveness of mitigation measures. Table 30-2 outlines the follow-up programs and related preliminary compliance monitoring and reporting requirements identified for each VC. Although most of the VC-specific follow-up programs are indirectly linked to Current Aboriginal Uses, one follow-up program was included specifically to address potential project effects on Current Aboriginal Uses. The Marine Traditional Country Foods Follow-up Program is designed to verify the accuracy of predictions regarding the potential contamination of marine country foods resulting from dredging at the Materials Offloading Facility (Section 30.4.8).

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PNW LNG will also continue its involvement in various measures to address issues of concern to Aboriginal groups, including the following:

- Government-led cumulative effects management processes
- Local land and marine resource use planning exercises and related Skeena River estuary conservation initiatives
- The PRPA's Construction Coordination Committee
- Strategic PRPA-led assessments of various values of interest to First Nations in the Port of Prince Rupert.

21.14 CONCLUSION

The Project is not expected to result in a significant adverse residual effect on current use of spiritual sites and cultural landscapes due to the complete removal of Lelu Island as a traditional use site. The entire island is to be leased to PNW LNG by the Port of Prince Rupert. Even though green space and many culturally modified trees within this buffer zone will be retained around most of the circumference of Lelu Island, the aboriginal traditional use of this area is not practical due to LNG Plant safety and security reasons.

With the exception of Lelu Island, and with planned mitigations applied, the Project is not expected to create any other significant adverse residual effect on Current Aboriginal Use. Almost all residual effects are characterized as low in magnitude. Adverse residual effects will occur in the project marine infrastructure areas adjacent to Lelu Island while some effects extend out into the LAA. Most relevant effects will be for the medium term and will occur continuously or regularly during the construction and operations phases, with some residual effects also taking place during decommissioning if commissioning of a Port industrial site is ever implemented. The majority of effects will be reversible except for the elimination of Lelu Island as a traditional use site.

Confidence in this prediction is moderate. While the assessment is based on detailed, site-specific current use information, the quality and depth of this information varies between the aboriginal groups who supplied the information. PNW LNG has not been provided current traditional use information from the Lax Kw'alaams First Nation. In addition, despite the quality of information used by this assessment, human behavior is changeable and difficult to predict.

The residual effects from the Project acting cumulatively on Current Aboriginal Uses with other past, present, or reasonable foreseeable projects and activities is also predicted to be not significant: these effects are not predicted to affect the viability or sustainability of traditional use by Aboriginal people of lands and resources within the RAA.

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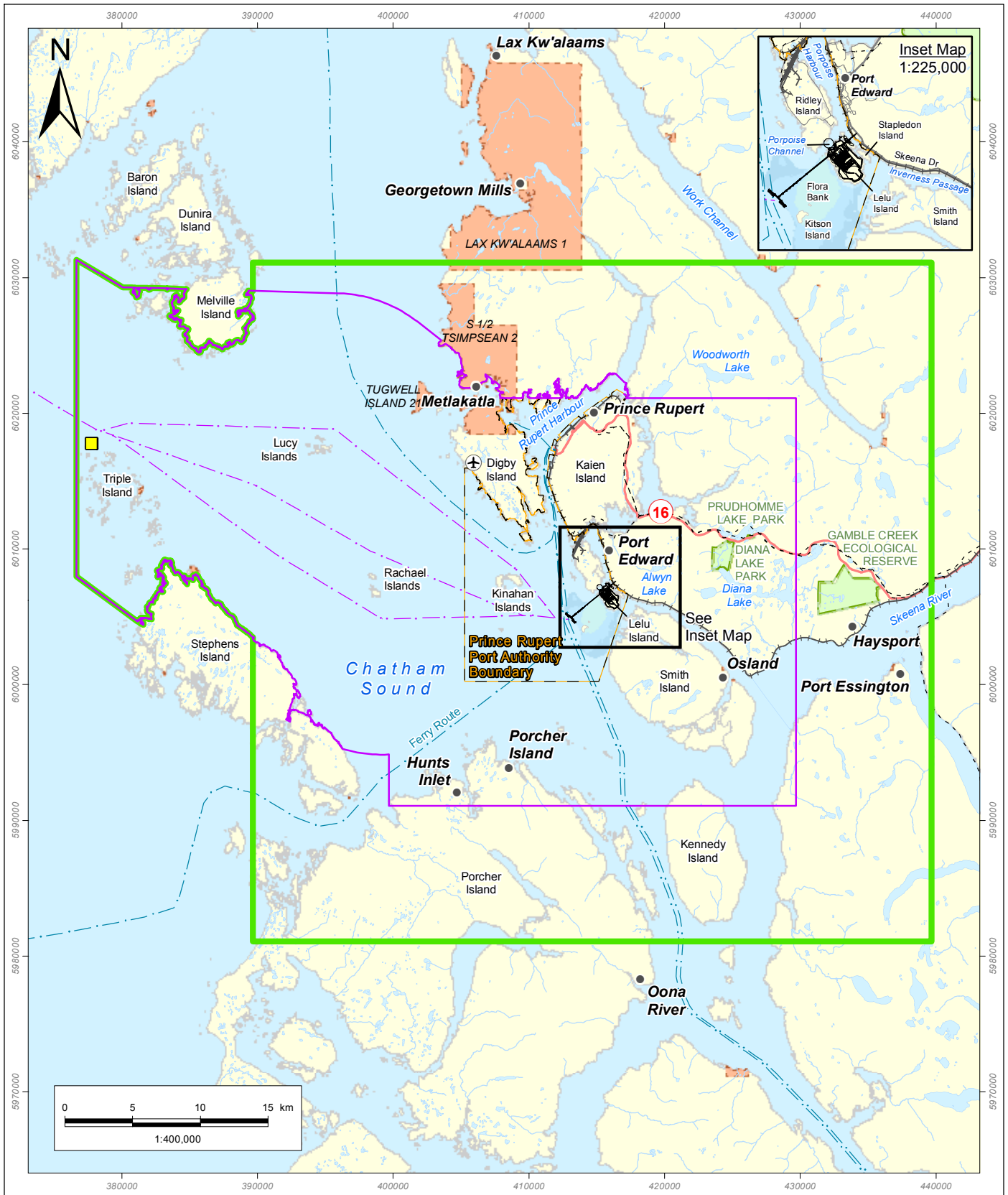
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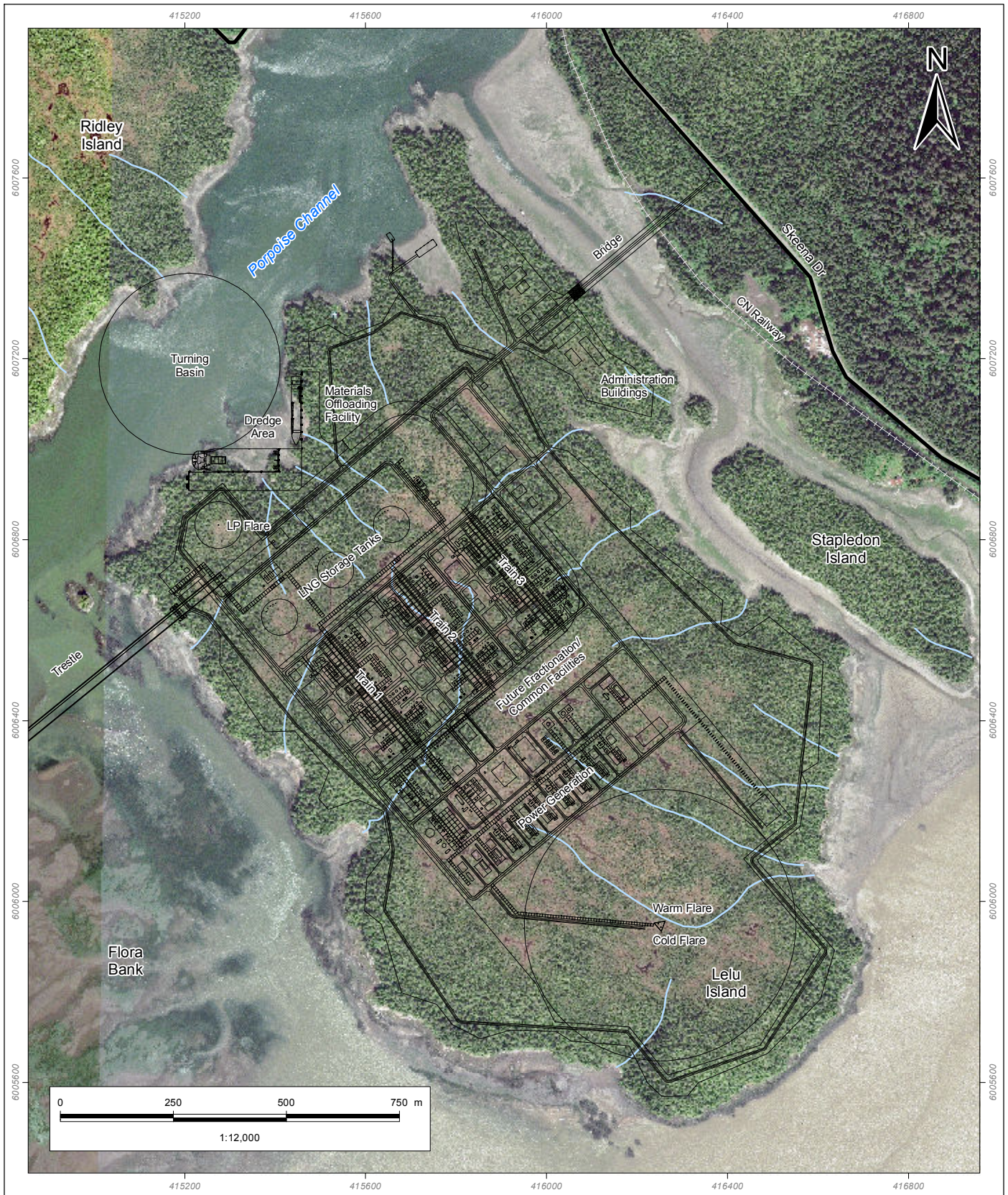
21.15 FIGURES

Please see the following pages.



<ul style="list-style-type: none"> Local Assessment Area Regional Assessment Area Potential Shipping Route Project Component ✈ Airport City or Town Pilotage Station Electrical Power Transmission Line Ferry Route Highway Railway Watercourse Indian Reserve Prince Rupert Port Authority Boundary Protected Area Waterbody Agnew Bank Flora Bank Horsey Bank 	<p style="text-align: center;">Pacific NorthWest LNG Current Use of Lands and Resources for Traditional Purposes Local Assessment Area and Regional Assessment Area</p> <p style="text-align: center;"><i>EIS ADDENDUM</i></p> <p><small>Sources: Government of British Columbia; Prince Rupert Port Authority; Government of Canada, Natural Resources Canada, Centre for Topographic Information; Progress Energy Canada Ltd.</small></p> <p><small>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.</small></p> <p>DATE: 21-NOV-14 FIGURE ID: 123110537-421 DRAWN BY: K. POLL</p> <p>PROJECTION: UTM - ZONE 9 DATUM: NAD 83 CHECKED BY: S. BLACK</p>	<p>PREPARED BY: </p> <p>PREPARED FOR: </p> <p>FIGURE NO: 21-1</p>
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<ul style="list-style-type: none"> Project Component Railway Road Watercourse 	<p>Pacific NorthWest LNG</p> <p>Project Layout</p> <p>EIS ADDENDUM</p> <p><small>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.</small></p> <p><small>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.</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DATE: 21-NOV-14</td> <td style="width: 50%;">PROJECTION: UTM - ZONE 9</td> </tr> <tr> <td>FIGURE ID: 123110537-429</td> <td>DATUM: NAD 83</td> </tr> <tr> <td>DRAWN BY: K. POLL</td> <td>CHECKED BY: S. BLACK</td> </tr> </table>	DATE: 21-NOV-14	PROJECTION: UTM - ZONE 9	FIGURE ID: 123110537-429	DATUM: NAD 83	DRAWN BY: K. POLL	CHECKED BY: S. BLACK	<p>PREPARED BY:</p> <p style="text-align: center;"> Stantec</p> <p>PREPARED FOR:</p> <p style="text-align: center;"> Pacific NorthWest LNG</p> <p>FIGURE NO:</p> <p style="text-align: center; font-size: 24px; font-weight: bold;">21-2</p>
DATE: 21-NOV-14	PROJECTION: UTM - ZONE 9							
FIGURE ID: 123110537-429	DATUM: NAD 83							
DRAWN BY: K. POLL	CHECKED BY: S. BLACK							

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