KSI LISIMS LNG

Natural Gas Liquefaction and Marine Terminal Project

Detailed Project Description Summary

(BC EAA 2018, IAA 2019)

Date: July 18, 2022

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ACRONYMS AND ABBREVIATIONS

AK	Alaska
ATON	Aids to Navigation
(the) Agency	Impact Assessment Agency of Canada
BC	British Columbia
BC CDC	British Columbia Conservation Data Centre
BC EAO	British Columbia Environmental Assessment Office
BC Hydro	British Columbia Hydro and Power Authority
BC EAA	British Columbia *Environmental Assessment Act*
BC ENV	British Columbia Ministry of Environment and Climate Change Strategy
BC OGC	British Columbia Oil and Gas Commission
Bcf/d	billion cubic feet per day
Bcf/yr	billion cubic feet per year
CAC	critical air contaminant
CCG	Canadian Coast Guard
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CWH Zone	Coastal Western Hemlock Biogeoclimatic Zone
dAIR	draft Application Information Requirements
DFO	Fisheries and Oceans Canada
EA	environmental assessment
EAC	Environmental Assessment Certificate
ECCC	Environment and Climate Change Canada
EMP	Environmental Management Plan
EP	Engagement Plan
FEED	front-end engineering design
FLNG	floating liquefaction module
FLNRORD	Forests, Lands, Natural Resource Operations and Rural Development
GHG	greenhouse gas
ha	hectare
IAA	Federal *Impact Assessment Act*
IPD	Initial Project Description
km	kilometre
Proponent	Nisga'a Nation and its partners Rockies LNG Limited Partnership and Western LNG LLC
LNG	liquefied natural gas
m^3	cubic metres
MLA	Member of Legislative Assembly
MOF	material offloading facility
MOU	memorandum of understanding
MP	Member of Parliament
Mtpa	million tonne(s) per annum

MW	megawatt
net-zero	net-zero refers to a state in which the GHGs going into the atmosphere are balanced by removal of an equivalent amount of GHGs out of the atmosphere
NO_X	nitrogen oxide
PRGT	Prince Rupert Gas Transmission
SACC	Strategic Assessment of Climate Change
SARA	Federal *Species at Risk Act*
SO_2	sulphur dioxide
SoC	Statement of Cooperation on Protection of Transboundary Waters
TA	Technical Advisor
TERMPOL	Technical Review Process of Marine Terminal Systems and Transshipment Sites
TPA	tonnes per annum
t/t	tonnes per tonne
UTM	Universal Transverse Mercator
VC	Valued Component
VOC	volatile organic compounds
WCGT	Westcoast Connector Gas Transmission
WCSB	Western Canadian Sedimentary Basin

1 INTRODUCTION

The Nisg̲a’a Nation, Rockies LNG Limited Partnership (**Rockies LNG**) and Western LNG LLC (via its subsidiary, **Western LNG**) (each a proponent and collectively referred to herein as [the] **Proponent**), are proposing to jointly develop an energy project, the Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project (the **Project**). It is proposed to be a floating natural gas liquefaction facility and marine terminal located at Wil Milit on the northwest coast of British Columbia (**BC**) at the northern end of Pearse Island. The Project site (**Site**) is approximately 15 kilometres (**km**) west of the Nisg̲a’a community of Gingolx (Figure 1). The Project will be located on Category A Land (District Lots 5431 and 7235) owned in fee simple by the Nisg̲a’a Nation and located within the Nass Area, as defined in the Nisg̲a’a Treaty, and on an adjacent proposed Water Lot located on Portland Canal at the northern point of Pearse Island (the proposed Water Lot is shown in Figure 2).

The name of the Project, “Ksi Lisims”, means “from the Nass” in the Nisg̲a’a language. Since 2014 the Nisg̲a’a Nation has been working to develop liquefied natural gas (**LNG**) and pipeline facilities in and around its Nisg̲a’a treaty territory. Wil Milit is one of the prospective sites initially proposed by the Nisg̲a’a Nation in a publicly distributed document entitled: *Nisg̲a’a Lisims Government – New Available LNG Sites on Canada’s West Coast – February 2014*. This Project is the culmination of that work and is a key element of the Nisg̲a’a Nation’s economic and social development strategies. It will provide training, jobs and new business opportunities for Nisg̲a’a citizens and other Indigenous Nation communities. Economic development opportunities such as this Project will help ensure the continued growth and vitality of the Nisg̲a’a Nation and other Indigenous Nations.

The Project will operate under a governance structure that ensures it is operated in a manner that is consistent with the Nisg̲a’a Nation’s commitment to stewardship of the land. The Project is consistent with the economic development aspirations of the Nisg̲a’a Nation and provincial government LNG development requirements while still meeting the sustainable economic development objectives of the Nisg̲a’a Nation, BC and Canada.

The Project has secured investigative licenses, permits and authorizations from the Nisg̲a’a Nation, BC and Canada to undertake baseline field surveys. It is anticipated that the Project will be subject to a review under both the federal *Impact Assessment Act* (**IAA**) and the BC *Environmental Assessment Act* (**BC EAA**). The Detailed Project Description (**DPD**) was prepared in accordance with the Information and Management of Time Limits Regulations under the IAA and the Environmental Assessment Office’s Early Engagement Policy (BC EAO 2019). An exemption from the BC *Environmental Assessment Act* (2018) is not being sought.

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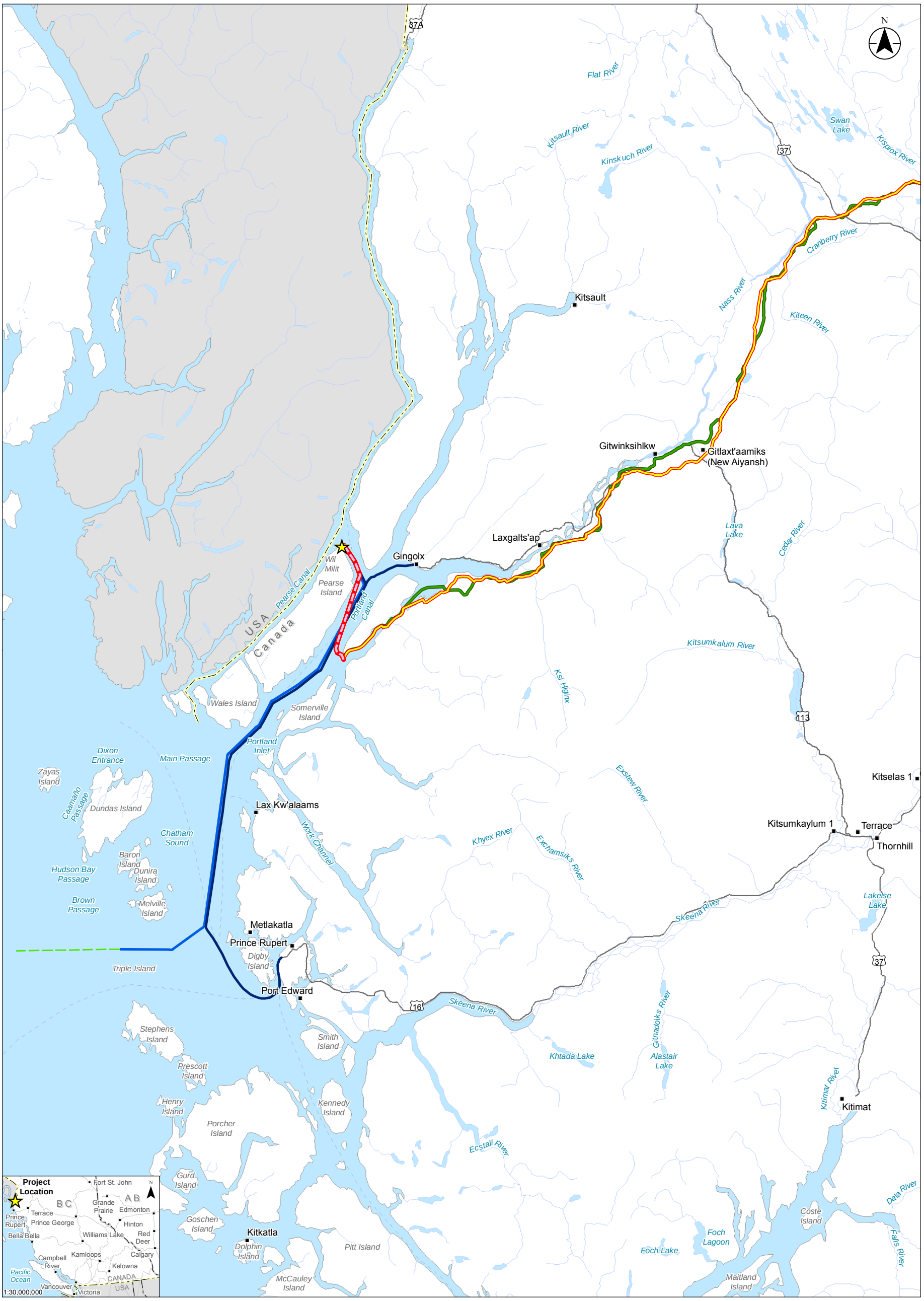

KSI LISIMS LNG

Notes
1. Coordinate System: NAD 1983 UTM Zone 9N
2. Data Sources: DataBC, Government of British Columbia; Natural Resources Canada, Stantec, Nisga'a Nation, Rockies LNG

- Wil Milit – Project Location
- Preliminary Materials and Supply Shipping Route
- Expected Marine Transit Route
- Expected Marine Transit Route to Triple Island from Overseas
- Potential Location of Connecting Pipeline
- Prince Rupert Gas Transmission
- Westcoast Connector Gas Transmission Pipeline Route 1
- Populated Place
- Ferry Route
- Highway
- International Boundary
- Watercourse

Country
- Canada
- United States
- Waterbody

0 5 10 15 20 km
1:750,000 (at original document size of 11x17)

Stantec

Project Location: Pearse Island, BC
Project Number 123221820
Prepared by TQUILICHINI on 20220104
Requested by EFLORY on 20211121
Checked by SMOSS on 20220104

Client/Project/Report
Ksi Lisims LNG
Natural Gas Liquefaction and Marine Terminal
Detailed Project Description

Figure No.
1

Title
Project Location

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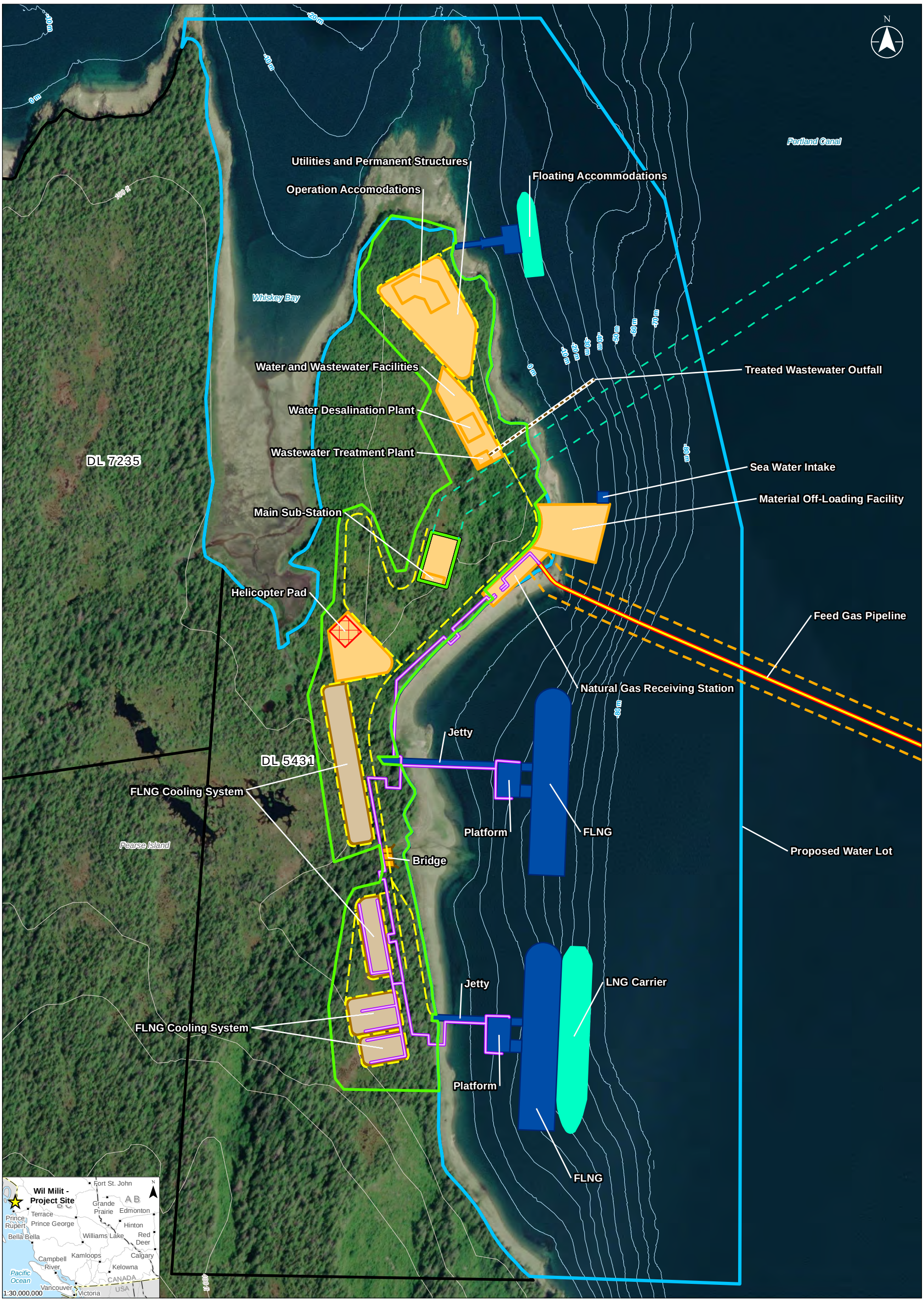

KSI LISIMS LNG

Notes
1. Coordinate System: NAD 1983 UTM Zone 9N
2. Data Sources: DataBC, Government of British Columbia; Natural Resources Canada, Stantec, Nisga'a Nation, Rockies LNG

- Site
- Proposed Access Road
- Feed Gas Pipeline
- Feed Gas Pipeline Right-of-Way
- Powerline Right-of-Way from Mainland
- Utility Lines
- Wastewater Treated Effluent Pipeline

Footprint Component
- Bridge
- Buildings and Utilities
- Cooling Structures
- Helicopter Pad
- Marine Component (Fixed)
- Marine Component (Not Fixed)
- Switchyard
- Preliminary Site Fenceline
- Proposed Water lot

- Bathymetric Contour
- Topographic Contour
- Boundaries of District Lots 7235 and 5431

0 75 150 225 300 m
1:6,500 (at original document size of 11x17)

Stantec

Project Location: Pearse Island, BC
Project Number 123221820
Prepared by TQUILICHINI on 20220415
Requested by EFLORY on 20220415
Checked by SMOSS on 20220415

Client/Project/Report
Ksi Lisims LNG
Natural Gas Liquefaction and Marine Terminal
Detailed Project Description

Figure No.
2

Title
Conceptual Project Layout - Base Case

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2 GENERAL INFORMATION

This document is a plain language summary of the DPD as required by the Impact Assessment Agency of Canada (**Agency**) per Schedule 2, paragraph 25 of the 2019 *Information and Management of Time Regulations* and the *Guide to Preparing an Initial Project Description and a Detailed Project Description* under the *Impact Assessment Act* (**IAA**).

This document is a summary of the official English language version of the DPD. In case of discrepancy, the original DPD in English shall prevail.

2.1 Project Name, Sector and Location

Project Name	Ksi Lisims LNG – Natural Gas Liquefaction and Marine Terminal Project
Type/Sector	LNG Production and Export; Marine Terminal
Proposed Location	Approximately 15 km west of the Nisg̲a'a community of Gingolx on the northern point of Pearse Island (see Figure 1).

2.2 Proponent Information

Project Name	Ksi Lisims LNG – Natural Gas Liquefaction and Marine Terminal Project
Proponents	Nisg̲a'a Nation, Rockies LNG and Western LNG
Address	1000, 600 – 3rd Avenue SW Calgary, AB T2P 0G5
Project Regulatory Leadership (reporting to Ksi Lisims LNG Steering Committee)	Chris Chong-Ping, Managing Director, Ksi Lisims LNG <Email address removed> <Personal information removed>
	Collier Azak, CEO, Nisg̲a'a Lisims Government <Email address removed> <Personal information removed>
Principal Contact(s) for the Environmental-Impact Assessment	Sandra Webster, Director, Environmental and Regulatory Affairs <Email address removed> <Personal information removed>
URL	www.ksilisimslng.com

2.3 Purpose of and Need for the Project, and Potential Benefits

Since the effective date of the Nisg̲a'a Final Agreement, the Nisg̲a'a Nation has sought economic development opportunities that will provide a higher quality of life for Nisg̲a'a citizens. With this objective in mind, the Nisg̲a'a Nation has pursued an LNG facility for nearly a decade. The Ksi Lisims LNG – Natural Gas Liquefaction and Marine Terminal Project (Ksi Lisims LNG Project) will advance the Nisg̲a'a Nation's goal of economic self-determination by providing economic opportunities for the Nisg̲a'a Nation, meaningful employment and contracting opportunities for Nisg̲a'a citizens, as well as, increased economic opportunities for other Indigenous Nations, BC, Alberta, and Canada.

The Project serves four foundational purposes:

- Create economic self-determination for the Nisga'a Nation and improve the quality of life for all Nisga'a citizens.
- Create direct and indirect economic benefits for other Indigenous Nations, British Columbia, Alberta, and Canada.
- Enable the export of clean and reliable Canadian natural gas to markets outside of North America.
- Provide a lower carbon intensive energy source to meet growing global energy demands.

The Project will provide the Nisga'a Nation with an opportunity for greater economic self-determination and prosperity. In so doing, the Project will contribute to economic reconciliation by recognizing and implementing the Nisga'a Nation's wishes in respect of sustainable development on lands they own under the Nisga'a Treaty. The Project will be an important component in the Nisga'a Nation's social development strategy, providing extensive opportunities for jobs, training, and new businesses to be formed, both during the construction and operation phases of the Project.

Other Indigenous Nations in the region will also see Project related direct and indirect benefits, including economic benefit opportunities during the construction phase of the Project, and construction of the pipeline by the pipeline proponent selected by the Project. At a provincial level, the Project will generate significant revenue and direct and indirect jobs and businesses opportunities.

The Project creates additional access to global markets for the export of Canadian natural gas, which will help mitigate risk caused by North American market fluctuations while contributing to economic development by improving energy security in those global markets.

From a regional environmental perspective, the Project is working towards net-zero LNG production by using renewable electricity. The Project will not only meet the increasing global demand for low-carbon LNG, but it may also displace the use of higher emission energy sources such as coal and thus help to protect the environment.

Other key benefits and objectives of the Project are to:

- Enable the export of rich natural gas deposits of the Western Canadian Sedimentary Basin (**WCSB**) by natural gas producers in BC and Alberta to serve the growing demand for natural gas.
- Create tax and royalty revenues to the BC, Alberta and Federal Governments.
- Create direct and indirect benefits for Indigenous and non-Indigenous peoples through opportunities for jobs, training, and business investment.
- Assist Canada, BC, Alberta, and Indigenous Nations in meeting objectives to address global climate change through reduced GHG emissions.
- Create significant revenue for BC through tax payments, direct and indirect economic impacts, cumulative corporate taxes, and payments to BC Hydro.

3 PROJECT OVERVIEW

The Project is a proposed 12 million tonne(s) per annum (**mtpa**) LNG project. The Project will process approximately 575 to 695 billion cubic feet per year (**Bcf/yr**) of natural gas and temporarily store it between LNG carrier (**LNGC**) loadings on two permanently installed floating liquefaction modules (**FLNG**) modules. The FLNGS will be designed with integrated storage with an aggregate capacity of approximately 450,000 cubic metres (**m^3**) of LNG. The final determination of the production capacity and storage configuration and quantity of each FLNG will be made during the front-end engineering and design **(FEED)** stage of the Project.

The Project will convert Canadian natural gas from the WCSB of northeastern BC and northwest/central Alberta into LNG. Natural gas will be transported to the Site via a natural gas transmission pipeline originating in northeastern BC. The feed gas pipeline will be owned and operated by a third party and will be subject to the regulatory requirements of the Nisga'a Lisims Government (**NLG**), BC, and Canada.

The Proponent is designing the Project to be one of the lowest carbon emitting LNG export facilities in the world, targeting to be net-zero during operations once BC Hydro grid connection has been established. This will be achieved by the use of renewable power and other greenhouse gas (**GHG**) reducing design elements, in combination with a robust monitoring and measurement program, an operating culture focused on low emissions, and through the purchase of carbon offsets. It is anticipated that renewable power will be supplied to the Project via a new inter-connection between a BC Hydro substation and their existing transmission system.

3.1 Project Updates and Changes

Since the submission of the Initial Project Description (**IPD**), design has advanced and the following updates and changes have resulted:

- No permanent LNGC berth, instead LNGC will pull alongside moored FLNG modules
- No project infrastructure in Whiskey Bay
- Confirmation of temporary workforce accommodation (floatel) off northeast corner of DL 5431 in proposed Water Lot with connecting floating jetty to shore
- New material offloading facility (**MOF**) off northeast corner of DL 5431 in proposed Water Lot
- Alternative potential temporary power barge(s) berth alongside MOF if the BC Hydro grid connection is delayed
- Flares no longer proposed onshore and now housed on FLNGs
- Permanent (not temporary/construction phase only) helipad on DL 5431
- Removal of potential power generation on DL 7235
- Permanent operations workforce accommodations moved to north portion of DL 5431 along with other support and utility buildings required for the Project
- Identification of new water treatment plant on north portion of DL 5431 including treated effluent pipe, outfall and diffuser into Portland Canal

- Potential for water diversion structure, pipeline and road from DL 7235 or DL 5431 to water treatment plant
- Potential desalination plant
- Potential seawater intake structure and piping to a desalination plant to supply fresh water for:
    - Potable water
    - Use as a cooling medium for the temporary power barges and to top-up closed loop cooling infrastructure for FLNGs
    - Use for firefighting systems onboard the FLNGs
- New onshore closed loop cooling infrastructure for FLNGs
- Potential onshore cooling infrastructure to cool power generation gas turbines on temporary power barges
- Two pile supported jetties from shore to the FLNGs
- Addition of on-Site power substation(s) for BC Hydro connection from the mainland with Site electricity distribution system to onshore facilities and FLNGs
- Addition of natural gas receiving station with pipeline inspection gauge (pig) receiver and metering facilities connecting to the feed gas pipeline coming onshore
- Addition of back up diesel power generation to enable safe shutdown and provision of emergency power in the event of power grid connection failure
- Addition of diesel fuel storage tanks
- Site roadways and utility corridors for distribution of natural gas, electricity, potable water and sanitary wastewater now identified
- Addition and update to FLNG permanent marine mooring infrastructure consisting of sub-tidal anchors and chains and piles on the nearshore
- Solid waste management and overburden storage areas identified

3.2 Location

The proposed Project location is in the northwestern coastal region of British Columbia in Canada on a site known to the Nisg̲a’a Nation as Wil Milit, a former Indian Reserve and located approximately 15 km west of the Nisg̲a’a Nation community of Gingolx. The proposed Site consists of undeveloped land that, in part, has previously been logged and is adjacent to established shipping routes.

The Project components and activities are to be located at a Site on the most northern portion of Pearse Island within the Nass Area, as defined in the Nisg̲a’a Treaty, on DL 5431 with the potential for Project components on DL 7235 and in the proposed Water Lot. The Project’s onshore components are located on Category A Land, as defined in the Nisg̲a’a Treaty, owned in fee simple by the Nisg̲a’a Nation.

The Site is located roughly centered at 55°01’26”N and 130°10’49”W. There are no federal lands within or adjacent to the Site. The nearest federal lands are more than 25 km from the Site.

3.3 Activities and Components

The Project will consist of two floating LNG production, storage and off-loading barges (FLNGs) with a total nominal capacity of 12 mtpa. The main refrigerant compressor drives are electric motors.

At full build-out, the Project will receive between 1.7 and 2 Bcf/d (i.e., 48.1 and 56.6 million m^3 per day) of pipeline grade natural gas and produce up to 12 mtpa of LNG.

The Project's FLNGs and onshore components, their configuration, and certain technology selections will be developed during FEED, informed by the Project's engagement with regulatory authorities and Indigenous Nations.

The Project includes:

- Two FLNGs that will each include:
    - Feed gas pre-treatment systems that include:
        - Acid Gas Removal Unit
        - Dehydration unit
        - Mercury removal unit
    - Multiple single mixed refrigerant liquefaction trains with:
        - Natural gas liquefaction system
        - Heavy hydrocarbon removal system
        - Condensate stabilization and storage
        - Refrigerant storage
    - LNG storage for a combined capacity of approximately 450,000 m^3
    - Mooring systems
    - LNG ship-to-ship off-loading equipment
    - Boil off gas management
    - Emergency flaring systems
    - All utilities required for the FLNG operation
- Feed gas receiving facility including:
    - Fiscal metering
    - Pig receiver
- Site natural gas distribution piping
- Electrical substation and Site electricity distribution systems
- Water and wastewater treatment plants and associated interconnecting piping and access roads
- Potential surface water stream diversion structure and/or groundwater well, pump and pipeline to the water treatment plan
- Backup diesel power generation

- Diesel fuel storage tank(s)
- Treated effluent pipeline, outfall and diffuser in Portland Canal
- Refrigeration closed loop cooling system (using water as the cooling medium)
- Potential temporary power barge(s) and onshore cooling system
- Support buildings including control building, administrative building (including medical clinic), maintenance workshop and warehouse, workforce personnel accommodations and security office
- MOF, barge berths, potential tug berths and supply/personnel jetty
- Monitoring equipment
- Two jetties and platforms, one each connecting each FLNG to the shore
- Connecting roads, utility rights-of way and security fencing
- Solid waste management facilities
- Helipad

See Figure 2 for a conceptual plan of on land and in-water Project components.

Access to the Site will likely be by helicopter or float plane originating in Prince Rupert or Terrace or by suitable vessels originating from Gingolx or the Prince Rupert area. Project regional supply centres may include the Nisga'a community of Gingolx, other Nisga'a communities, the Nass Camp airstrip, the regional airport at Terrace, the Prince Rupert Airport, and the Port of Prince Rupert.

3.3.1 Third-Party Projects

3.3.1.1 Pipeline

The Project will be supplied with pipeline grade natural gas from the WCSB to the Site by an approximately 650 to 750 km long natural gas transmission pipeline built, operated, and owned by a third party.

Two natural gas transmission pipeline projects hold Environmental Assessment Certificates that are valid through November 2024: TC Energy's Prince Rupert Gas Transmission (**PRGT**) project and Enbridge's Westcoast Connector Gas Transmission (**WCGT**) project. It is anticipated that one of these pipeline projects will enter into a commercial agreement to deliver natural gas transportation services to the Project.

3.3.1.2 Transmission Line

The Proponent has entered into a commercial agreement with a third party to design, build and operate an independent transmission line that will connect the Project to the BC Hydro grid. In addition to providing electricity to the Project, the transmission line will supply reliable electricity to Nisga'a communities.

The preliminary proposed route for the interconnection transmission line will follow, approximately, the corridors on Nisga'a Lands previously studied in connection with the PRGT and WCGT pipelines. The length of the interconnection transmission line is approximately 90km and will be constructed with a voltage rating of 287kv. The Nisga'a Nation intends on taking the lead role on the assessment of the

interconnection transmission line on Nisg̱a'a Lands under Chapter 10 of the Nisg̱a'a Final Agreement and will be responsible for granting the land authorizations for the required right of way on Nisg̱a'a Lands.

The transmission line is not within the care and control of the Proponent. It will be constructed and operated under a commercial relationship whereby the Proponent will not direct or influence the third party in carrying out the powerline connection activity. In addition, the transmission line will not solely be for the benefit of the Proponent; as such, the powerline connectivity activity should be considered incidental and not a Project component.

3.4 Construction

The total onshore footprint at Wil Milit will fall primarily within DL 5431 with potential for some components in DL 7235. The marine footprint for the Project will be within the proposed Water Lot. Most onshore infrastructure will be constructed at an offsite location(s) and then barged to, and installed at, the Site. Construction planning and logistics will be further developed during the FEED stage.

Temporary Project components and early construction activities may consist of the following:

- An initial temporary pioneer dock (e.g., for unloading construction equipment and supplies)
- Site access trails
- Clearing of vegetation from construction, storage, and lay-down areas
- Temporary diesel power generation
- Modular construction offices
- An on-Site concrete batching plant
- Temporary fuel storage areas
- Overburden storage areas
- Installation of a temporary concrete batch plant
- Self-contained floatel
- Personnel dock for floatel
- A weather station

The Project's construction workforce will be hired by the Project's construction contractor(s) and will be housed at the Site and not in nearby communities. The number of on-site construction workers will vary. It is anticipated that peak numbers may be up to 600-800 workers, however, better estimates will be provided as an outcome of FEED. The origin of the construction workers is not yet known, but efforts will be made for the Project to secure construction contractors who are required to recruit locally from available talent in nearby communities, then recruit regionally, provincially, nationally, and internationally, in that order of preference, to the extent possible. It is anticipated that certain specialized trades and expertise may need to be sourced from elsewhere in BC, Canada or internationally. Construction worker details and estimates will be developed during FEED. All construction activities will be conducted by third parties under contract to the Project who will maintain care and control of all construction activities.

Construction is expected to take approximately three and a half years (i.e., 2024–2027) with commissioning estimated for 2027.

Construction materials, supplies and equipment are anticipated to be transported to the Site through local regional centers (e.g., Terrace or Prince Rupert) either by truck through Gingolx along Highways 16 and/or 113 or by barge along marine transportation routes from the Port of Prince Rupert or potentially from other coastal ports (e.g., Vancouver).

Permanent Project component construction activities are currently proposed to include:

- Tree removal, vegetation clearing, soil removal/salvage and general onshore site preparation
- Permanent helipad construction
- Potential blasting of bedrock outcrops, if necessary
- Upland Site drainage construction and stormwater management systems
- Road and utility right-of-way construction
- MOF and, potentially, temporary power barge berth construction in the proposed Water Lot
- FLNG permanent mooring infrastructure (e.g., sea floor anchors, chains, chain weights and piles) in the proposed Water Lot
- Construction of pile supported FLNG access jetties and interconnecting pipe racks to the FLNGs
- Construction of an onshore closed loop FLNG cooling system (including piping, equipment and supporting steel structures) to support FLNG processes
- Building construction (e.g., control building, security building, permanent accommodation, warehouse, etc.)
- Construction of wastewater treatment plant, treated effluent pipeline, outfall and diffuser in Portland Canal for domestic and industrial water use during construction and operation
- Installation of onshore firewater and other safety systems
- Installation of a potable water storage tank and the plant instrument air systems
- Potential installation of a desalination plant and necessary connecting water pipeline infrastructure
- Potential installation of a diversion structure in a stream, a pump, water pipeline and access road to the Site water treatment plant for domestic and industrial water use during construction and operation
- Potential drilling of a groundwater well and connecting water pump and piping infrastructure to the water treatment plant
- Potential rainwater collection systems connecting to the water treatment plant
- Potential installation of a waste management incinerator for construction or operations non-hazardous wastes that are combustible
- Installation of electric power substation and the natural gas receiving facilities
- Erecting site security fencing, constructing Site outdoor lighting and access control systems
- Telecommunications tower construction
- Post-construction clean-up and on-Site grounds reclamation

3.5 Operations and Maintenance

The Project is designed to operate 24 hours per day, 365 days per year. Permanent operational workforce estimates are between 150 and 200 employees. Personnel working at the Site during operations will be housed in permanent on-Site accommodations. Water taxi will be the primary means of moving the permanent workforce to and from the mainland (i.e., from Gingolx) to the Site.

Major operations activities include:

- Feed gas pre-treatment
- LNG production and storage
- Refrigerant and condensate management
- Loading of LNG and NGL product carriers
- Process control systems
- Safety, security and emergency response systems

Routine inspections and maintenance of the above components and systems would be completed on an ongoing basis.

3.6 Marine Shipping

LNGCs and vessels suitable for transporting NGL product will be owned, insured, and operated by third parties and are anticipated to have a capacity between 140,000 and 180,000 m^3. The present estimate of LNG shipments per year is between 140 and 160, depending on the size of the LNGCs used and the total LNG produced by the Project. NGL product vessels calling on the terminal, expected 8-12 times per year, are anticipated to have a nominal capacity range of 5,000 to 30,000 m^3. All vessels are anticipated to follow the same shipping route (see Figure 1).

The minimum required water depth at the marine terminal will be determined on the fully laden draft of the Project's marine terminal design vessels. Aids to Navigation (**ATON**) will be used to identify the Project's marine facility, provide warnings and guidance to local and passing marine traffic and assist the BC Coast Pilots in berthing and unberthing the LNGCs and NGL product vessels. Environmental limiting conditions (e.g., severe weather) at the marine terminal are anticipated. In order to fully address marine safety and potential marine accidents and malfunctions, a Navigation Safety Assessment will be conducted for the Project.

LNG carriers are anticipated to enter Canadian waters from the west through Dixon Entrance north of Haida Gwaii and will pick up a BC Coast Pilot at a designated location near Triple Island. LNGCs will be piloted between Triple Island and the Project's marine terminal by BC Coast Pilots to support the safe inbound and outbound transit of LNGCs, consistent with applicable marine navigation laws and regulations. The Project's actual marine routes and/or procedures for LNGCs may change, informed by future engagements with BC Coast Pilots, analyses and engagements with Indigenous communities, government agencies and stakeholders.

3.7 Decommissioning

The eventual decommissioning of the Project or extension of operating life (after a minimum of 30 years) is described in general terms at this time. A decommissioning and abandonment plan would be developed in consultation with the Nisg̲a'a Nation, incorporated at least in part into the land lease and proposed Water Lot sublease from the NLG and engagements with applicable regulatory authorities. Upon decommissioning of the Project, the area may be restored as required by NLG and/or per the applicable agreements with the Nisg̲a'a Nation and as prescribed in operating permits.

3.8 Emissions, Discharges and Waste

The FLNGs and accompanying upland infrastructure will generate a variety of wastes, emissions, and effluents over the life of the Project. Each of these wastes will be managed in compliance with the applicable NLG, provincial and federal regulatory requirements and guidelines according to a management plan that will be developed for the Project.

3.8.1 Construction

During construction, it is anticipated that some native (e.g., originated at the onshore Site) construction wastes will be managed on-site and that most construction wastes will be managed, stored, and shipped to approved disposal locations on the BC mainland. Solid and liquid wastes are expected from:

- Biomass, soil and rock waste (e.g., from land clearing and excavation)
- Construction wastes (e.g., wood, scrap metal, concrete, etc.)
- Regulated hazardous materials (e.g., used oil or solvents)
- Sanitary and domestic solid and liquid waste
- Stormwater

The primary sources of air emissions during construction will be from construction equipment and power generation from portable diesel-powered generators.

3.8.2 Operations

During operations, solid and liquid wastes and air emissions will be managed as required by NLG, provincial and federal regulatory authorities through different forms of waste management authorizations. Most wastes generated during operations will be regulated by the BC OGC (e.g., air emissions, process liquid effluent emissions) under their delegated waste management authorities under the *Oil and Gas Activities Act* (**OGAA**). Solid and liquid wastes are expected to be generated from:

- Domestic solid and liquid waste including sanitary (e.g., from offices, workshops, warehouses)
- Wood and scrap metal originating from maintenance activities
- Stormwater
- Hazardous wastes including those removed during natural gas treatment

During operations, nitrogen oxides, carbon monoxide, sulfur dioxide, particulate matter (including total suspended particulate and diesel particulate), volatile organic compounds, and GHGs will be released into the atmosphere from:

- Fugitive emissions from FLNG liquefaction and LNGC loading systems
- Combustion associated with:
    - Acid gas incinerators
    - Direct-fired process heaters
    - Temporary gas-fired facilities to produce power for the LNG facility until the BC Hydro grid connection is made
    - Safety flares (used to manage emergency or maintenance activities)
    - LNGCs, NGL product carriers and support vessels
- Land and water-based vehicles associated with the transport of personnel, materials, supplies and/or equipment

3.8.3 Decommissioning

Emissions, discharges and wastes during decommissioning are expected to be similar to those associated with construction as both Project phases will rely on similar types of equipment.

3.9 Greenhouse Gases

The Project will generate GHG emissions during construction, operation and decommissioning. These GHG emissions will be managed in compliance with the applicable NLG, provincial and federal regulatory requirements and guidelines. A preliminary analysis of annual GHG emissions for the Project and the impact of the Project on the ability of governments to meet GHG emissions targets has been developed.

The Project is designed to be one of the lower carbon emitting LNG export facilities in the world. This will be achieved through the use of clean, renewable electrical power from the BC Hydro grid and the purchase of carbon offset credits. This will result in the Project achieving its target of net-zero emissions and being in alignment with the provincial CleanBC Plan.

3.9.1 Preliminary Estimates of Project GHG Emissions

This section provides preliminary estimates of the proposed Project-related net GHG emissions, which have been estimated following the approach in Section 2.1 of Environment and Climate Change Canada (**ECCC**)'s Draft Technical Guide Related to the Strategic Assessment of Climate Change where:

$$Net\ GHG\ Emissions\ = Direct\ GHG\ Emissions\ + Aquired\ Energy\ GHG\ Emissions \\ - Avoided\ Domestic\ GHG\ Emissions - Offset\ Measures$$

Direct emissions refer to emissions under the control of the Project and within the assessment scope. Acquired energy emissions refer to GHG emissions generated to supply electricity to the Project. Offset measures refer to both CO_2 captured and stored and offset credits.

The estimates in this DPD are based on the Project's preliminary front-end engineering and design (**Pre-FEED**) design, current technologies, and emission regulations.

The average annualized construction emissions over a three-year construction period are estimated to be approximately 8,020 tCO_2e/year (approximately 0.01% of total GHG emissions in BC in 2019), or a total of approximately 24,060 tCO_2e (e.g., 3 year) when considering all construction activities. The annualized direct construction emissions will depend upon the construction period duration and sequencing of activities, which are yet to be developed in detail.

The direct GHG emissions during operations at full capacity are estimated as:

(1) Operations (Base Case) – BC Hydro Grid Connection

Sufficient BC Hydro grid power is available to meet the maximum electrical power requirement for Project operations. Annual direct emissions are estimated to be approximately **197,000 tCO_2e/year** (approximately 0.3% of total GHG emissions in BC in 2019).

(2) Operations (Alternative Case)

The connection to BC Hydro is delayed and no BC Hydro grid power is yet available, in which case the Project must self-generate 100% of its power. In this scenario, the Project is considering three alternatives that have different energy requirements. Annual direct emissions are estimated to be a range of approximately **1,860,000 to 1,900,000 tCO_2e/year** (approximately 2.8% - 2.9% of total GHG emissions in BC in 2019) with all three scenarios.

Emissions during decommissioning are expected to be similar to those associated with construction, as both Project phases will rely on similar types of equipment, however, these have not been estimated at this time

Acquired energy emissions are estimated based on a 2020 and 2021 Integrated grid GHG emissions intensity factor, as published by the BC Government. These factors can vary widely year to year depending on grid electricity consumption from other users and variations in water supply conditions and reservoir levels and are not under the control of the Project. Using the published 2020 and 2021 Integrated grid GHG emissions intensity factor, annual acquired energy emissions are estimated to be between approximately 50,000 and 200,000 tCO_2e/year when full grid power is available for Project operations.

As the Project has not quantified avoided domestic GHG emissions and does not anticipate CO_2 capture and storage, at this time, the net GHG emissions are the sum of the Project's direct emissions and acquired energy emissions, less carbon offsets. The Project intends to purchase carbon offsets to offset the amount of GHG emissions associated with acquired energy and other direct GHG emissions not associated with self-generated power, for both the operations base and alternative cases.

The Project intends to purchase the required offset credits for the Base Case Operations which is estimated to be between 250,000 and 400,000 tCO_2e/year of offset credits, beginning at operations start up. If insufficient credits are available on the BC Registry, credits may be sourced from the federal offset registry, when that source becomes available, or from other sources. This quantity is sufficient to offset

the direct and acquired energy emissions during operations powered by electricity from the BC Hydro grid.

The use of electrical power from the BC Hydro grid and the purchase of offsets enables the Project to achieve its target of net-zero emissions well ahead of Canada's 2050 target.

Scope 3 GHG emissions, as defined by the US Environmental Protection Agency, are the result of activities from assets not owned or controlled by the proposed Project but are indirectly impacted by the proposed Project's value chain. Preliminary estimates of indirect Scope 3 GHG emissions and their sources per proposed Project phase include:

- Construction sources:
    - Emissions associated with marine delivery of FLNGs and other construction materials to proposed Site
    - Emissions associated with on-road delivery of workers, equipment, and construction materials to proposed Site
- Operations sources:
    - International marine transport and delivery of LNG and NGL products
    - Upstream gas extraction, processing, and transmission

These estimates are based on the Project's preliminary understanding of activities that are caused by the proposed Project.

Upstream emissions based on the design capacity of 12 mtpa are anticipated to exceed the 500,000 tCO_2e threshold in the Draft Technical Guide Related to the Strategic Assessment of Climate Change. This value will be refined through the completion of an upstream GHG emissions assessment to be completed as part of the Application.

3.10 Land and Water Use

The Project will be located on Category A Lands owned in fee simple by the Nisga'a Nation, as defined in the Nisga'a Treaty, on undeveloped but previously logged land on District Lots 5431 and 7235 on Pearse Island and on the proposed Water Lot in Portland Canal (Figure 2). DLs 7235 and 5431, comprise approximately 164 ha on Pearse Island. It is currently envisioned that all of the Project's onshore infrastructure will be on DL 5431 however, this may change based on other Site investigations to be undertaken (e.g., water sources).

Potable water may be shipped for temporary use at the Site during construction or acquired from an on-site source (e.g., suitable stream, well water, etc.). Both options are being evaluated for construction water (e.g., cement plant).

During operations, the Project is considering a number of potential sources of water for LNG processes and potable water use. Sources being considered include groundwater wells, precipitation capture and freshwater streams, or a combination thereof or, if none of the alternatives prove suitable, then from a

desalination plant. The current estimate for water requirements during operation is 15-25 m^3/hr. Estimates for construction water needs are still in development; however, it is expected to be less than that for operation.

3.11 Schedule and Constraints

Table 1 outlines the current, estimated Project schedule for the primary Project Phases.

Table 1 – Approximate Project Schedule

Project Phase	Estimated Timeline
Environmental assessment	Q2 2021 to Q1 2024
Engineering design (FEED and detailed design)	Q2 2021 to Q4 2024
Permitting and environmental management plans	Q3 2022 to Q1 2024
Construction activities	Q2 2024 to Q3 2027
Operations and maintenance	2027 out to a minimum of 30 years (2057)
Decommissioning, abandonment, and reclamation	Sometime after 2057 when the Project has reached the end of its operational life

The Project construction schedule related to higher risk or effect activities (e.g., those generating high levels of noise) may be adjusted to accommodate sensitive activity periods related to wildlife, freshwater resources or marine resources. These adjustments will be identified during pre-construction planning and based on the results of baseline studies.

3.12 Alternatives to the Project

An LNG facility at a different location with a different proponent partnership structure, or a different Nisg̲a’a-led economic opportunity on their treaty lands, could contribute to the primary objectives of the Project (see Section 2.3). However, no alternative for the Project has been identified that is both technically and economically feasible and that would contribute towards each of the Project’s foundational purposes (see Section 2.3).

3.13 Alternative Means of Carrying Out the Project

Iterations of the Project with respect to design and siting have been and continue to be evaluated by the Project team, particularly as FEED progresses. These alternatives are presented in Table 2. The assessment of these alternatives will be informed by engagement with local Indigenous communities and regulators.

Table 2 – Project Component Alternatives

Project Component	Alternatives Considered
Floating Design	The Project has been designed as an FLNG based on reduced land need for Project infrastructure, lower expected construction cost and timeline and use of Site-based accommodation to avoid the introduction of large temporary construction workforce in nearby communities.
Water Supply	The Project is currently considering water supply options for domestic and process water. The final decision for water supply will depend on hydrometric analysis of local surface water sources, feasibility of groundwater and feasibility and effects assessment of desalination including for water withdrawal and waste management.
Site Options	Several sites were evaluated for this Project based on preferred site information assembled by the Nisga'a Nation. Sites were selected based on a number of risk factors, including constructability, operations, environmental impact and land ownership. Two other properties, Sgawban and Xmaat'in, owned and controlled by the Nisga'a Nation were deemed less desirable due to physical properties. Final upland and marine footprint will be informed by available engineering design, baseline environmental information and engagement with Indigenous Nations including the Nisga'a Nation.
Marine Terminal Design	Marine terminal design considered the use of distinct berths; however, this design requires considerable additional marine footprint and therefore is no longer under consideration. Anchoring mooring structures for the FLNGs is currently under consideration
Electric Power Supply	The Project is considering alternatives for power supply. As the base case, the Project relies on a renewable energy source connection via the BC Hydro grid; however, should connection not be available for the commissioning and/or start of operation, then up to three power barges will be used for temporary on-Site power generation. The Proponent does not anticipate requiring the temporary use of the barges to extend beyond the first 1 to 5 years of operation. The Proponent has currently identified four potential power supply alternatives: ▪ Base Case – Electricity is provided by BC Hydro at the start of Project operations ▪ Alternative 1 – Connection to the BC Hydro grid is delayed. Power generation on-Site from temporary power barges that use open loop sea water cooling is required at the start of Project operations ▪ Alternative 2 – Connection to the BC Hydro grid is delayed. Power generation on-Site from temporary power barges that use water cooling via onshore evaporative cooling towers is required at the start of Project operations ▪ Alternative 3 – Connection to the BC Hydro grid is delayed. Power generation on-Site from temporary power barges that use water cooling via closed loop onshore cooling towers is required at the start of Project operations
Third-party Pipeline	The Project requires a natural gas transmission pipeline to convey natural gas from northeast BC and Alberta. The Project is currently considering two potential pipeline options that would be designed, constructed, owned and operated by a third party – PRGT proposed by TC Energy and WCGT proposed by Enbridge. Final selection will be made following further Project design.

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4 SETTING

The following section provides an overview of the biological and human environment setting in the vicinity of the Project. An image of the proposed Project Site is shown in Photo 1.

Photo 1 – Wil Milit Project Site at the Northern End of Pearse Island, View to the South

4.1 Atmospheric Environment

4.1.1 Climate and Air Quality

The Project is located on BC's north coast, a location dominated by temperate rainforest and complex coastal terrain. Air masses flowing across the northern Pacific Ocean encounter the Coast Mountains resulting in high annual precipitation. The climate can be characterised as having mild winters and cool summers. Winds are influenced by the complex terrain.

Given the remoteness of the Site and its distance from industrial operations, air quality is considered pristine.

4.1.1.1 Acoustic Environment

The existing acoustic environment is characterized by various sounds from the natural environment including wind, waves and marine and terrestrial wildlife. Due to the remoteness of the Site, anthropogenic sounds are limited to marine and occasional air traffic.

4.2 Physical Environment

4.2.1 Surface Water

The marine waters in the vicinity of the Site are within the Inner Pacific Shelf Ecoregion and North Coast Fjords Ecosection. Water levels throughout the area are strongly tidal (range approximately seven metres above chart datum). Marine currents within Portland Inlet, and Portland and Pearse Canals are highly variable due to a combination of wind and tidal forcing. Wind forcing is highly episodic and particularly important in the fall and winter under the combined influence of frequent Pacific storms and Arctic outflow winds.

Nine streams, as well as several tributaries and open water wetlands that flow into these streams, are located at the Site. These streams discharge into Portland Canal, Whiskey Bay, and Pearse Canal and have peak flows in May, October, and November with low flow periods in summer (July and August) and late winter (February and March). Two major river systems discharge into the larger regional area: the Skeena River into southern Chatham Sound and the Nass River into northern Chatham Sound via Nass Bay and into Portland Inlet.

4.2.2 Groundwater and Sediment

Unconsolidated sediment deposits mapped across the Site include glaciomarine sediments, colluvium, till, and organics (McCuaig, 2003). Deposit landforms are generally veneers; thin, discontinuous horizons of material with numerous areas of exposed bedrock.

Groundwater levels across the Site can be expected to be a subdued expression of topography and general characteristics of the local groundwater flow system can be inferred on this basis. Based on the bedrock characteristics, the volume of water stored and transmitted through bedrock underlying the Site may be limited.

4.3 Biological Environment

4.3.1 Vegetation and Wetlands

The terrestrial portion of the Site is within the Southern Boundary Ranges Ecosection and the marine portion of the Site is within the North Coast Fjords Ecosection. The Site is within the Coastal Western Hemlock Biogeoclimatic Zone (**CWH**), specifically the Central variant of the Very Wet Hypermaritime subzone (**CWHvh2**). The terrain is mostly subdued and rocky, the climate is extremely wet, and the vegetation is a mosaic of poor forest and wetland, with productive forests restricted to moderate and steep slopes or floodplains (Banner et al. 1993).

The vegetation of the northern part of Pearse Island is primarily coniferous forest interspersed with low lying wetlands. The Site is characterized by gentle relief with gradual above and below water slopes, with the far southwest corner of the Site sloping up from a stream. A large wetland complex is present in the centre of the Site which drains to the northwest of the Site through an estuary and then into Whiskey Bay, which has large areas of intertidal mudflat. The outer shoreline adjacent to the Site has a thin strip of discontinuous estuarine meadow and marsh vegetation broken by unconsolidated beaches and bedrock shelf. The south end of the Site is drained by streams that discharge into Portland Canal on the

east shoreline. Riparian areas around the bog complex and streams are composed of productive moist to wet forest. Tree clearing has occurred in the past throughout a large portion of DL5431 , which is evident from stumps observed during field studies.

4.3.2 Wildlife

Foreshore habitats and salmon-bearing streams in the general area of the Site provide important foraging habitat for many species of wildlife, including grizzly bear, moose, American marten, fisher, black bear, grey wolf, river otter, mink, wolverine, bald eagle, and gulls. Old forests provide important habitat for birds such as marbled murrelet, sooty grouse and northern goshawk. In addition, numerous other species of birds (migratory and non-migratory), mammals and other wildlife are known or suspected to occur in the vicinity of the Site.

4.3.3 Freshwater Fish

Nine unnamed streams and their tributaries have been confirmed at the Site. Several of these streams have been confirmed fish-bearing. Fish captured or observed within streams at the Site include coho salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), Dolly Varden (*Salvelinus malma*), coastal cutthroat trout (*Oncorhynchus clarkii clarkii*), and prickly sculpin (*Cottus asper*). Pacific salmon occur in many of the rivers and streams at the Site. Salmon species known to occur at other locations on Pearse Island outside of the Site include coho, chum (*Oncorhynchus keta*), and pink salmon.

4.3.4 Marine Resources

The waters and shoreline surrounding the Site as well as that along the preliminary identified shipping routes support a diverse marine community and a variety of marine ecosystem types (e.g., estuaries, marshes, rocky coastlines, sandy shores). Intertidal habitats in the proposed Water Lot include rocky shorelines and sand/gravel beaches that vary in slope from steep to shallow. The subtidal environment includes a range of habitats from unconsolidated substrates (i.e., sand and mud) to boulder/cobble fields and steep bedrock walls.

The Site and surrounding waters, including the identified shipping routes support a variety of species ranging from benthic (e.g., Pacific halibut [*Hippoglossus stenolipus*]) to demersal (e.g., rockfish [*Sebastes* spp.]) to pelagic (e.g., Pacific salmon [*Oncorhynchus* spp.]), species. The Site and shipping route are expected to provide both year-round habitat for some species (e.g., Pacific herring [*Clupea pallasii*]), and temporary habitat for migratory species (e.g., Pacific salmon, eulachon).

The distribution and abundance of marine mammals fluctuates greatly across the northern coastal waters in response to changes in food availability, with runs of species such as eulachon, herring, and salmon drawing large numbers of cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions). Sea turtles, while less common, could also occur in the area.

4.4 Human, Social and Economic Setting

4.4.1 Project Proximity to Communities

The Project Site is within the boundaries of the Regional District of Kitimat-Stikine. There are no schools, provincial or regional parks, hospitals, houses, water supplies, roads, or railways within approximately 15 km of the Project Site.

The nearest communities to the Site are as follows:

- The Nisg̲a'a Village of Ging̲olx, BC (see Photo 2) is approximately 15 km east
- The Nisg̲a'a Village of Laxgalts'ap is approximately 38 km east
- Lax Kw'alaams, BC is approximately 58 km south-southwest
- The Nisg̲a'a Village of Gitwinksihlkw, BC, approximately 63 km east-northeast
- The Nisg̲a'a Capital – Village of Gitlaxt'aamiks, BC, approximately 78 km east-northeast
- Metlakatla, BC, approximately 80 km south
- Prince Rupert, BC, approximately 80 km south
- Metlakatla, Alaska (**AK**) is approximately 90 km west
- Port Edward, BC is approximately 92 km south
- The City of Ketchikan, AK is approximately 100 km to the west-northwest
- The District of Stewart, BC and the village of Hyder, AK, are approximately 103 km north
- City of Terrace, Kitsumkalum IR 1 (approximately 5 km west of Terrace) and Kitselas IR 1 (just west of Terrace) are approximately 120 km southeast

Four Nisg̲a'a Villages (Ging̲olx, Gitwinksihlkw, Laxgalts'ap and Gitlaxt'aamiks) could potentially be affected by the Project. The closest Nisg̲a'a Village to Wil Milit is Ging̲olx. It is connected to the provincial highway system by Highway 113 to Terrace. The Village of Ging̲olx may become, at least in part, one of the supply and service centres for the Project. As well, a ferry service may originate in Ging̲olx harbour or nearby Mill Bay, to transport people, supplies and materials across Portland Inlet into Portland Canal to a berth at the Site.

Photo 2 – Gingolx, BC

4.4.1.1 Indigenous Groups Setting

The Site is within the Nass Area on Category A lands as defined in the Nisga'a Treaty. In addition to the Nisga'a Nation, the BC Environmental Assessment Office (**EAO**) has identified six Participating Indigenous Nations. The traditional territories for the following First Nations are intersected or are in proximity to components of the Project:

- **Lax Kw'alaams Band** – based in Lax Kw'alaams (formally Port Simpson) near the north end of the Tsimpsean Peninsula, approximately 30 km northwest of Prince Rupert. Lax Kw'alaams Band has approximately 4,001 members, of which 17% live on reserve land. Lax Kw'alaams Band have 81 reserves throughout their traditional territory, covering approximately 16,497 hectares (**ha**). Lax Kw'alaams Band traditional territory includes Nass Bay and Nass River to the east, and Wales and Pearse Islands, the Dundas and Stephens Islands groups as well as lands and waters at the mouth of the Skeena River.
- **Metlakatla First Nation** – based in Metlakatla, on the south half of Tsimpsean 2 reserve near Prince Rupert. Metlakatla First Nation has approximately 1,026 members; 9% of which live on reserve land in Metlakatla. Metlakatla First Nation has 21 reserves, covering approximately 7,742 ha. Metlakatla First Nation traditional territory extends from the coastal islands in eastern Hecate Strait to Lakelse Lake near Terrace with Portland Canal and Observatory Inlet marking the northern extent of the territory.

- **Kitsumkalum First Nation** – based 5 km west of Terrace and has a population of approximately 802 members. About 30% of Kitsumkalum First Nation members live on reserve land, primarily in the main community at Kitsumkalum IR 1. Kitsumkalum First Nation has four reserves totaling 597 ha, including a reserve at Port Essington co-managed with Kitselas First Nation. Kitsumkalum traditional territory encompasses the areas around the Kalum River and Lakelse Lake watersheds, westward along the Skeena River, to the headwaters of Ecstall River, and out to the coast and marine waters including south down Grenville Channel, west past Arthur Island and north into Portland Canal.
- **Kitselas First Nation** – has a population of 714 members, of which approximately 43% live on two reserves: Kitselas IR 1 and Kulspai IR 6. These reserves are located along the Skeena River; IR 1 is just outside of Terrace, and IR 6 is in the Kitselas Canyon to the east of Terrace. Kitselas First Nation has 10 reserves covering 1,069 ha; one reserve (Port Essington) is co-managed with Kitsumkalum First Nation. Kitselas First Nation's Marine Harvest Area encompasses the coastal waters from the southern tip of Banks Island to the northern tip of Pearse Island.
- **Gitxaala Nation** – based in the Village of Kitkatla on Dolphin Island in Kitkatla Channel, located approximately 120 km west of Kitimat and 55 km south of Prince Rupert. The Gitxaała Nation has approximately 2,064 members, 21% of which live at the village of Lach Klan on Dolphin Island (also referred to as Kitkatla or "the Village") (Dolphin Island IR 1). Gitxaała Nation has 21 reserves covering 1,885 ha. Gitxaała Nation traditional territory covers just over 3,000 ha.
- **Gitga'at First Nation** – based in Hartley Bay (IR 4 and 4A) approximately 50 km southwest of Kitimat and 125 km south of Prince Rupert and has a registered population of 814. Gitga'at First Nation has 15 reserves; reserve land area totals 641.7 ha. Hartley Bay (IR 4) is recognized as the home community with approximately 140 residents. Gitga'at First Nation's asserted territory encompasses roughly 7,500 square kilometres (**km^2**) and includes the lower Douglas Channel, Whale Channel, Wright Sound, and Lewis Pass to Caamano Sound on British Columbia's North and Central Coast.
- **Haida Nation** – comprised of two bands: Old Masset Village Council or Haida Village, located 5 km northwest of Masset, and the Skidegate Mission, located on the southeast corner of Graham Island on Haida Gwaii. Haida Gwaii consist of two main islands, the more northerly Graham Island and Moresby Island in the south, and approximately 150 smaller islands; Haida Gwaii is located approximately 85 km west of Prince Rupert. Old Masset Village Council has 27 reserves covering 970 ha, and Skidegate Mission has 11 reserves covering 842 ha. Haida Nation has approximately 4,848 members, 28% of which live on two reserves: Masset IR 1 and Skidegate IR 1.
- **Region 6 Prince Rupert and District Métis Nation of BC** – members may access marine areas in the vicinity of the Project in pursuit of recreational, commercial, and Indigenous fisheries.

4.4.2 Land and Marine Use Planning

The Project Site is within the Regional District of Kitimat-Stikine but is not subject to an Official Community Plan or Zoning By-law as might be administered by a regional district or municipality.

The Nisga'a Nation has developed a land use plan that sets out important considerations during Project planning including the principle of sustainable use of resources for the benefit of all Nisga'a citizens. There are also a number of confidential marine use plans that have been developed for areas that will be transected by the shipping route to the Project.

4.4.3 Federal, Provincial, Nisga'a Nation or Foreign Lands

The Project is located on Nisga'a Nation Treaty Lands. The Project disturbance area does not overlap with any Federal lands or lands outside of BC or Canada. The proximity of federal lands, including First Nation reserve lands, from the Site (out to 55 km) are listed in Table 3.

Table 3 – Proximity of Site to Treaty Lands and Federal Lands

Federal Lands and Treaty Areas and Lands	Proximity to Project Site (km)
Treaty Area	
Nisga'a Nation Nass Wildlife Area	n/a within area
Treaty Lands	
Nisga'a Lands	11
Treaty Related Lands	
Nisga'a Category A (12)	0–52
Nisga'a Category B (6)	17–48
First Nation Reserve Lands	
Maklaksadagmaks 42, Knames 45, Knames 46, Red bluff 88	20–30
Maklaksadagmaks 41, Ksadagmks 43, Ksadsks 44, Me-yan-law 47, Spokwan 48, Spakels 17, Birnie Island 18	31–40
Finlayson Island 19, Union Bay 31, Carm Creek 38, Kateen River 39, Ksabasn 50, Ktamgaodzen 51, Knamadeek 52, Lax Kw'alaams 1, Tymgowzan 12	41–55
Fisheries and Ocean Canada	
Kincolith CEDP Hatchery	~15

4.4.4 Social and Economic Setting

4.4.4.1 Regional Setting

4.4.4.1.1 Regional District of Kitimat-Stikine

The proposed Project is located in the Regional District of Kitimat-Stikine (**RDKS**). The RDKS provides local government services to an area of 100,000 km^2 in northwestern BC and includes the City of Terrace, Village of Hazelton, Nisg̲a'a (Nisg̲a'a Land), District Municipalities of Kitimat, New Hazelton, and Stewart, RDKS Electoral Areas A, B, C (Part 1 and 2), D, E, and F and 22 First Nations reserves. In 2021, the population of RDKS was 37,790 persons.

4.4.4.1.2 North Coast Regional District

A portion of the social and economic study area is located within the North Coast Regional District (**NCRD**), previously the Skeena-Queen Charlotte Regional District, has a land area of 19,710 km^2 and includes the City of Prince Rupert, villages of Masset, Queen Charlotte, and Port Clements, the District Municipality of Port Edward, NCRD Electoral Areas A, C, D, and E, and 8 First Nation reserves. In 2021, the population of NCRD was 18,181 persons.

4.4.4.2 Local Setting

4.4.4.2.1 Nisg̲a'a Nation

The Nisg̲a'a Nation includes the villages of Gingolx, Gitwinksihlkw, Laxgalts'ap, and Gitlaxt'aamiks. In 2016, the total combined population of these four villages was 1,690.

4.4.4.2.2 Village of Gingolx

The Village of Gingolx is in the RDKS and is located approximately 15 km east of the proposed Project. In 2016, the Village of Gingolx had a population of 370 persons.

4.4.4.2.3 City of Prince Rupert

The City of Prince Rupert is a port town in the NCRD of BC. It lies approximately 80 km south of the proposed Project. The total land area of the City of Prince Rupert is 66 km^2. In 2021, the population of Prince Rupert was 12,300.

4.4.4.2.4 City of Terrace

The City of Terrace is in the RDKS and lies approximately 120 km southeast of the proposed Project. The City of Terrace covers an area of approximately 57 km^2. In 2021, the population of Terrace was 12,017 persons

4.4.5 Land and Water Use

The Project's location at Wil Milit is in a remote wilderness area and, other than some logging several decades ago, it has been primarily used by the Nisg̲a'a for traditional purposes. In the broader region, coastal logging and associated log storage and transport, regional mines and associated shipping of minerals out of the port facilities at Stewart, BC and commercial fish processing are the only industrial uses currently operating in this part of coastal BC.

The marine waters of the region serve as marine navigation routes for commercial, industrial, Indigenous, and recreational users. Gingolx is connected to Terrace, BC via BC Highway 113.

4.4.5.1 Existing Industrial and Commercial Operations

Historical industrial and commercial transportation into and out of the Portland Canal area has been via commercial vessels going past Wil Milit to the port facilities in Stewart, BC or Hyder, AK or to supply historic fishing lodges, camps, marine log transport (e.g., barged logs from commercial forest harvesting) and potentially whaling stations of years past. Recreational, commercial and Indigenous fishing vessels also routinely transit this maritime region.

4.4.5.2 Past and Present Water Use

There is no known surface or groundwater use at Wil Milit except by Indigenous people who used the Wil Milit area in past years. Infrequent use by other marine users of Whiskey Bay, e.g., as a safe anchorage site, may also be possible.

4.4.5.3 Past and Present Land Use

The Site is a former reserve (IR. No. 43) and can be considered undeveloped but was logged in areas near the shore several decades ago. The Site does not have a history of any other developments aside from the past use by Indigenous people.

4.4.5.4 Past and Present Marine Use

4.4.5.4.1 Tourism and Recreation

Maritime-based commercial tourism and non-commercial recreational users use the Portland Canal, Pearse Canal and Portland Inlet area, primarily in the summer season. These tourism and recreation activities generally have historically had unhindered and unrestricted access within Portland and Pearse canals.

4.4.5.4.2 Marine Fishing

Marine fisheries in the area generally target all species of salmon, herring, eulachon, halibut, shrimp, bivalves and crab. Marine plants (algae) are also harvested.

Commercial fishing by the Nisg̲a'a Nation, area Indigenous Nations and non-Indigenous groups is an economic staple in the local regional economy. Indigenous Nations conduct commercial, recreational and Indigenous fisheries in Portland Inlet, Portland Canal, Pearse Canal and Nasoga Gulf.

4.4.6 Heritage Setting

District Lots 5431 and 7235 are subject to “Chapter 17 – Cultural Artifacts and Heritage” of the Nisga’a Final Agreement. The northern Pearse Island land and marine area has been inhabited by the Nisga’a people and other area Indigenous Nations people for millennia. There are numerous recorded archaeological sites in this region on the Province’s Remote Access to Archaeological Data application and many areas are modeled as having high potential for archaeological sites.

4.5 Baseline Studies

A Baseline Study Plan **(BSP)** has been developed and implemented by the Proponent. Field surveys are underway for freshwater quality and fish and fish habitat; acidification and eutrophication; marine fish and mammals; marine water quality; wildlife including marine and shorebirds, raptors, songbirds, amphibians and ungulates and carnivores; soil; vegetation including rare plants; wetlands; heritage resources; and meteorology.

Baseline data collection for human and social will include statistical information from Statistics Canada’s Census of the Population and National Household Survey as well as information from two planned Nisga’a community surveys – one with households and one with businesses.

5 PROJECT POTENTIAL BIOPHYSICAL, HUMAN, SOCIAL AND ECONOMIC EFFECTS

5.1 Potential Environmental, Social and Economic Effects

Project construction, operation and decommissioning activities have the potential to result in effects to Nisga'a Treaty rights and to biophysical (air quality, acoustic, surface water, groundwater, vegetation, wetlands, wildlife, freshwater fish and marine resources) and human (social, economic, human health and cultural) effects. A summary of potential effects and mitigation that has been preliminarily identified is presented in Table 4. As the Project advances through the EA-IA process, revised or additional mitigation measures to those presented in the following subsections will be incorporated into the Project design.

The Project EA-IA will present an examination of direct, indirect (i.e., via effects pathway), and cumulative effects. The cumulative effects assessment will examine residual environmental, social and economic, heritage and health effects arising from the Project together with the residual effects from past, existing, and reasonably foreseeable projects and activities in each of the valued component regional assessment areas. These may include but, not necessarily be limited to, marine port developments, oil and gas projects and activities and forestry. The EA-IA will provide additional information regarding the identification of past, present and reasonably foreseeable projects and activities that have been identified.

Given the proximity of the Project to the United States border between BC and AK the potential exists for some effects, such as air emissions, to result in a trans-boundary effect. The potential for effects on air quality will be evaluated once meteorological conditions are better understood. Other potential transboundary effects include under and above water noise.

Effects to provincial lands other than BC are not anticipated given that the closest provincial border is the BC--Yukon border approximately 525 km north of the Site.

5.2 Potential Effects in Relation to Requirements of the Impact Assessment Act

Section 19 of the Information and Management of Time Limits Regulation requires the assessment of potential effects of Project activities as follows:

Fish and Fish Habitat as defined in subsection 2(1) of the *Fisheries Act* – the Project has the potential to affect fish and fish habitat as defined by the *Fisheries Act* as a result of:

- The harmful alteration, disruption and destruction of fish habitat as a result of construction and operation of the Project
- Potential mortality or physical injury of fish (including marine mammals) and/or fish eggs due to the Project's construction activities and large vessel movements to and from the marine terminal
- Sensory disturbance or hearing injury due to underwater construction noise generated during construction of the marine terminal infrastructure

Aquatic Species as defined in subsection 2(1) of the *Species at Risk Act* (**SARA**) – the Project has the potential to affect aquatic species as defined by SARA as a result of:

- Sensory disturbance or hearing injury resulting in behavioural changes due to underwater construction noise generated during construction of the marine terminal infrastructure
- Shading or clearing of intertidal or subtidal vegetation as a result of the construction of the marine terminal infrastructure
- Mortality or physical injury as a result of physical impact due to construction activities (e.g., by machinery or covering by sediment)

Migratory Birds as defined in subsection 2(1) of the *Migratory Birds Convention Act*, 1994 – the Project has the potential to affect migratory birds:

- Changes to migratory bird movement patterns due to an increase in large vessel marine traffic
- Loss or alteration of habitat on the upland due to the construction and operation of the Project
- Increased risk of mortality due to the construction and operation of the Project

Table 4 – Potential Effects between Project Phase and Environmental and Human Components

Biophysical or Human Component	Description of Project Activity	Potential Effect	Preliminary Identified Mitigation Measures
Air Quality	As a result of Project construction and operation critical air contaminant (**CAC**) emission sources, the Project has the potential to increase the concentrations of ambient air pollutants. An increase in the concentrations of ambient air pollutants may affect human health, may result in acidification of waterbodies, vegetation, and soils, and may have transboundary effects into Alaska. Given the remoteness of the Project Site, it is not anticipated that direct emissions will be above provincial or national standards with the potential to interact with Indigenous interests, the biophysical environment and/or the human environment.	▪ Increase in concentrations of ambient air pollutants.	▪ Designing the Project to be 100% electrified by acquiring adequate electricity from the BC Hydro grid, which will provide a substantial reduction in CAC emissions ▪ Following the Flaring and Venting Reduction Guideline, aimed at reducing and mitigating air emissions from LNG facilities ▪ Implementing thermal oxidation (instead of flaring) of waste acid gas from feed gas processing units ▪ Implementing best management practices for construction and operation such as regular maintenance of machinery and equipment
GHG Emissions	The processing of LNG and the use of natural gas to produce electric power generates GHG emissions. The Project is designed to run on renewable electricity provided via the BC Hydro grid.	▪ Increase in emission of GHGs including carbon dioxide, methane, nitrous oxide expressed as carbon dioxide equivalent (**CO_2e**)	▪ Purchase of carbon offsets sufficient to offset direct and acquired energy emissions equal to what is expected at full BC Hydro grid power
Acoustic	Noise will be generated during construction, operations and decommissioning. Some noise effects will be intermittent and short-term (e.g., construction activities) while others will be continuous (e.g., FLNG operation).	▪ Increased noise levels in the acoustic environment causing nuisance, annoyance and sleep disturbance to people	▪ Stipulating a noise management plan for construction and operation activities ▪ Provide administrative or engineering noise control for activities with high noise emission levels ▪ Incorporating noise mitigation into the engineering design of the FLNGs.

Surface Water	Construction of on-land infrastructure can increase erosion and lead to increased sediment loading in streams and wetlands and air emissions have the potential to cause acidification in lakes. In addition, freshwater sources at Wil Milit are being considered as a source of supply for construction and operation.	▪ Change in the chemical and physical composition of surface water
		▪ Change in surface water quantity
			▪ Avoiding Project effluent discharges into streams, wetlands or groundwater aquifers
			▪ Sizing and location of onshore Project components that eliminates or limits, to the extent practical:
			  ◦ Permanent, fish-bearing streams
			  ◦ Steep slopes
			  ◦ Wetlands
			  ◦ Riparian areas
			  ◦ Bedrock outcrops that require blasting
			▪ Developing and implementing an erosion prevention and sediment control plan that uses industry best management practices and specific measures for conditions at the Site
			▪ Developing and implementing a stormwater management plan and associated infrastructure (e.g., run-off ditching, silt fence installation)

Groundwater	Potential Project effects on groundwater are associated with the diversion of groundwater for Project water supply, if required.	▪ Change in the chemical and physical composition of groundwater from saltwater intrusion ▪ Change in groundwater discharge to wetlands, stream courses, and submarine discharge	▪ Decommission unsuccessful groundwater exploration wells following best practices outlined in the *Groundwater Protection Regulation* to avoid providing artificial flow pathways and reduce the risk of cross-contamination across confining hydrostratigraphic horizons

Table 4 – Potential Effects between Project Phase and Environmental and Human Components

Biophysical or Human Component	Description of Project Activity	Potential Effect	Preliminary Identified Mitigation Measures
Freshwater Fish and Fish Habitat	The Project has the potential to result in the harmful alteration, disruption or destruction of freshwater fish habitat during site clearing activities and the construction of land-based components including roads. In addition, there is potential for mortality or physical injury of fish in any life stage due to construction activities.	▪ Change in fish habitat ▪ Change in fish health, growth, survival, or reproduction	▪ Avoiding the discharge of Project effluent into watercourse or waterbody ▪ If instream works are required, maximize these works within provincial and federally identified reduced risk timing windows ▪ Where practical, using clear span bridges across streams with confirmed fish presence ▪ Developing and implementing an erosion prevention and sediment control plan that includes industry best practices and specific controls for site-specific conditions ▪ Developing and implementing a stormwater management plan and associated infrastructure (e.g., run-off ditching, silt fencing, settling ponds, etc.) ▪ If a freshwater intake is required, installing fish screens that comply with criteria in Fisheries and Oceans Canada's (**DFO**'s) *Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater*
Marine Resources	The Project has the potential to affect marine resources through construction of the marine infrastructure, changes to water quality, underwater acoustic effects and through marine shipping activity during both construction and operation. The highest potential risk activities are expected to include impact pile driving to support building the MOF and the FLNG mooring infrastructure in subtidal areas. In addition, during construction and operation, there is potential for effects related to increased vessel traffic (e.g., vessel strikes, sensory disturbance, accidental spills, etc.) on the marine environment	▪ Change in water quality ▪ Change in habitat ▪ Change in marine mammal injury or mortality risk ▪ Change in behaviour of marine mammals caused by sensory disturbance ▪ Change in fish injury or mortality risk ▪ Change in behaviour of fish caused by sensory disturbances	▪ Developing and implementing an erosion prevention and sediment control plan to limit sediment-laden water entering the marine environment that includes industry best practices and specific controls for site conditions ▪ Developing a Project-specific Environmental Management Plan (**EMP**) that outlines specific monitoring requirements tied to specific activities. The EMP will be incorporated into construction contracts ▪ If required, harmful alterations, disruption and destruction of fish habitat will be offset through habitat creation, restoration, or enhancement measures. The compensation will be developed in collaboration with NLG and DFO ▪ Conducting marine fish salvages, as required, prior to specific activities with high potential for crushing and burial. ▪ Utilizing marine construction methods that account for and aim to reduce the potential adverse effects of underwater noise and vibration on marine life

Vegetation and Wetlands	Direct and indirect effects may result from Project activities and components, primarily site preparation and clearing, but also from construction of temporary and permanent land-based infrastructure. Direct effects include the direct loss and removal of vegetation. Indirect effects include edge effects such as change in light and moisture conditions, change in soil hydrology following site preparation, change resulting from erosion, and change resulting from soil acidification or eutrophication.	▪ Change in the abundance of plant species of interest
		▪ Change in the abundance or condition of ecological communities of interest
		▪ Change in wetland functions
			▪ Proactive Project component site selection and design to avoid or limit the occurrence of the following within the Project footprint:
			  ◦ Wetlands
			  ◦ Riparian management zones
			  ◦ Year-round streams except at bridge crossings
			  ◦ Vegetated areas that may be traditionally used by Nisga'a citizens
			▪ Sediment and erosion control along roads, utility rights-of-way, fence lines, etc. within the Site
			▪ Use of best management practices to reduce the introduction or spread of invasive plants and noxious weeds
			▪ Marking clearing boundaries prior to site preparation to keep clearing activities within the designated footprint and away from plants or ecological communities that require protection
			▪ Proactive onshore component site selection to avoid or limit the removal of:
			  ◦ Red- and blue-listed plants or ecological communities

Table 4 – Potential Effects between Project Phase and Environmental and Human Components

Biophysical or Human Component	Description of Project Activity	Potential Effect	Preliminary Identified Mitigation Measures

Wildlife and Wildlife Habitat	Change in habitat will occur directly, through the removal or alteration of vegetation and the removal or alteration of marine and foreshore habitat, and indirectly from sensory disturbance (e.g., noise, vibration). Change in mortality risk may occur because of Project activities during construction and operation such as vegetation clearing, machinery and vehicle use, lighting, and human presence. Mortality risk from vegetation clearing is most likely to affect nesting birds and small, less mobile species such as small mammals, amphibians, and reptiles. Change in movement includes the alteration or impediment of wildlife movement due to physical barriers (e.g., buildings, roads, fences), sensory disturbance, or vegetation removal.	▪ Change in habitat
		▪ Change in mortality risk
		▪ Change in movement
			▪ Siting onshore Project components to avoid important wildlife areas, where possible
			▪ Avoiding clearing and vegetation disturbance during the primary nesting period (i.e., April 11 to August 8)
			  ◦ Where clearing or vegetation disturbance must occur during the primary nesting period a pre-disturbance nesting bird survey will be completed by a qualified professional
			  ◦ If an active bird nest is discovered a buffer will be placed around the nest in consultation with a qualified professional
			▪ Implementing a 100 m buffer around active bald eagle and great-blue heron nests. If work must occur in this buffer area the Project will consult with FLNRORD
			▪ Avoiding work in or within 30 m of wetlands during the amphibian breeding and dispersal periods (approximately April through September)
			▪ Conducting amphibian salvage or implementing additional mitigation measures (in consultation with a qualified professional), if work must occur in or within 30 m of wetlands during the amphibian breeding and dispersal period
			▪ Reducing artificial night lighting if safe and practical. Consideration will be given to installing baffles or shields to reduce the effects of lighting on wildlife
			▪ Developing and implementing a waste management plan to manage wastes and other attractants

Employment and Economy	Project construction will create employment opportunities for local residents, including those residing in Nisga'a territory, Prince Rupert, Port Edward, Terrace, and nearby Indigenous communities. Local procurement and supply contracts could also provide indirect employment opportunities to area residents. These could include the provision of potable water, food, diesel fuel, lumber, and building materials and contracts for marine or road-based transportation of personnel, materials, supplies, and equipment.	▪ Change in regional employment ▪ Change in regional business ▪ Change in provincial economy	▪ Working with Indigenous communities, assess potential Project effects on Highway 113 ▪ Procurement strategies to facilitate economic participation by regional, BC, Canadian suppliers, contractors and service providers in that order of priority ▪ Workforce strategies to use BC or Canadian resident construction workforce in the building of those components of the Project constructed in Canada ▪ Providing operations supply contract opportunities to regional suppliers with a focus on Indigenous businesses, where practical
Marine Use	Installation of Project works, including marine jetties, MOF and FLNGs can affect navigation in the vicinity of the Site. Increased marine vessel traffic related to the construction and operation of the FLNG facility and vessel traffic potentially interfering with fishing activities. Potential effects on tourism and recreation opportunities due to changes in aesthetics and light conditions.	▪ Change in marine navigation ▪ Change in marine fisheries and other uses	▪ Water Lot site selection that has NLG support and that avoids key fishing areas. ▪ Installing appropriate ATON ▪ Implementing Project marine safety and emergency measures plans ▪ Avoiding, where practical directing lighting into the marine environment ▪ Designing lighting to provide only the required amount of illumination when it is required, to minimize unnecessary general area illumination

Table 4 – Potential Effects between Project Phase and Environmental and Human Components

Biophysical or Human Component	Description of Project Activity	Potential Effect	Preliminary Identified Mitigation Measures
Infrastructure and Services	Because of its location at a remote location, and as it is not directly connected to a highway system, the Project will have limited potential to interact with infrastructure and service providers of adjacent communities. Since the workforce will be physically isolated from nearby communities the potential for adverse interactions between the workforce and those communities is limited. There may be some modest additional demands put on regional emergency infrastructure (e.g., local hospital, Royal Canadian Mounted Police services).	▪ Change in infrastructure and services ▪ Change in accommodation availability ▪ Change in transportation infrastructure	▪ Housing Project workers on a self-contained modular floatel at the Site ▪ Preparing waste management plans that deal with disposal of hazardous and non-hazardous waste materials, as well as recycling ▪ Providing appropriate emergency response equipment, such as fire-fighting equipment on site ▪ Preparing and implementing emergency response plans ▪ Providing appropriate medical facilities and personnel during construction and operation
Heritage	Ground disturbance activities and tree clearing associated with the Project have the potential to cause adverse effects on heritage as a result of the alteration, disturbance, or destruction of archaeological or heritage resources.	▪ Loss of information about or alteration to site contents or context	▪ Confirming known archaeological sites of high potential in areas where the Project expects to develop on the onshore and in inter-tidal areas ▪ Impacting archaeological and heritage features only if supported by the NLG ▪ Developing and implementing an NLG approved Chance Find Protocol in the event upland or marine construction uncovers a previously unknown archaeological, fossil or heritage artifacts ▪ Implementing construction contract provisions with upland and marine construction sub-contractors that incorporate the Project's protection of archaeological and heritage sites and artifacts
Human Health	Human health can be affected by exposure to noise, inhalation of contaminants in the air and ingestion of contaminants in traditional foods (e.g., traditional plants and seafood) and drinking water. Human health could also be affected as a result of a change in access to traditional foods as it relates to food security. Potential effects of the Project on human health will be evaluated by identifying pathways for people to be exposed to environmental contaminants.	▪ Change to human health	▪ Developing an EMP that will address Project construction, operations and decommissioning wastes, emissions and treated effluent discharges in collaboration with the NLG and, as appropriate, area Indigenous Nations ▪ Environmental monitoring to support permit compliance is anticipated to be a regulatory requirement ▪ Redirecting solid wastes from the facility to recycle and reuse programs, when feasible ▪ Hazardous wastes will be recorded, stored and safely barged for further transport to appropriate permitted hazardous waste management facilities
Indigenous Peoples	The Project has the potential to impact the health, social and economic conditions of Indigenous Nations through changes to marine access and marine fisheries, changes in the ability to hunt and forage for traditional foods, changes in the quality and quantity of harvested foods (marine and terrestrial species), change in or interference with economic activities such as guiding, tourism, and marine recreation.	▪ Physical and cultural heritage through changes to the Site as a result of clearing and ground disturbance that could alter archaeological or heritage sites or sites of cultural importance ▪ Current use of lands and resources for traditional purposes, through a change in access to resources as a result of the removal of resources through Project activities or a change in the ability or desire to access lands and resources due to the presence of Project infrastructure and activities ▪ Structure, site or thing that is of historical, archaeological, paleontological or architectural significance through changes to the Site as a result of clearing and ground disturbance	▪ The Project will work with Indigenous Nations to evaluate and assess potential Project effects to their abilities to carry out traditional and cultural practices ▪ The Project will work with the Nisga'a to ensure baseline studies at the Site for vegetation include culturally important plants ▪ Providing opportunities for each Indigenous Nation to participate in baseline studies in 2022 ▪ The Project will work with Indigenous Nations, federal and provincial governments to implement an EA-IA that will evaluate and assess potential Project effects on asserted Aboriginal rights and title. This will include collaborating on the development of mitigation, management and monitoring plans to address potential negative effects that cannot be avoided

6 LEGISLATIVE AND REGULATORY CONTEXT

6.1 Nisg̲a’a Treaty

The Nisg̲a’a Nation is a self-governing Indigenous Nation. As set out in the Nisg̲a’a Treaty, the Nisg̲a’a Nation owns and controls parcels of land within the Nass Area including: Nisg̲a’a Lands and Nisg̲a’a Fee Simple Lands (each as defined in the Nisg̲a’a Treaty). The Site is located within Category A Fee Simple Lands. The Category A Lands include marine and/or estuary shoreline. The Nisg̲a’a Nation owns the surface and subsurface resources of Category A Lands.

The Nisg̲a’a Nation has constitutionally protected treaty interests and rights in the Nass Area and the Nass Wildlife Area (as defined in the Nisg̲a’a Treaty), including fisheries management and harvesting rights in an area covering approximately 26,000 km^2 and wildlife management and harvesting rights in an area covering approximately 16,000 km^2. Chapter 10 of the Nisg̲a’a Treaty, specifically states in 8 (e) and 8 (f) the following:

> 8 (e) assess whether the project can reasonably be expected to have adverse environmental effects on residents of Nisg̲a’a Lands, Nisg̲a’a Lands, or Nisg̲a’a interests set out in this Agreement and, where appropriate, make recommendations to prevent or mitigate those effects; and
>
> 8 (f) assess the effects of the project on the existing and future economic, social and cultural well-being of Nisg̲a’a citizens who may be affected by the project.

The EA-IA of the Project must meet the requirements of Chapter 10 of the Nisg̲a’a Treaty. In accordance with paragraphs 8(e) and 8(f) of Chapter 10 of the Nisg̲a’a Treaty, the EA-IA of a proposed project is required to assess:

- Whether a proposed project can reasonably be expected to have adverse environmental effects on residents of Nisg̲a’a Lands, Nisg̲a’a Lands or Nisg̲a’a interests set out in the Nisg̲a’a Treaty and, where appropriate, make recommendations to prevent or mitigate those effects
- The effects of a proposed project on the existing and future economic, social, and cultural well-being of Nisg̲a’a citizens who may be affected by the Project

The Project will undertake a comprehensive assessment of the Project on Nisg̲a’a treaty rights, including potential social and economic impacts to the Nisg̲a’a people that include sensitive or vulnerable economic, social, heritage, or health values that may be affected by the Project, in accordance with paragraphs 8(e) and 8(f) of Chapter 10 of the Nisg̲a’a Treaty. The Chapter 10 assessment will be completed as part of the EA-IA.

6.2 Provincial Environmental Assessment

The Project is subject to review and Ministerial decision under the BC EAA 2018 as it exceeds several of the thresholds (triggers) listed in the *Reviewable Projects Regulation*, for:

- ***Energy Projects –*** The Project will incorporate gas fired power plant(s) that would combust natural gas to create electricity exceeding the 50-megawatt (**MW**) threshold.
- ***Petroleum and Natural Gas Projects –*** The Project's LNG storage capacity in each of the FLNGs is expected to be approximately 225,000 m^3, exceeding the threshold of 136,000 m^3.
- ***Water Management Projects –*** Construction of the FLNGs and barge mooring infrastructure is expected to result in direct physical disturbance of more than 2 ha of a combination of foreshore and submerged land, exceeding the $\geq$2 ha threshold for shoreline modification projects

6.3 Federal Impact Assessment

The Project will require an impact assessment decision under the IAA as it meets or exceeds the thresholds (triggers) for three criteria in the *Physical Activities Regulations*:

- ***Oil, Gas and Other Fossil Fuel Projects –*** The Project will incorporate a temporary thermal electric power plant(s) that would combust natural gas to create electricity, exceeding the 200 MW threshold under section 30 of the Schedule to the Regulations
- ***Oil, Gas and Other Fossil Fuel –*** The Project's LNG storage capacity in each of the FLNGs is expected to be approximately 225,000 m^3, exceeding the threshold of 136,000 m^3 under section 37(d) of the Schedule to the Regulations
- ***Transport –*** The Project will require construction and operation of a new marine terminal designed to handle LNGCs exceeding the threshold of 25,000 deadweight tonnes under section 52 of the Schedule to the Regulations

On August 6, 2021, in accordance with the "one-project, one-assessment" principle, the BC EAO requested substitution of the Project under the Impact Assessment Cooperation Agreement Between Canada and British Columbia with the intent to avoid duplication.

On October 25, 2021, the Proponent requested a suspension of the 180-day time limit for the Planning Phase of the federal process. The process will resume once a DPD and response to the Joint Summary of Issues and Engagement (JSOIE) are accepted by Agency.

6.3.1 Strategic Assessment of Climate Change

In 2020, the need for a Strategic Assessment of Climate Change (**SACC**) was established to enable consistent, predictable, efficient and transparent consideration of climate change throughout the federal impact assessments. The SACC, as outlined in the Draft Technical Guide to the Strategic Assessment of Climate Change, requires that project proponents:

- Submit GHG and climate change information related to their project at each phase of a federal IA
- Provide a credible plan that describes how their project will achieve net-zero emissions by 2050 (for projects with operations planned beyond 2050)

6.4 Other Provincial and Federal Approvals

Provincial and federal permits, approvals or authorizations will be required in support of LNG export from Canada. If the Project is approved, additional permits, authorizations and approvals will be required for marine and upland construction and operations. The Project will also be subject to the terms and conditions of the lease for the Site from the NLG. The BC OGC is the regulatory authority that authorizes commissioning and operations of LNG facilities in BC.

A preliminary list of anticipated EA-IA decisions, permits, authorizations and approvals for the three major Project phases is included in Table 5.

6.5 Applicable International Agreements between BC and Alaska

The Site is within 2 km of the BC – Alaska border. A Memorandum of Understanding and Cooperation Agreement (**MOU**) between the State of Alaska and the Province of British Columbia was signed by the Alaskan Governor and the Premier of BC in 2015. Parts of this MOU that may be applicable to this Project may include:

- protection of transboundary waters
- sharing best practices on workforce development and training
- advancing marine transportation reliability and safety
- reinforcing emergency management mutual aid and response
- fostering continued growth of existing and increased transportation links
- exploring other areas for cooperative action

Appendix 1 of the MOU includes *a Statement of Cooperation on Protection of Transboundary Waters* (**SoC**) between the State of Alaska departments of Environmental Conservation, Fish and Game, and Natural Resources and the BC ministries of Environment and Energy and Mines. The SoC makes specific reference to the Nisga'a Nation, environmental assessment and permitting processes and other matters.

6.5.1 Canada-United States Air Quality Agreement

The Project will follow Article V of the Canada-United States Air Quality Agreement. The Project will model air emissions from the Agreement and if transboundary migration of Project emissions is anticipated, the Project will engage appropriate United States federal government and State of Alaska regulators and will work to mitigate transboundary migration through engineering solutions where possible.

6.6 Provincial and Federal Policies

6.6.1 GHG Management Legislation and Policies

GHG emissions from industry are federally and provincially monitored in Canada. At a federal level, GHG emissions are reported via the GHG Reporting Program under section 46 of the *Canadian Environmental Protection Act*, 1999. GHG emissions within BC are also reported under the *Greenhouse Gas Industrial Reporting and Control Act* (**GGIRCA**) and its associated regulations. Both laws require industrial facilities to report their annual GHG emissions if they emit more than 10,000 t CO_2e per year or meet specific other criteria. Those annual reports are then included in the provincial and national GHG inventories.

In addition, there are federal and provincial climate commitments and GHG reduction targets. Federally, the *Pan-Canadian Framework on Clean Growth and Climate Change* makes commitments to reduce national GHG emissions by 30% below 2005 levels by 2030.

GHG reduction targets within BC are legislated under the *Climate Change Accountability Act* (formerly *Greenhouse Gas Reduction Targets Act*). Greenhouse gas targets are set as 40%, 60% and 80% below the 2007 GHG emission levels by 2030, 2040 and 2050, respectively. There is also an interim target of 16% by 2025. Additionally, the Minister established sectoral targets for transportation, industry, oil and gas, and buildings and communities.

6.7 Federal Funding

The Project is not anticipated to require the use of federal funding or federal land.

6.8 Environmental Assessment Timing

The preliminary schedule for the EA-IA and permitting phase is shown in Table 5.

Table 5 – Anticipated Authorization by Project Phase

PHASE I. Authorizations potentially required in the Pre-EA-IA, up to and including the EA-IA decision period	PHASE II. Authorizations potentially required to commence activities after positive EA-IA decisions	PHASE III. Construction authorizations potentially required (Post FID + 2~4 years)
Site-specific upland clearing, upland and marine geotechnical drilling, animal and fish sampling – collection, archaeological surveys and artefact identification collection, EA-IA decisions	**Site preparation and ground improvement, Site roads bridges- culverts, tree clearing, initial marine works (e.g., barge dock-wharf, floatel)**	**Construction of upland permanent facilities, offsite utilities, lateral feed gas pipeline, marine terminal works**
▪ BC OGC and NLG natural resource authorizations – Investigative use permits ▪ Archaeology Branch – Archeological Impact Assessment ▪ DFO – *Fisheries Act* – Licences to Fish and Collect Fish – marine and freshwater ▪ FOR – *Wildlife Act* Authorizations – Permit to sample for fish and amphibians ▪ BC EAO – EA Certificate ▪ Agency – Impact Decision Statement	▪ BC OGC – LNG Facility Permit ▪ FOR or BC OGC – Water Lot lease at Wil Milit ▪ BC OGC – *Water Sustainability Act* Section 10 – Short-term Use Approval and/or Section 11 Approval Changes in and About a Stream ▪ Northern Health Authority (**NHA**) approval for the floatel – temporary construction workforce accommodation ▪ NGL – Private Timber Mark ▪ NLG – Burning Permit ▪ FOR – Water or groundwater use licence – *Water Sustainability Act* – [potential] ▪ BC OGC and BC ENV Waste Discharge Authorizations (for temporary works, including stormwater discharge, if necessary) ▪ DFO *Fisheries Act* Authorization ▪ DFO Habitat Compensation Plan Concept – approval ▪ Transport Canada NPP – Notice of Works ▪ BC ENV – Concrete Batch Plant	▪ Transport Canada NPP – Order and/or Approval ▪ NHA – Waterworks Construction Permit – permanent ▪ FOR – Water or groundwater use licence – *Water Sustainability Act* – [potential] ▪ FOR – *Wildlife Act* Authorizations – Permit to sample for fish and amphibians - [potential] ▪ NHA – Waterworks Operation Permit – permanent ▪ BC ENV – Municipal Wastewater Registration ▪ BC OGC – Leave to Construct ▪ TSBC – Equipment Safety Plan Approval ▪ Transport Canada Obstacle Clearance Permit ▪ BC OGC – Air and Water Waste Discharge Authorization(s) **Post FID after approximately 4 years:** ▪ FLNG federal inspections and classifications ▪ BC OGC – Leave to Operate

ABBREVIATIONS:
Agency TSBC – Technical Safety BC
Transport Canada NAV CAN – Transport Canada's Navigation Canada
Transport Canada NPP – Navigation Protection Program
NHA – Northern Health Authority

Table 6 – Preliminary Schedule for the EA-IA and Permitting Phases

Ksi Lisims LNG Workplan* (Updated December 1, 2021)			2021				2022				2023				2024	
Regulatory Phases[1]	**Activity**	**Dates**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
	Engagement	On-going														
Early Engagement	Initial Project Description & Engagement Plan accepted by BC EAO	**July 16, 2021**														
	Federal planning phase starts	**July 21, 2021**														
	BC EAO Requests Substitution to Agency	**August 6, 2021**														
	Draft Detailed Project Description submission	**Feb. 9, 2022**														
	File Detailed Project Description[2]	**April 25, 2022**														
EA Readiness	Notice of Decision (BC EAO, discretionary)	**July 1, 2022**														
	Agency makes Impact Assessment Determination	**July 1, 2022**														
Process Planning	Federal Minister makes Section 31 substitution decision	**July 16, 2022**														
	Process Order (BC EAO)	**Nov. 3, 2022**														
Application Development	Indigenous Nation review of draft EA-IA Chapters and Data Reports	**June-Dec 2022**														
	Draft EA-IA Application Submission	**Jan. 9, 2023**														
	EA-IA Application Review and Revision	**Jan-July., 2023**														
	Revised EA-IA Accepted	**Aug. 28 2023**														
Recommendation	EA and Recommendation review	**Aug. 29, 2023 – Jan. 25, 2024**														
	Final Assessment Report	**Jan. 29, 2024**														
Decision	BC EAA, EAC, and IAA Decision Statement	**Feb. 28, 2024**														
Permitting	Key Permits: BC OGC, DFO, Transport Canada	**2023/Q1 2024**														
FID		**Q2 2024**														

NOTES:
* Workplan assumes that substitution is granted
[1] Based on BC EAA regulatory phases. May differ from IAA phases
[2] Request to suspend the federal process likely required to align federal and provincial planning phases. This would result in a delay in submission of the DPD to Agency.

7 INDIGENOUS NATION ENGAGEMENT

The Project recognizes the importance of early and meaningful engagement with Indigenous Nations and strives to establish and maintain mutually respectful relationships with Indigenous Nations engaged with the Project.

7.1 Engagement with Indigenous Nations

The Project is being developed in partnership with the Nisg̲a’a Nation. The Site is located within Category A Lands, which are lands owned in fee simple by the Nisg̲a’a Nation and within the Nass Area, where the Nisg̲a’a Nation has constitutionally protected treaty rights and interests as set out in the Nisg̲a’a Treaty. Access to the surrounding water to exercise treaty rights and interests is available to the Nisg̲a’a Nation as well as other Indigenous Nations.

The Project has endeavoured to engage regional Indigenous Nations/Groups through:

1. Nation-to-Nation engagement led by Nisg̲a’a leadership
2. Technical engagements led by the Proponent Project team with designates of each of the Indigenous Nations/Groups

To date, engagement has been undertaken with the following Indigenous Nations:

- Nisg̲a’a Lisims Government
- Lax Kw’alaams Band
- Metlakatla First Nation
- Kitsumkalum First Nation
- Kitselas First Nation
- Gitxaala Nations
- Gitga’at First Nation
- Haida Nation
- Métis Nation British Columbia

7.2 Indigenous Nation Engagement Activities to Date

The Proponent has and continues to engage with the identified Indigenous Nations. The Nisg̲a’a Nation, as a partner in the Project and supported by its Project partners, has and will continue to lead all engagement efforts with Nisg̲a’a Villages, Nisg̲a’a urban locals and Nisg̲a’a citizens.

Engagement has focused on information sharing about the Project, development of early regulatory components, responding to questions and issues raised by Indigenous Nations, gaining a better understanding as to how the Project may impact each Indigenous Nation’s interests, and recording concerns expressed. More details regarding engagement are provided in the DPD (in particular Appendix 6), IPD and Engagement Plan (**EP**).

7.2.1 Indigenous Nations Comments and Issues

Along with comments and issues received during early engagement on Project introductions, the Project has routinely sought input from the Indigenous Nations/Groups on key Project documents and studies:

- IPD and EP – following submission of the IPD and EP, each Indigenous Nation/Group had the opportunity to submit a formal review and comments
- Baseline Studies – status and proposed baseline studies to support identification of existing conditions,
- The Proponent's proposed draft Application Information Requirements (**dAIR**) components – each of the Participating Indigenous Nations was provided a preliminary draft of the Proponent's proposed:
    - Valued Component (**VC**) selection table and VC assessment area figures
    - Project Works and Activities Interaction Table
    - Project Inclusion List for cumulative effects assessment

A detailed record and overview of engagement activities as well as issues, comments and concerns received from each of the Indigenous Nations is provided in the DPD, specifically in Section 7, Appendix 6, Appendix 7, Appendix 10 and Appendix 11.

7.3 Indigenous Nations Engagement Summary

7.3.1 Lax Kw'alaams Band

The Proponent has engaged directly with Lax Kw'alaams Band since March 2021. Lax Kw'alaams Band has provided comments regarding their issues and interests through:

- Written correspondence
- Comments on the IPD
- Comments on dAIR components (i.e., drafts of VCs, Project Interaction Table, VC assessment areas, and Project Inclusion List)
- Comments on a draft version of this DPD

In addition, the Proponent was provided with a summary of Lax Kw'alaams Band interests, impacts and requests as provided to the BC EAO and the Agency during the IPD comment period.

7.3.1.1 Summary of Interests

Based on initial correspondence and discussions with Lax Kw'alaams Band to date, the Proponent's understanding of key issues and interests identified by Lax Kw'alaams Band is summarized below.

- EA process and Project design:
    - Collaboration on the Project regulatory process, with a focus on ongoing engagement.
    - A regulatory process funding agreement.

- Project assessment areas for valued components (e.g., perceived limitations of local and regional assessment areas).
- Project scope, plans, baseline studies, components, works, and activities, with a focus on:
  - Products and by-products.
  - The marine shipping route and increased marine vessel traffic.
  - Air emissions including GHGs.
  - Impurities removal.
  - Management and supply of refrigerants.
  - Floating facilities.
  - Source of water (including potable).
  - Natural disaster assessments.
  - Wind engineering evaluation.
  - Management of waste.
  - Inclusion of third-party plans for transmission line and pipeline.

- Potential impacts from accidents and malfunctions, with a focus on:
  - The stability of the floating LNG facility at the marine terminal site (e.g., due to atmospheric and oceanic conditions).
  - Development of emergency response plans.
- Indigenous rights, governance, land and marine use:
  - Incorporation of Lax Kw'alaams Band's Land and Marine Use Plan and consideration of the described management direction.
  - Collaboration on VC selection and identification of potential effects on Lax Kw'alaams Band's rights and interests.
  - Potential impacts on ability to practice traditional rights with a focus on marine resources.
  - Potential impacts of environmental pressures and changing economy on Lax Kw'alaams Band's cultural identity and way of life.
  - Potential impacts on harvested species.
  - Potential impacts on Lax Kw'alaams culture and heritage sites.
  - Potential impacts on Lax Kw'alaams Band rights, ecology, and people.
- Environmental impacts:
  - Potential impacts to air quality with a focus on GHG emissions and the marine shipping route.

- Potential impacts to acoustic with a focus on the marine shipping route.
- Potential impacts to water with a focus on impacts to biological functions changes in water flow.
- Potential impacts to soils with a focus on contamination.
- Potential impacts to terrestrial resources with a focus on effects to old growth forest, wetland ecosystems, wildlife and valued species (e.g., deer and wolves), and changes in wildlife habitat.
- Potential impacts to freshwater fish with a focus on foreshore habitats, salmon-bearing streams, benthic invertebrates and subcomponents of freshwater fish.
- Potential impacts on land and resource use with a focus on the marine terminal area.
- Potential impacts to marine use with a focus on:
  - Changes to marine navigation due to increased marine vessel traffic along the marine shipping route.
  - Potential impacts from low level hydrocarbon outputs.
  - Disproportionately distributed effects.
- Potential impacts to marine resources with a focus on:
  - Marine sediment quality.
  - Changes in baseline aquatic noise levels with effects to marine fish, invertebrates, and mammals.
  - Effects from equipment and other Project-related vibrations.
  - Introduction of invasive species from marine shipping.
  - Increased marine vessel traffic.
  - Inorganic carbon impacts to invertebrate shell.

- Socio-economic impacts:
  - Potential impacts of the Project workforce with a focus on workforce accommodations and access to site.
  - Potential impacts to Lax Kw’alaams Band member’s physical and mental health.
  - Potential impacts to Lax Kw’alaams Band economies and economic interests.
- Cumulative Effects:
  - Potential cumulative effects on the environment, regional flora and fauna, and the health of the ocean and its resources.

Based on feedback provided to date and review of the key issues and interests for Lax Kw'alaams Band and based on legislated requirements, the Proponent has developed a preliminary list of potential effects on Lax Kw'alaams Band Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Lax Kw'alaams Band both prior to and during the assessment process. The preliminary list of potential effects on Lax Kw'alaams Band Interests are as follows:

- Changes to Lax Kw'alaams Band consumption and harvest (marine)
- Changes to Lax Kw'alaams Band consumption and harvest (terrestrial)
- Changes to Lax Kw'alaams Band governance and socio-economic conditions
- Changes to Lax Kw'alaams Band sacred and heritage sites
- Changes to Lax Kw'alaams Band health and wellbeing
- Changes to Lax Kw'alaams Band Culture
- Changes to Lax Kw'alaams Band access and travel

7.3.2 Metlakatla First Nation

The Proponent has engaged directly with Metlakatla First Nation since March 2021. Metlakatla First Nation has provided comments regarding their issues and interests through:

- Written correspondence
- Comments on the IPD
- Comments on dAIR components (i.e., drafts of VCs, Project Interaction Table, VC assessment areas, and Project Inclusion List)
- Comments on a draft version of this DPD

In addition, the Proponent was provided with a summary of Metlakatla First Nation interests, impacts and requests as provided to the BC EAO and the Agency during the IPD comment period.

7.3.2.1 Summary of Interests

Based on initial correspondence and discussions with Metlakatla First Nation to date, the Proponent's understanding of key issues and interests identified by Metlakatla First Nation is summarized below.

- EA process and Project design:
    - Project scope, components, plans, works and activities with a focus on project assessment areas, the marine shipping route and marine shipping activities, waste production and management, Project water supply, and the transmission line
- Indigenous rights, governance, land, and marine use:
    - Project effects on Metlakatla First Nation rights including:
        - Potential loss of place-based knowledge and cultural landscape and associated disruption to cultural transference and cultural identity

        - Potential impacts on quality of experience and sense of place at cultural and spiritual sites due to sensory disturbance
        - Potential impacts on access and travel, governance and decision making, industrialization of the land, increased marine traffic

- Heritage and Culture:
    - Potential disturbance to heritage, cultural and spiritual sites within and around the Project footprint
    - Consideration of Metlakatla Stewardship Society cultural heritage policies
- Environmental impacts:
    - Potential impacts on air quality with a focus on GHG emissions
    - Potential impacts on the terrestrial environment and terrestrial harvesting with a focus on:
        - Permanent removal of vegetation, wetlands, timber, and wildlife habitat
        - Decreases in quality and quantity of valued vegetation and wildlife
        - Sensory disturbances and potential to effect wildlife abundance
    - Potential impacts on marine resources with a focus on marine harvesting and:
        - Changes to fish quality and abundance
        - Changes to marine bird and marine mammal abundance and distribution
        - Changes in fish behaviour due to marine shipping activities and marine infrastructure
        - Loss of marine and intertidal harvesting sites
- Socio-economic impacts:
    - Potential impacts on Metlakatla economic development with a focus on:
        - Restricted access and reduced availability of commercially harvested resources and trade items
        - Loss of economic development opportunities (e.g., alienation from lands, loss of income/livelihood including trade)
    - Potential social and economic impacts from the Project workforce (e.g., size and duration of workforce)
    - Potential impacts on Metlakatla health, safety, and well-being, and sensory disturbance from marine shipping activities

- Accidents and Malfunctions:
    - Potential impacts on vegetation, wildlife, and marine resources due to accidents or malfunctions
- Cumulative Effects:
    - Potential for cumulative effects on marine, terrestrial, socioeconomic, and heritage values from the Ksi Lisims Project and other past, present, and future developments.

Based on feedback provided to date and review of the key issues and interests for Metlakatla First Nation, and based on legislated requirements, the Proponent has developed a preliminary list of potential effects on Metlakatla First Nation Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Metlakatla First Nation both prior to and during the assessment process. The preliminary list of potential effects on Metlakatla First Nation Interests are as follows:

- Changes to Metlakatla First Nation consumption and harvest (marine)
- Changes to Metlakatla First Nation consumption and harvest (terrestrial)
- Changes to Metlakatla First Nation governance, decision making, and economic development
- Changes to Metlakatla First Nation sacred places and heritage sites
- Changes to Metlakatla First Nation health, wellbeing, and safety
- Changes to Metlakatla First Nation cultural identity
- Changes to Metlakatla First Nation access and travel
- Changes to Metlakatla First Nation sense of place

7.3.3 Kitsumkalum First Nation

The Proponent has engaged directly with Kitsumkalum First Nation since March 2021. Kitsumkalum First Nation has provided comments regarding their issues and interests through:

- Written correspondence
- Comments on the IPD
- Comments on dAIR components (i.e., drafts of VCs, Project Interaction Table, VC assessment areas, and Project Inclusion List)
- Comments on a draft version of this DPD

In addition, the Proponent was provided with a summary of Kitsumkalum First Nation interests, impacts and requests as provided to the BC EAO and the Agency during the IPD comment period.

7.3.3.1 Summary of Interests

Based on initial correspondence and discussions with Kitsumkalum First Nation to date, the Proponent's understanding of key issues and interests identified by Kitsumkalum First Nation is summarized below.

- EA process and Project design:
    - Collaboration on the Project regulatory process
    - Project scope (e.g., inclusion of third-party plans for the transmission line, the pipeline, and upgrades to existing transmission infrastructure)
    - Project plans (e.g., plans for solid and liquid waste generation and management)
    - Identifying linkages between the First Nations Climate Initiative (FNCI) and the Project
    - Marine shipping route:
        - Exclusion of the northern option around (north of) Dundas Island to/from Triple Islands
        - Potential to shift the shipping route for the Project to North of Dundas Island to reduce risks in Chatham Sound
        - Increase of shipping due to current project proposals and developments that require shipping of goods
- Risk assessment and potential impacts from accidents and malfunctions:
    - Impacts of accidents and malfunctions along the shipping route and terminal site (e.g., due to atmospheric and oceanic conditions)
    - Impacts of accidents and malfunctions along the road transportation route, with a focus on increased traffic and associated risk for community safety, access, and wildlife (e.g., due to extreme weather)
    - Impacts to marine resources if an LNG Carrier ran aground and there was a spill into the marine environment (i.e., LNG vessel oil capacities and fuel used by LNG carriers)
- Indigenous rights, governance, land, and marine use:
    - Recognition of and potential impacts to specific UNDRIP articles, including but not limited to, the right to self-governance and self-determination, the right to practice traditional activities, the right to transmit traditional knowledge
    - Potential impacts on Kitsumkalum stewardship of lands
    - Potential impacts on Kitsumkalum sense of place
    - Potential impacts on Kitsumkalum commercial and FSC resource harvesting
    - Potential impacts to traditional rights related to cultural and spiritual practices and knowledge transmission

    - Potential impacts on the land base and impacts to access due to increased recreational users
    - Potential impacts to access and travel routes, including marine and terrestrial routes:
        - For marine routes, a particular focus on increased shipping along the North Coast on marine users and potential impacts from the third-party underwater transmission line and underwater pipeline
        - For terrestrial routes, a particular focus on the highway corridor within the Kitsumkalum Valley between the Project area and Terrace
- Environmental impacts and cumulative effects:
    - Potential impacts on wildlife, fish, and bird that extend beyond the Project's assessment areas
    - Potential impacts to air quality, with a focus on air emissions and GHGs
    - Potential impacts to water quality
    - Potential impacts to wildlife from increased marine and vehicle traffic
    - Potential impacts to salmon habitat from increased shipping along the North Coast
    - Potential impacts to marine resources from increased shipping, with a particular focus on the Chatham Sound/Triple Islands area, seaweed harvesting sites, fishing sites, bivalve collection sites, whale strikes, and fish migration
- Socio-economic impacts and cumulative effects:
    - Potential impacts to infrastructure and services with focus on housing, police and social services, road use, and health care system access
    - Potential socio-economic impacts, including financial disparity
    - Potential impacts to employment opportunities, and the identification of training and employment for community members
    - Potential impacts from the construction temporary workforce
    - Potential impacts to community wellbeing (social determinants of health)

Based on feedback provided to date and review of the key issues and interests for Kitsumkalum First Nation and based on legislated requirements, the Proponent has developed a preliminary list of potential effects on Kitsumkalum First Nation Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Kitsumkalum First Nation both prior to and during the assessment process. The preliminary list of potential effects on Kitsumkalum First Nation Interests are as follows:

- Changes to Kitsumkalum First Nation consumption and harvest (marine)

- Changes to Kitsumkalum First Nation consumption and harvest (terrestrial)
- Changes to Kitsumkalum First Nation governance and socio-economic conditions
- Changes to Kitsumkalum First Nation sacred and heritage sites
- Changes to Kitsumkalum First Nation health and wellbeing
- Changes to Kitsumkalum First Nation access and travel
- Changes to Kitsumkalum First Nation transmission of knowledge

7.3.4 Kitselas First Nation

The Proponent has engaged directly with Kitselas First Nation since March 2021. Kitselas First Nation has provided comments regarding their issues and interests through:

- Written correspondence
- Comments on the IPD
- Comments on dAIR components (i.e., drafts of VCs, Project Interaction Table, VC assessment areas, and Project Inclusion List)
- Comments on a draft version of this DPD

In addition, the Proponent was provided with a summary of Kitselas First Nation interests, impacts and requests as provided to the BC EAO and the Agency during the IPD comment period.

7.3.4.1 Summary of Interests

Based on initial correspondence and discussions with Kitselas First Nation to date, the Proponent's understanding of key issues and interests identified by Kitselas First Nation is summarized below.

- EA process and Project design:
    - Kitselas First Nation right to participate in decision-making and to be engaged in a meaningful way including through consensus seeking and incorporating feedback
    - Project scope and plans (e.g., electric or gas power supply, third-party plans, GHG emissions and net-zero plan, condensate and hazardous waste)
    - Project components, with a focus on the marine shipping route
- Indigenous rights, governance, land and marine use:
    - Project effects on Kitselas First Nation rights including:
        - Implementation of Kitselas First Nation laws, customs and protocols
        - Kitselas stewardship rights and responsibilities
        - Right to clean air, water, lands and resources within Kitselas territory, and the right to peacefully enjoy them
        - Development of Kitselas First Nation territory including water, land and resources

        - Access to traditional resources and to peacefully enjoy them including for harvesting and cultural and spiritual practice
        - Impacts to harvesting areas
        - Rights to revitalize, develop, and transmit to future generations Kitselas' traditional knowledge, histories, oral traditions, and place names relating to the Project area

- Environmental impacts:
    - Potential impacts to the acoustic environment
    - Potential impacts to wetlands and surface water, with a focus on changes in air quality and related interactions with the environment
    - Potential impacts to water, with a focus on acidification and eutrophication
    - Potential impacts to wildlife and other biophysical elements, including effects of noise on wildlife
    - Potential impacts to marine resources
    - Potential impacts resulting from GHG emission
    - Potential impacts from Accidents and Malfunctions
- Socio-economic impacts:
    - Potential impacts to infrastructure and services with focus on housing, police and social services, road use, and health care system access
    - Potential social and economic impacts from the construction temporary workforce
    - Potential effects to marine use, including access to cultural and traditional use areas at preferred time and by preferred method
- Cumulative Effects:
    - Terrestrial and human health cumulative effects (specifically related to wetlands and air quality) along the coast (i.e., the Port of Prince Rupert to Pearse Island)
    - Marine resources and marine use cumulative effects
    - Socio-economic cumulative effects
    - Cumulative effects resulting from GHG emissions

Based on feedback provided to date and review of the key issues and interests for Kitselas First Nation, and based on legislated requirements, the Proponent has developed a preliminary list of potential effects on Kitselas First Nation Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Kitselas First Nation both prior to and

during the assessment process. The preliminary list of potential effects on Kitselas First Nation Interests are as follows:

- Changes to Kitselas First Nation consumption and harvest (marine)
- Changes to Kitselas First Nation consumption and harvest (terrestrial)
- Changes to Kitselas First Nation governance and socio-economic conditions
- Changes to Kitselas First Nation sacred places and heritage sites
- Changes to Kitselas First Nation health and wellbeing
- Changes to Kitselas First Nation access and travel

7.3.5 Gitxaała Nation

The Proponent has engaged directly with Gitxaała Nation since March 2021. Gitxaała Nation has provided comments regarding their issues and interests through:

- General correspondence
- Comments on the IPD and EP
- Comments on the proposed baseline studies
- Comments on dAIR components (i.e., drafts of VCs, Project Interaction Table, VC assessment areas, and Project Inclusion List)
- Comments on a draft version of this DPD

In addition, the Proponent was provided with a summary of Gitxaała Nation interests, impacts and requests as provided to the BC EAO and the Agency during the IPD comment period.

7.3.5.1 Summary of Interests

Based on initial correspondence and discussions with Gitxaała Nation to date, the Proponent's understanding of key issues and interests identified by Gitxaała Nation is summarized below.

- EA process and Project design:
    - The Project regulatory process, with a focus on collaboration and a consideration of Gitxaała Nation concerns
    - Information sources, with a focus on the age and appropriateness of secondary sources (e.g., data collected for other projects) and consideration of regulatory environmental assessment reports
    - Project scope, with a focus on:
        - Inclusion of third-party plans for transmission line and pipeline
        - Inclusion of diversity and GBA Plus
    - Project plans and components, with a focus on:
        - The extent of the marine shipping route and the potential for LNG and NGL transport south of the pilot boarding station at Triple Island to ports in the United States

        - The Projects Net-Zero Plan
        - Marine components
        - Back-up power considerations including the temporary power barges
        - Waste management including effluent discharge
        - Workforce accommodation
        - Water supply options
        - Mooring and piling for marine components
        - Net zero target emissions
- Potential impacts from accidents and malfunctions, with a focus on:
    - The Project's emergency response plans
    - Management of liquid or other discharges into the marine environment
- Indigenous rights, governance, land and marine use:
    - Potential impacts to heritage sites along the marine shipping route
    - Unceded section 35 rights in the vicinity of the Project
    - Potential impacts on traditional harvesting due to marine shipping, including noise effects on marine mammals
    - Potential impacts on the sensory environment
- Environmental impacts:
    - Potential impacts to air quality, with a focus on GHG emissions, modelling, and assessment subcomponents
    - Potential impacts to the acoustic environment along the marine shipping route
    - Potential impacts to the marine environment from marine shipping, with a focus on:
        - LNG vessel desalination
        - Changes in marine mammal and marine fish behaviour
    - Potential impacts to freshwater fish, with a focus on oolichan and salmon spawning routes and habitats
    - Potential impacts to the marine environment at the marine terminal, with a focus on dredging and construction

- Socio-economic impacts:
    - Potential impacts to employment opportunities and the identification of training and employment opportunities for community members, with a focus on local direct and indirect benefits
    - Potential impacts on human health, with a focus on potential effects from marine shipping, including change in air quality and acoustic
- Cumulative Effects:
    - Potential cumulative effects from increased marine vessel traffic within the portion of the marine shipping route overlapping Gitxaała Nation territorial waters

Based on feedback provided to date and review of the key issues and interests for Gitxaała Nation, and based on legislated requirements, the Proponent has developed a preliminary list of potential effects on Gitxaała Nation Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Gitxaała Nation both prior to and during the assessment process. The preliminary list of potential effects on Gitxaała Nation Interests are as follows:

- Changes to Gitxaała Nation consumption and harvest (marine)
- Changes to Gitxaała Nation consumption and harvest (terrestrial)
- Changes to Gitxaała Nation governance and socio-economic conditions
- Changes to Gitxaała Nation sacred places and heritage sites
- Changes to Gitxaała Nation health and wellbeing
- Changes Gitxaała Nation access and travel

7.3.6 Gitga’at First Nation

The Proponent has engaged directly with Gitga’at First Nation since November 2021. Gitga’at First Nation has provided comments regarding their issues and interests through:

- General correspondence
- Comments on a draft version of this DPD

7.3.6.1 Summary of Interests

Based on initial correspondence and discussions with Gitga’at First Nation to date, the Proponent’s understanding of key issues and interests identified by Gitga’at First Nation is summarized below.

- EA process and Project design:
    - Project mitigation measures
    - Management plans for liquid, solid, and hazardous waste

- Indigenous rights, governance, land and marine use:
    - Cumulative effects on Gitga'at First Nation Interests from changes in marine shipping and air quality, with a particular focus on Prince Rupert and Kitimat
- Environmental impacts:
    - Potential impacts to air quality, with a particular focus on GHGs
    - Potential impacts to marine resources from increased shipping, with a particular focus on marine mammals and marine fisheries

Based on feedback provided to date and review of the key issues and interests for Gitga'at First Nation, and based on legislated requirements, the Proponent has developed a preliminary list of potential effects on Gitga'at First Nation Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Gitga'at First Nation both prior to and during the assessment process. The preliminary list of potential effects on Gitga'at First Nation Interests are as follows:

- Changes to Gitga'at First Nation consumption and harvest (marine)
- Changes to Gitga'at First Nation consumption and harvest (terrestrial)
- Changes to Gitga'at First Nation governance and socio-economic conditions
- Changes to Gitga'at First Nation sacred places and heritage sites
- Changes to Gitga'at First Nation health and wellbeing
- Changes to Gitga'at First Nation access and travel

7.3.7 Haida Nation

7.3.7.1 Summary of Interests

Ksi Lisims LNG has engaged Haida Nation through written correspondence since March 2021. Ksi Lisims LNG has received limited feedback to date from Haida Nation. Based on review of public information, the Proponent understands that Haida Nation consider the waters north of Graham Island as very important to many facets of their culture. The Proponent has developed a preliminary list of potential effects on Haida Nation Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Haida Nation both prior to and during the assessment process. The preliminary list of potential effects on Haida Nation Interests are as follows:

- Changes to Haida Nation consumption and harvest (marine)
- Changes to Haida Nation governance and socio-economic conditions
- Changes to Haida Nation sacred places and heritage sites
- Changes to Haida Nation access and travel

7.3.8 Métis Nation British Columbia

7.3.8.1 Summary of Interests

Ksi Lisims LNG has engaged Métis Nation British Columbia through written correspondence since May 2021. Ksi Lisims LNG has received limited feedback from Métis Nation British Columbia.

Based on review of public information, the Proponent understands that Métis Nation British Columbia may have harvesters in the area of the marine shipping route with an interest in the Project. The Proponent has developed a preliminary list of potential effects on Métis Nation British Columbia Interests to be considered as a starting point for discussion on the structure of the assessment and subject to being refined through development of the Application. It is expected that this list will be further developed through ongoing consultation with Métis Nation British Columbia both prior to and during the assessment process. The preliminary list of potential effects on Métis Nation British Columbia Interests are as follows:

- Changes to Métis Nation British Columbia consumption and harvest (marine)
- Changes to Métis Nation British Columbia consumption and harvest (terrestrial)
- Changes to Métis Nation British Columbia governance and socio-economic conditions
- Changes to Métis Nation British Columbia sacred places
- Changes to Métis Nation British Columbia access and travel

7.4 Summary of Planned Engagement Activities with Indigenous Nations

The Proponent is committed to engaging with potentially affected Indigenous Nations regarding established or asserted Aboriginal rights, title and other interests (including current use for traditional purposes) that may be affected by the Project. The NLG will coordinate all Project engagement activities related to the Project with Nisga'a citizens. The Proponent will coordinate with the BC EAO and the Agency so that Participating Indigenous Nations receive the most up-to-date information with respect to the EA-IA processes under the BC EAA 2018 and the IAA 2019.

8 GOVERNMENT AND PUBLIC ENGAGEMENT

8.1 Engagement with Federal, Provincial, Municipal and Regional Governments and the United States

The Proponent conducted various engagement activities with federal, provincial, municipal and regional governments beginning in Q4 of 2020 and continuing through 2021 to present.

8.1.1 Technical Advisors

With the initial meeting held September 8, 2021, Technical Advisors (**TA**s) for the Project were identified by BC EAO and Agency. The role of the TAs is that of technical advisors to BC EAO and participating Indigenous Nations including technical review of Project regulatory and technical documents and studies. Current Project TAs include:

- **Indigenous Nations** – NLG/Nisga'a Nation and the Participating Indigenous Nations: Lax Kw'alaams Band, Metlakatla First Nation, Kitsumkalum First Nation, Kitselas First Nation, Gitxaala Nation and Gitga'at First Nation (2022)
- **Regional Government** – Regional District of Kitimat-Stikine, North Coast Regional District, City of Terrace, City of Prince Rupert and District of Stewart
- **Provincial Ministries and Agencies** – Ministry of Energy, Mines and Low Carbon Innovation, BC Ministry of Environment and Climate Change Strategy (**BC ENV**), FLNRORD, Ministry of Indigenous Relations and Reconciliation, Ministry of Health, Northern Health Authority, Ministry of Transportation and Infrastructure, Ministry of Municipal Affairs, Ministry of Jobs, Economic Recovery and Innovation, BC EAO, and BC OGC
- **Federal Ministries and Authorities** – Crown-Indigenous Relations and Northern Affairs Canada, Environment and Climate Change Canada (**ECCC**), Employment and Social Development Canada, DFO, Health Canada, Human Resources and Skills Development Canada, Agency, Indigenous Services Canada, Natural Resource Canada, Transport Canada, Women and Gender Equality Canada, Coast Guard, Pacific Pilotage Authority, and the Prince Rupert Port Authority
- **United States Agencies** – United States Environmental Protection Agency, Alaska Department of Natural Resources

8.2 Engagement with the Public

Formal opportunities for comment and issue identification on the Project from the public and all stakeholders (including Indigenous Nations and governments) have been provided as follows:

- Public engagement and comment period on the IPD, which began August 10, 2021 and closed September 24, 2021. The public engagement and comment period invited feedback on the Project as it is presented in the IPD and EP and how the public would like to be engaged in the future. During the public comment period, the Project received 76 comments through the comment portals (13 via Agency's portal and 63 via the BC EAO's portal).
- A JSOIE was jointly prepared by the BC EAO and Agency based on comments received during the public engagement and comment period on the IPD. Appendix 10 of the DPD provides Proponent responses to and engagement on all raised issues and concerns. Additional information to respond to these comments is provided in the DPD and, where appropriate, will be provided in the EA-IA.
- Two Project virtual information sessions (i.e., Open Houses) held September 8, 2021 and September 9, 2021.
- Printed copies of the IPD were provided for public review in the following locations: Prince Rupert Public Library, Terrace Public Library, Member of Legislative Assembly (**MLA**) office in Prince Rupert, Member of Parliament (**MP**) office in Prince Rupert, municipal office in Prince Rupert, MLA office in Terrace, MP office in Terrace, municipal office in Terrace, municipal office in Port Edward.
- The Project has developed a website: https://www.ksilisimslng.com/. The Project website provides general Project information as well as offering the opportunity to contact the Project with specific requests or comments Summary of Planned Engagement Activities.

8.2.1 Planned Engagement with Federal, Provincial, Municipal and Regional Governments and the United States

Federal, provincial, municipal, and regional government and United States of America agencies with an interest in the Project have been provided an opportunity to participate as TAs. TA meetings will continue on an appropriate basis as determined by the BC EAO or the Agency.

8.2.2 Planned Engagement with the Public

The Project will continue engagement with stakeholders and the public as:

- The Project website will be maintained and updated as the Project reaches new milestones and to support the EA-IA process
- Virtual (or in-person, depending on the COVID-19 protocols) open houses, town halls or community meetings may take place during BC EAO and Agency designated public comment periods
- Digital and print ads, as well as social media will promote open houses, town halls or community meetings and direct the interested public to an online registration page on the Project's website

The Proponent will continue to engage with stakeholders and the public during early engagement and throughout the EA-IA processes including following submission of the DPD and dAIR and through development of the EA-IA.

8.3 Gender Based Analysis Plus

The Project recognizes that certain barriers to under-represented, potentially impacted populations may limit the ability of these groups to participate in engagement activities on the Project. The Project commits to creating an open and safe environment for its engagement activities and further commits to exploring other engagement opportunities or methods to ensure that these groups feel included and safe. The Project will strive to adapt its engagement methods according to the priorities identified by each of the groups to be engaged, to provide each of these groups with a meaningful opportunity to participate in the EA process and provide comments on the DPD.

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9 PUBLIC AND ENVIRONMENTAL SAFETY

Accidents and malfunctions may occur during construction, operation and decommissioning of the Project.

9.1 Regulatory Context

Responsibility to protect and manage marine resources is a joint effort between provincial and federal agencies and includes Transport Canada, ECCC, DFO, Canadian Coast Guard (**CCG**), the Pacific Pilotage Authority, BC Coast Pilots, the Western Canada Marine Response Corporation and, potentially, the Canada Border Services Agency. The federal government has constitutional authority for shipping and navigation in Canadian waters.

CCG's Marine Spills Contingency Plan (GoC 2019b) defines the scope and framework within which CCG will operate to ensure a response to marine pollution incidents. Canadian legislation entrenches the polluter's responsibility to pay for clean-up efforts and pollution damage from ships. Transport Canada, through regulation, certified specialized response contractors across Canada to be available to the industry to support pollution clean-up. CCG actively oversees and participates with industry to manage clean-up operations, and direct or rapidly undertake the operation, when necessary. To meet this expectation, CCG is the lead agency Incident Commander for all marine pollution incidents that fall within its mandate and will work with the polluter (if willing and able) and stakeholders from federal, provincial, and/or territorial agencies, Indigenous communities, and municipalities in a single or Unified Command setting for the successful resolution of the incident.

9.2 Specific FLNG Regulatory Requirements

Each FLNG will be designed to meet or exceed applicable CSA standards. In addition, a number of other international engineering standards apply to the Project's onshore and marine infrastructure. The Project requires an LNG Facility permit administered by the BC OGC and a Safety Management Plan administered by Technical Safety BC. From a facility design and safety perspective, the permit addresses:

- FLNGs built outside BC
- Flaring, incinerating, venting and relief system design
- Design and safety studies related to siting
- Quantitative risk assessment studies
- Hazard identification studies
- Seismic, geotechnical and tsunami studies
- Quality assurance program validation

While the FEED process is underway, Hazard Planning Zones and Emergency Planning Zones, as defined in the OGAA *Emergency Planning Regulation* will be developed to inform operational safety and emergency response plans at, and within defined distances around, the Project marine terminal.

LNG transportation over Canadian waters is regulated by Transport Canada. Transport Canada has developed a technical review process, Navigation Safety Assessment, to measure navigational risks associated with placing and operating marine terminals for large LNGCs and NGL product carriers (Transport Canada 2019). The Project has committed to conducting a Navigation Safety Assessment in collaboration with NLG, area Indigenous Nations and federal agencies including Transport Canada, Pacific Pilotage Authority, BC Coast Pilots, CCG, ECCC, DFO and Canadian Hydrographic Service.

9.3 General Project Safety and Security Measures

Safety is a key consideration for the Project. Each FLNG will incorporate accident and malfunction prevention and protection measures including, but not limited to emergency response plans, scheduled safety drills, safe operating policies and procedures, evacuation infrastructure and associated safety equipment such as detection alarms, fire water pumps, hydrants and fire-extinguishing apparatus.

An instrument system is incorporated into the FLNGs to manage the safety, shutdown and gas depressurization processes for the Site. The system will include separate components for each FLNG and will include a combination of manual and automatic shutdown processes. Based on current design, each FLNG will be equipped with a flare for the safe disposal of gas during emergency situations, LNG facility upsets or in preparation for maintenance activities. In addition, Emergency Planning Zones and Hazard Planning Zones will be developed for safety around the Project marine terminal.

9.4 Accidents and Malfunction Scenarios

The Project has identified preliminary credible accident and malfunction scenarios. A brief overview of these scenarios is presented in Table 7 with a preliminary estimate of risk. Final risk assessment will be completed as part of the EA-IA process.

Table 7 – Preliminary Identified Accident and Malfunction Scenarios

Scenario	Description	Preliminary Risk Estimate
Emergency Flaring and LNG Facility Shutdown	Emergency flaring involves routing the hydrocarbons to one or more flare stacks and is used to prevent the accumulation of gases that could pose a hazard to humans or the environment. This could occur as a result of a fire, loss of containment, gas leak, pressure safety valve release or emergency shutdown.	Very Low
Explosion and Fire	Major accidents at LNG export facilities are historically very rare. LNG is not explosive except in poorly ventilated, confined conditions when natural gas vapours are present within the range of flammability and exposed to an ignition source. The worst-case scenario is a vapour cloud explosion or fire that would result in human deaths outside the facility.	Very Low
Fuel or Hazardous Material Spill	Hazardous materials such as motor fuel, hydraulic fluid, spent solvents, hydrocarbon-contaminated wastewater and mercury would be used or generated on-site. A fuel or hazardous material spill would likely be contained within the Site, but a large spill could result in environmental effects on the surrounding area.	Low
LNG or NGL Spill	LNG or NGL could be spilled from leaks in the FLNGs or NGL product carriers, during transfer to an LNGC or NGL product carrier along the loading line or at the loading arm that connects to the berthed vessels. A worst-case scenario event is the full rupture of the supply loading line at the marine terminal.	Very Low
Marine Vessel Grounding, Collision or Allision	Three main scenarios related to the shipping of LNG or NGL in BC coastal waters are considered: 1. grounding or vessel allision with the marine terminal 2. collision of an LNG or NGL product carrier with another vessel 3. collision of a Project supply or personnel vessel	Very Low
Aircraft Collision with the Flare Stack	An aircraft could collide with the flare stack. The height of the flare stack will be determined in FEED.	Very Low
Motor Vehicle Collisions on Highway 113	The major road transportation route from Terrace to the mainland community of Gingolx is Highway 113. It is anticipated that Terrace may be a significant supply centre for the Project and that workers, supplies and equipment could be transported on Highway 113, increasing traffic and potentially leading to motor vehicle accidents at a frequency higher than what occurs at present.	Low

9.5 Preliminary Accident and Malfunction Mitigation Measures

The Project will identify, assess and, where appropriate, incorporate a suite of accident and spill prevention design measures, such as:

- Conducting all necessary studies to inform the BC OGC LNG facility permit
- Implementing engineering controls in Project design such as, but not limited to:
    - Emergency detection and shut-down systems
    - Spill containment barriers
    - Fire prevention and protection measures
    - Evacuation infrastructure and plans
- Development and implementation, including ongoing updates, of a facility Emergency Response Plan
- Develop a Safety Management Plan for facility operations and maintenance
- Conducting a Project-specific Navigation Safety Assessment in collaboration with NLG, area Indigenous Nations and other government agencies as indicated in Section 9.2.4

10 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

10.1 Potential Effects of the Environment Scenarios

The Project has identified preliminary potential effects of the environment on the Project. A brief overview of these scenarios is presented in Table 8. Final scenarios to be assessed, and assessment of these scenarios will be completed as part of the EA-IA process.

Table 8 – Preliminary Potential Effects of the Environment on the Project Scenarios

Scenario	Description
Climate Change	Four of the potential BC climate related risks relevant to the Project: ▪ Increases in extreme precipitation ▪ Coastal storms and storm surge ▪ Change in wind patterns and speed ▪ Sea level rise Each of these potential risks will be assessed in the EA-IA through assessments of likelihood and consequence of the changes or effects to relevant VCs.
Extreme Weather	Severe weather events include extreme temperatures, precipitation and flooding, and associated high wind and waves. Elevated temperatures could impact the Project by creating higher energy demand for cooling or making working conditions unsafe due to heat-induced illnesses. Colder temperatures could impact the Project by causing increased ice loads on the marine infrastructure that necessitates additional structural support or by increasing the risk of travel to the Site. Heavy precipitation or flood events can come in the form of rain or snow and could impact the Project by causing damage to infrastructure or by causing unsafe working conditions. High winds and large waves could impact the Project by damaging marine infrastructure (e.g., mooring systems) or creating unsafe conditions on the FLNG facility.
Seismic Events and Tsunamis	The Pacific Coast is the most seismically active area of Canada. Depending on the magnitude of the event and distance to the Site, a seismic event is most likely to impact the Project through shaking and vibration, which could affect the structural integrity of both the marine and terrestrial infrastructure. In addition, the potential will be assessed whether a seismic event could lead to a local, landslide-induced tsunami and associated flooding event.
Geologic Hazards	Geologic hazards are terrain-related risks to infrastructure such as landslides, debris flows, rockfalls, avalanches, and erosion. The geotechnical stability of the Site will be documented during geophysical and geotechnical investigations.
Forest Fires	There is the potential for a forest fire to interrupt construction/decommissioning or operation of the Project. The extent of the effects of fire on the Project depends greatly on the location and size of the event.

10.2 Preliminary Mitigation for Effects of the Environment on the Project

The Project has identified the following potential mitigation to avoid or mitigation potential effects of the environment:

- The FLNG facility will be able to adjust to changing water levels including due to sea level rise and storms surges
- Limits of LNGC berthing operation will be established and based on specific weather conditions
- Development and implementation of emergency management program that will be amended as required by CSA and regulatory requirements