



Project Description - Executive Summary

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2016-05-13	2	Approved for Use	I.Govender	M. Winfield-Lesk	M. Winfield-Lesk
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY

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Executive Summary

Project Information

Kitimat Clean Ltd. (“Kitimat Clean” or “Proponent”) is proposing to construct and operate an oil refinery and associated infrastructure in the Kitimat-Stikine Regional District. The proposed Kitimat Clean Refinery Project (the Project), will be comprised of a refinery, a rail yard, a tank farm, a refined fuel delivery pipelines corridor, and a marine terminal for product export. The proposed Refinery Site covers an area of 1,000 ha and is situated about 13 kilometers (km) to the north of Kitimat, on provincial Crown land. The Refinery Site is located in the Coast Range 5 Land District and overlaps district lots (DLs) 6132, 6133, 6134, 6135, 6145, 6146, 6147, and 6148. The Fuel Delivery Pipelines Corridor intersects numerous parcels of municipal, private, and provincially owned land. The proposed Marine Terminal Site is located roughly 12 km south of Kitimat on the west side of the Douglas Channel on provincial Crown land. A regional Project location map is provided in Figure 1.

Contact Information

Kitimat Clean Ltd. is a privately held corporation in British Columbia (BC) and is seeking provincial and federal approvals to enable the undertaking of the Project. Kitimat Clean Ltd.’s corporate information is summarized in Table 1. The principal contact person for the Project Description is David Black.

Table 1: Proponent Contact Information

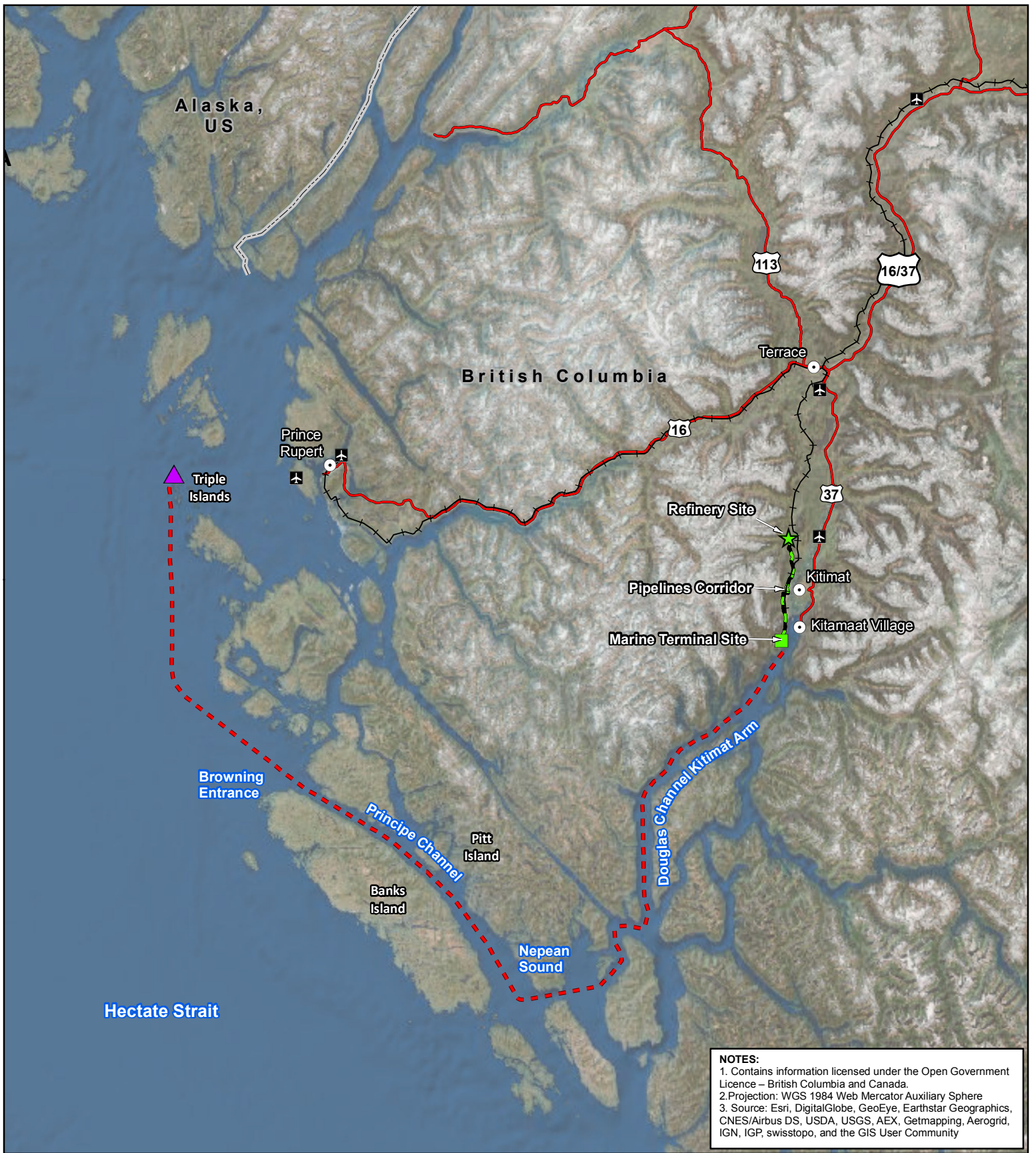
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Kitimat Clean Ltd.
Kitimat Clean Refinery Project
H347026

Project Management Report
Environment Sustainability and Community Interface Management
Project Description - Executive Summary

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NOTES:
 1. Contains information licensed under the Open Government Licence – British Columbia and Canada.
 2. Projection: WGS 1984 Web Mercator Auxiliary Sphere
 3. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- ★ Refinery Site
- Marine Terminal Site
- Pipelines Corridor
- - - Marine Shipping Route
- Community
- ✈ Airport
- Road
- Railway
- International Boundary
- ▲ Triple Island Pilot Station



Figure 1
 Kitimat Clean Ltd.
 Kitimat Clean Refinery Project
Regional Project Location



Project Location

The proposed Project, encompassing the refinery, tank farm, fuel delivery pipeline corridor and marine terminal are located on two separate sites within the Regional District of Kitimat-Stikine (RDKS). The refinery (consisting of two process trains), storage tanks, and rail spur is located on a land parcel referred to as the Wedeene site, located approximately 13 km north of Kitimat at 54° 10' 00" North and 128° 42' 00" West. The closest residence is approximately 5 km east of the Refinery Site located within the District of Kitimat.

Processed fuel products will be delivered to the Marine Terminal Site via a 23 km Fuel Delivery Pipeline Corridor. The north end of the pipeline corridor is located at 54 degrees 08' 28" N, 128 degrees 41' 21" W and the terminus is at 53 degrees 57' 19" N, 128 degrees 42' 39" W. The 45 m wide right-of way follows the Wedeene Forest Service Road (FSR) southward, crosses the Little Wedeene River, and continues southward to the Kitimat Service Centre. From there, the pipeline route proceeds southward around Sandhill along the west side of Alcan Rd, and then along the Bish Creek Forest Service Road to the Marine Terminal Site. The proposed pipeline alignment is the most direct route and has the fewest watercourse crossings and least amount of sensitive habitat and steep terrain.

Access to the Refinery Site will be from Highway 37, west along Haisla Boulevard and Third Street, then north along the existing Wedeene Forestry Service Road (WFSR) for 11 km. The Wedeene FSR will require upgrades and improvements, including widening, some straightening, and substantial re-surfacing to allow heavy equipment and wide loads (e.g., pre-fabricated modules) and other materials to be transported to site during the Construction Phase. Upgrades, de-commissioning and replacement of up to six existing bridge crossings along the WFSR may be required.

The marine terminal facilities (e.g., loading facility, vessel and utility berths) are proposed to be located on the west side of Kitimat Arm, just north of Bish Cove at approximately 53° 55' 38" North and 128° 45' 17" West. The 155 ha site is located on provincial Crown land across the Douglas Channel (and slightly south) from Kitamaat Village (Figure 2). The Marine Terminal Site will be accessed from Highway 37 by travelling south on Haisla Boulevard to Alcan Road, then turning south at the junction with the Bish Creek Forest Service Road for approximately 12km. The Bish Creek Forest Service Road was recently upgraded and does not any require any improvements.

Project Objectives

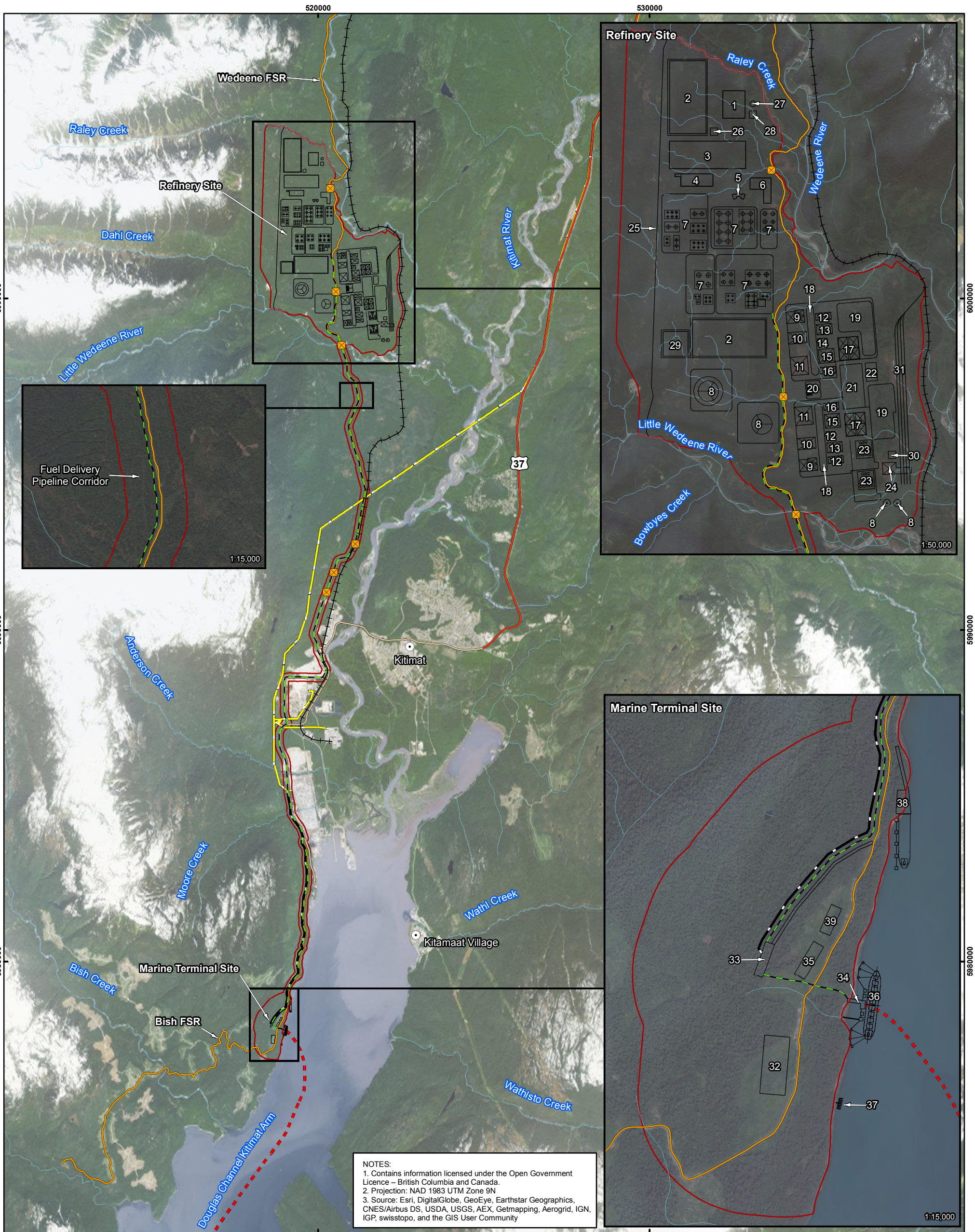
The primary objective of the Project is to build an oil refinery, which will be a domestic, value-added industry. Once operational, the refinery will process bitumen into value-added fuels (gasoline, diesel, some ultra-low sulphur diesel, and jet fuel) for export to Asia to meet their demand for a stable supply of these fuels. The Project is anticipated to not only create employment, and bring economic and trade-building skill benefits to the region, but is also expected to provide \$1 billion per year in new taxes to regional, provincial and federal governments within 10 years of production.



Regulatory Framework

As listed in Table 2, the Project exceeds a number of threshold criteria for both the provincial and federal environmental assessment regulations; the Project is considered a “reviewable project” pursuant to the Reviewable Projects Regulation of the *British Columbia Environmental Assessment Act* (BCEAA) and a “designated project” pursuant to the Regulations Designating Physical Activities of *Canadian Environmental Assessment Act 2012* (CEAA 2012). To enable the Project to proceed, the Project will require an Environmental Assessment Certificate (EAC) under BC EAA and an EA Decision Statement under CEAA 2012.

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- Community
- ⊠ Bridge
- +++ Railway
- Forest Service Road
- Highway
- Road
- Existing
- Transmission Line
- Proposed Infrastructure**
- Pipeline
- Transmission Line
- Marine Shipping Route
- Infrastructure
- Project Footprint

Refinery

- 1 - PARKING
- 2 - SURFACE WATER MANAGEMENT POND
- 3 - CONSTRUCTION CAMP
- 4 - WAREHOUSE/FIREHALL/MEDICENTRE/MAINTENANCE SHOPS
- 5 - CONTROL BUILDING
- 6 - ADMIN. FACILITIES
- 7 - TANK FARMS (COMBINED TWO TRAIN AREA)
- 8 - FLARE AND RELIEF SYSTEM
- 9 - NAPHTHA HYDROHEATER/HEAVY NAPHTHA REFORMER/LIGHT NAPHTHA ISOMERIZATION
- 10 - VACUUM GAS OIL HYDROCRACKER INTEGRATED WITH DISTILLATE HYDROTREATER
- 11 - VACUUM BOTTOM RESID HYDROCRACKER INTEGRATED WITH SOLVENT DEASPHALTING UNIT
- 12 - FISCHER TROPSCH PRODUCT HYDROCARBONS
- 13 - FISHER TROPSCH
- 14 - SYNGAS CLEANING/SWEETENING (H2S/CO2/NH3)
- 15 - GASIFIER
- 16 - AIR SEPARATION UNIT
- 17 - STEAM METHANE REFORMERS
- 18 - LAYDOWN AREA
- 19 - LAYDOWN STAGING AREA
- 20 - COOLING WATER SYSTEM
- 21 - STEAM GENERATION (COMBINED TWO TRAIN AREA)
- 22 - POWER SUBSTATION (COMBINED TWO TRAIN AREA)
- 23 - SULPHUR BLOCK
- 24 - SUPLHUR PELLETIZING UNIT
- 25 - DIVERSION DITCH
- 26 - WASTEWATER TREATMENT PLANT
- 27 - WASTE INCINERATOR
- 28 - SANITARY SEWER
- 29 - OILY WATER POND
- 30 - BITUMEN UNLOADING FACILITY
- 31 - RAILWAY

Marine Terminal Site

- 32 - ADMINISTRATION & SUPPORT FACILITIES
- 33 - SURGE TANK FACILITIES
- 34 - LOADING FACILITY
- 35 - LAYDOWN AREA
- 36 - VESSEL BERTH
- 37 - UTILITY BERTH
- 38 - MATERIALS OFFLOADING FACILITY
- 39 - DREDGEATE DISPOSAL

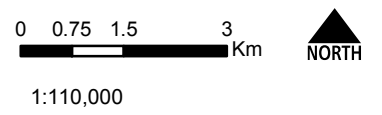


Figure 2
Kitimat Clean Ltd.
Kitimat Clean Refinery Project
Project Site Map



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Table 2: Summary of Provincial and Federal Environmental Assessment Thresholds

Kitimat Clean Refinery Project	BCEAA Reviewable Projects Regulation	CEAA 2012 Regulations Designating Physical Activities
<p>Construction and operation of a Refinery facility with a processing capacity of approximately 400,000 barrels per day (63,600 m³/day or 56,000 tonnes/day) of pure bitumen to produce approximately 460,000 barrels per day of value-added fuel products. The production capacity of the refinery will be approximately 20,400,000 tonnes of value-added fuel products per year.</p>	<p>Part 2 – Industrial Projects, Table 1 – Organic and Inorganic Chemical Industry;</p> <p>2 Industrial Organic Chemical Industries not elsewhere classified</p> <p>A new manufacturing facility That has a production capacity of ≥ 100 000 tonnes/year.</p>	<p>14. The construction, operation, decommissioning and abandonment of a new (a) Oil refinery, including a heavy oil upgrader, with an input capacity of 10,000 m³/day or more.</p>
<p>Construction of a Marine Terminal facility with a disturbance area of approximately 155 hectares. The marine facility will handle VLCCs with capacity of 250,000 DWT. Disturbance of approximately 2 hectares of the foreshore environment and a total (but not continuous) length of approximately 1 km of linear disturbance along the shoreline. The total length of the linear shoreline disturbance provided covers the locations of the vessel berth, utility berth and material offloading facility.</p>	<p>Part 8 – Transportation Projects, Table 14 Transportation Projects</p> <p>4 Marine Port Facilities (other than Ferry Terminals)</p> <p>Subject to subsection (2), a new marine port facility, other than a ferry terminal, if construction of the facility entails dredging, filling or other direct physical disturbance of ≥ 2 hectares of foreshore or submerged land, or a combination of foreshore and submerged land, below the natural boundary of a marine coastline or marine estuary.</p>	<p>24. The construction, operation, decommissioning and abandonment of a new (c) marine terminal designed to handle ships larger than 25 000 DWT unless the terminal is located on lands that are routinely and have been historically used as a marine terminal or that are designated for such use in a land-use plan that has been the subject of public consultation.</p>
<p>Construction and operation of a tank farm with a storage capacity of approximately 8,000,000 barrels (1,250,000 m³) in volume. The tank farm will store energy resources capable of yielding approximately 16 PJ of energy by combustion.</p>	<p>Part 4 – Energy Projects, Table 8 Petroleum and Natural Gas Projects</p> <p>1 Energy Storage Facilities</p> <p>Subject to subsection (2), a new energy storage facility with the capability to store an energy resource in a quantity that can yield by combustion ≥ 3 PJ of energy.</p>	<p>14. The construction, operation, decommissioning and abandonment of a new (e) petroleum storage facility with a storage capacity of 500 000 m³ or more.</p>



Kitimat Clean Refinery Project	BCEAA Reviewable Projects Regulation	CEAA 2012 Regulations Designating Physical Activities
<p>Construction and operation of an on-site electrical power generation facility with approximate capacity of 540 MW.</p>	<p>Part 4 – Energy Projects, Table 7 – Electricity Projects;</p> <p>Power Plants</p> <p>(1) A new facility with a rated nameplate capacity of ≥ 50 MW of electricity that is</p> <p>(b) A thermal electric power plant.</p>	<p>2. The construction, operation, decommissioning and abandonment of</p> <p>(a) A new fossil fuel-fired electrical generating facility with a production capacity of 200 MW or more.</p>
<p>Construction and operation of approximately 10 groundwater wells for the purposes of abstracting groundwater for make-up process water supply requirements, with extraction rate of 230 litres/second</p>	<p>Part 5 – Water Management Project, Table 9 – Groundwater Extraction Project</p> <p>(1) a new facility that</p> <p>(a) consists of one or more works for the extraction of groundwater to be used for the same project or where, in the reasonable opinion of the executive director, the works are so closely related they can be considered to form a single project,</p> <p>(b) is operated intermittently or continuously for ≥ 1 year, and</p> <p>(c) is designed to be operated so that groundwater is extracted at a rate of ≥ 75 litres/second.</p>	

Provincial and Federal Permits

Prior to Project construction and operation, a number of permits, licenses and approvals will be required in addition to the provincial and federal EA approvals. Major authorizations are listed in Table 3; this list will be revised as needed.



Table 3: Provincial and Federal Authorizations Required for Project Construction and Operation

Legislation	Permits, Licenses and Approvals	Governing Agency
Oil and Gas Activities Act	Facility Permit	British Columbia Oil and Gas Commission (BC OGC)
Oil and Gas Activities Act	Pipeline Permit	BC OGC
Heritage Conservation Act	Heritage Inspection permit	BC OGC/Archaeology Branch
Heritage Conservation Act	Heritage Alteration permit	BC OGC/Archaeology Branch
Forest Act	Road Use Permit	BC OGC
Forest Act	Master License to Cut	BC OGC
Water Sustainability Act	Changes in and about a stream approval	BC OGC
Water Sustainability Act	Short term use of water approval	BC OGC
Water Sustainability Act	Water License	BC OGC
Land Act	License of Occupation, Temporary Works Permit, Right of Way,	BC OGC
Environmental Management Act	Waste Discharge Permits (air emissions, solid wastes)	BC OGC
Oil and Gas Waste Regulation under Environmental Management Act	Approval for Introduction of Waste	BC OGC
Mines Act	Quarry Permit	BC Ministry of Energy and Mines
Wildlife Act	Wildlife Collection Permit	BC Ministry of Environment
Wildlife Act	Fish Collection Permit	BC Ministry of Environment
Commercial Transportation Act	Oversize/Overload Permit	BC Ministry of Transportation and Infrastructure
Drinking Water Protection Act	Drinking Water System Construction Permit	BC Ministry of Health
Drinking Water Protection Act	Drinking Water System Operations Permit	BC Ministry of Health
Public Health Act	Industrial Camp Waste Authorizations	BC Ministry of Health / BC Ministry of Environment
Fisheries Act	S. 35(2) Authorization	Fisheries and Oceans Canada (DFO)



Legislation	Permits, Licenses and Approvals	Governing Agency
National Energy Board Act	S.117 Export License	National Energy Board (NEB)
Navigation Protection Act	Notification and Approval	Transport Canada (TC)
Explosives Act	S. 7 Explosives Manufacture or Magazine License	Natural Resources Canada
Transportation of Dangerous Goods Act	Transportation of Dangerous Goods Permit	Transport Canada

Regional Setting

The Refinery Site, Marine Terminal Facility and Fuel Delivery Pipeline are located within the Regional District of Kitimat-Stikine (RDKS) which encompasses a land area of approximately 100,000 km². The RDKS provides local government services to the municipalities of Kitimat, Terrace, Stewart, Hazelton, and New Hazelton. The Project is located within the boundaries of the Kalum Land and Resource Management Plan (KLRMP) area. The KLRMP includes the communities of Terrace and Kitimat, and is located within the asserted traditional territories of the Kitselas, Kitsumkalum, and Haisla First Nations.

Within the KLRMP, land management direction is managed under three categories: General Resource Management; Resource Management Zones and Protected Areas. The Refinery Site falls within the General Resource Management category, which provides management directions for resource activities on Crown land and provides land management direction and objectives for a variety of resource development activities, such as recreation, tourism, botanical forest products, trapping, guiding, agriculture and grazing, and timber and mineral extraction.

The Fuel Delivery Pipeline corridor and Marine Terminal Facility fall within the District Municipality of Kitimat, which encompasses an area of 240 km². Under the KLRMP, the District is designated as a Settlement Zone, a sub-type of the Resource Management Zone. Within the Settlement Zone, both settlement and economic development are prioritized. The District of Kitimat, through the 2013 Official Community Plan (OCP) is responsible for the management of lands in the municipality.

Regional Environmental Studies

The Project is located within the Kitimat airshed, which due to its location at the head of the Douglas Channel, offers an attractive location for industries seeking a marine terminal along BC’s Pacific Coast to access foreign markets. A regional study, *Kitimat Airshed Emissions Effects Assessment*, was commissioned by the BC Ministry of Environment (MOE) to conduct a rapid scoping level assessment of the potential combined effects on the environment and human health from criteria air contaminants (sulphur dioxide (SO₂) and nitrogen dioxide (NO₂)) in the Kitimat airshed. The objective of the study was to provide information that regulators can use to understand and compare the potential risks under



different development scenarios to determine how many industrial facilities could be added to the Kitimat airshed without causing unacceptable impacts to human health and the environment.

The BC Ministry of Transportation and Infrastructure is completing a corridor study along the west side of the Douglas Channel (West Douglas Channel Corridor Study). The study is anticipated to be completed this year, and will lay out a proposed utility corridor (for pipelines and electrical lines) along the west side of the channel. The findings of this study may affect the pipeline corridor alignment.

Environmental studies in the Kitimat area have also been undertaken to meet environmental assessment (EA) requirements for the major resource development projects listed in Table 4.

Table 4: Past, Present, and Future Projects in the Kitimat Area

	Project Name	Description
Past	Eurocan Pulp and Paper Co. site	A pulp and paper mill producing linerboard and kraft paper for 40 years until it was closed down in January 2010.
	Methanex/Cenovus Terminal	The Methanex/Cenovus site was sold to Shell in 2011 and was decommissioned.
	Moon Bay Marina	The lease was terminated for this recreational marina in June of 2010. Rio Tinto Alcan currently owns the property.
Present	MK Bay Marina	Marina with 140 berths located at the head of Douglas Channel.
	Pacific Northern Gas Pipeline	Pacific Northern Gas' Western system's distribution system comprises approximately 1,180 km of distribution pipelines. The Western system transmission pipeline connects with the Spectra Energy pipeline system near Summit Lake, BC and extends 587 km to the west coast of BC at Kitimat.
	Rio Tinto Alcan Facility and Kitimat Modernization Project	Expanded facility, from 280,000 tpa to 420,000 tpa by 2015. Facility includes an existing 287 kV BC Hydro transmission line and a 230 kV transmission line to the Kemano powerhouse.
Future	Coastal GasLink Pipeline Project	Proposed 650 km natural gas pipeline from near Dawson Creek to Kitimat, BC. Pipeline capacity is 1.7 Bcf/day with a single compressor station, with provisions for up to 5 Bcf/day with five compressor stations.
	Enbridge Northern Gateway	Proposed oil export terminal in Kitimat. The project includes two parallel pipelines; one to transport bitumen from Edmonton to Kitimat (for export) and the other to transport condensate from Kitimat to Edmonton.
	Chevron Kitimat LNG Terminal Project	LNG plant and marine terminal facilities to be located at Bish Cove, with a 10 mtpa capacity. The project includes a 14 km natural gas pipeline to connect with Pacific Trail Pipeline near the Minette substation. The project includes re-developing the former Eurocan mill site as a construction camp.



	Project Name	Description
	Pacific Trail Pipelines Project	470 km, 914 mm natural gas pipeline between Summit Lake and Kitimat BC. Includes a new compressor station as well as upgrades to existing stations.
	Kitamaat Renewable Energy Corp – Hydro Power	Development of a 134-MW Crab/Europa hydroelectric project on Crab River and Europa Creek in British Columbia.
	LNG Canada (Shell)	LNG Terminal located in Kitimat Harbour with plant site on the former Methanex/Cenovus site. The final investment decision has been delayed until end of 2016.

Aboriginal Groups

There is a number of Aboriginal asserted territories potentially affected by the Project. The Refinery Site lies within the asserted traditional territories of the:

- Haisla Nation
- Lax Kw'alaams First Nation
- Kitselas First Nation.

The Marine Terminal Site is within the asserted traditional territory of the Haisla Nation.

Marine shipping activities cross the asserted traditional territories of the following Aboriginal groups:

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

Although there are no specific Métis communities within the Project area, there are two Métis Nation of British Columbia (MNBC) Chartered Communities in the vicinity: the Northwest BC Métis Association in Terrace and the Tri-River Metis Association in Smithers. The Métis Nation of British Columbia may be interested in this Project and will be consulted at a notification level.

All of these Aboriginal groups continue to practice traditional land use activities as an important part of their culture, which include fishing, harvesting, hunting, and trapping. In the summer and fall, plants (e.g., blueberries, raspberries, red huckleberries, gooseberries, crab apples, large cedar, cedar bark), wildlife (e.g., deer, grouse, moose, seals, black bear, grizzly bear, waterfowl), marine plant and mammal species (kelp, seaweed, seals, sea lions), marine birds and fish – especially all five species of salmon – are harvested and preserved for the winter months (British Columbia, 2002).



The Project is not situated on any federal land, although there are a number of federal Indian Reserves located near the Project Site.

Consultation and Engagement

Early notification and discussions with key local, provincial, and federal government agencies, Aboriginal groups, and other stakeholders began in 2012. The Proponent has shared informal Project information with the BC MOE, Ministry of Natural Gas Development (MNGD), Ministry of Forests, Lands & Natural Resource Operations (MFLNRO), Ministry of Finance, and the Ministry of Aboriginal Relations & Reconciliation (MARR). The Proponent has also met with Natural Resources Canada (NRCan), the District of Kitimat Council, and the City of Terrace Council.

To raise public awareness about the Project and receive preliminary feedback, the Proponent has held meetings with a number of community organizations (e.g., Chambers of Commerce, Rotary Clubs, Colleges), and has given presentations at town hall forums and conferences across BC including Kitimat, Terrace, Prince Rupert, Hazelton, Burns Lake, Kelowna, Victoria, and Vancouver. In an effort to understand public attitudes towards refineries, the Proponent commissioned two opinion polls in 2012 and 2013. The Mustel Group poll commissioned by Kitimat Clean in February 2013 showed that 66% of respondents supported the refinery proposal if an environmentally sound method of transporting bitumen from Alberta to Kitimat is used. The majority of BC residents agreed that: BC and Canada should add value to natural resources before exporting (86%), it was better to refine bitumen within B.C. rather than offshore (76%), and diversifying exports to find markets beyond the United States for Canada's petroleum products (70%) was supported.

The Proponent has also begun preliminary discussions with industry associations and utility providers including Canadian National Railway (CN), Rio Tinto, and Alberta oil producers.

The Proponent is committed to early and ongoing engagement with potentially affected and interested Aboriginal groups, with a particular focus on engaging with the Kitselas First Nation and the Haisla Nation regarding the proposed land-based Project sites. The Proponent has had preliminary and informal discussions about the Project with representatives from 19 First Nations, and presented the Project to 65 First Nations Chiefs and representatives at a Gitxsan event in Hazelton in 2012.

The Proponent's meetings to date with Aboriginal groups have focused on discussing preliminary Project information, environmental issues and potential economic and social benefits the Project may provide. During these meetings, the following issues and/or areas of interest were raised.

- *Project Benefits.* The potential benefits of the Project were well received by First Nations representatives, who have indicated that long-term jobs, indirect economic spin-off opportunities, and skills training are needed among their communities in northwest BC.
- *Environmental Management and Monitoring.* Representatives from both Kitselas and Haisla Nations have indicated that environmental management and monitoring of Project activities are a priority.



None of the representatives of Aboriginal groups that the Proponent has engaged with have raised objections or environmental concerns to the Project.

Project Description

The proposed Project consists of an oil refinery, rail yard, tank farm, refined fuel delivery pipelines, and a marine terminal for product export.

The refinery will process bitumen into fuel products, including gasoline, diesel, some ultra-low sulphur diesel, and jet fuel. Added byproducts will include butane, propane and sulphur pellets.

The proposed Project will comprise the following components:

- Bitumen Receiving Facility including a rail yard and bitumen offloading facility. The rail yard will consist of a rail yard, with storage for up to four unit trains. Each unit train will contain up to 120 rail cars. The rail cars will be delivered to the rail yard from the Canadian National Railway (CN) mainline. The rail unloading rack will consist of four tracks enabling the simultaneous unloading of up to 240 rail cars. The total maximum length of tracks in the rail yard will be 12 km.
- A Refinery capable of processing 400,000 barrels per day (bpd) of bitumen to produce approximately 460,000 barrels per day (bpd) of value added fuel products. The refinery will have two identical refinery processing trains with each train having 50 percent capacity (or 200,000 bpd). The Refinery will produce petroleum products, including diesel, ultra-low sulphur diesel, gasoline and jet fuel for export. It will also produce propane and butane products for the domestic and export markets. Estimated product volumes are:
 - ◆ 320,000 barrels per day (bpd) of diesel fuel and jet fuel (of which 50,000 bpd will be ultra-low sulphur diesel)
 - ◆ 119,000 bpd of gasoline
 - ◆ 11,000 bpd of butane
 - ◆ 9,000 bpd of propane.
- A Tank Farm containing 54 tanks of various capacity, ranging in size from 265,000 to 450,000 bbl per tank for the above-ground storage of bitumen, feedstock, processed hydrocarbons and intermediate products.
- A 23 km long Fuel Delivery Pipeline Corridor consisting of three 18" pipelines in a 45 m wide right-of-way to transport processed fuel products to the Marine Terminal Site.
- A Marine Terminal Facility for loading refined products on Very Large Crude Carrier (VLCC) tankers for export. The terminal will consist of a single tanker berth that will be equipped to load fuel onto the VLCCs. The Marine Terminal will also include a Material Off-loading Facility (MOF) and a utility berth with facilities necessary for accommodating the harbour tugs and utility work boats.



- Supporting infrastructure for the Project includes:
 - ◆ A Power and Cogeneration Facility consisting of two co-generation plants powered by two gas turbine generators each generating up to 120 megawatts (MW) power at ISO ambient conditions and four steam turbine generators with each generator capable of producing a maximum of 75 MW.
 - ◆ A third-party supplied natural gas pipeline tie-in to support power generation and refinery fuel requirements during Construction and Operations at the Refinery Site.
 - ◆ Water management facilities including groundwater supply (125,000 barrels per day (bpd)), water diversion structures, water treatment and two Surface Water Management Ponds. Water for refinery processes (total need of 250,000 bpd) will be recovered from the effluent treatment stream, the Surface Water Management Pond, and from groundwater. All water will be treated to meet cooling water make-up, process water, steam generation, firewater, and potable water requirements for the Refinery.
 - ◆ Electricity Transmission - The Proponent will tie into the existing 287 kV BC Hydro transmission line for its start-up electrical requirements and power supply to the Marine Terminal Site.
 - ◆ Upgrades and improvement of the existing Wedeene Forestry Service Road (FSR) and bridges for access to the site (as needed).
 - ◆ Permanent administration facilities, including offices and parking and maintenance facilities.
 - ◆ Temporary Construction facilities – including a temporary construction camp, site offices and parking, electricity supply to the Refinery Site (transmission line with sub-station – alignment to be determined based on BC Hydro re-routing study), water force main pipelines and pumps, storage, fuel and chemical storage facilities, laydown areas (e.g., to stockpile topsoil) facilities for the storage and disposal of waste, waste incinerator, sewage treatment and concrete batch plant.
 - ◆ Marine shipping of processed fuel products for export from the Marine Terminal Site to the Triple Islands Pilot Station.
 - ◆ Transportation of materials, supplies, equipment, and personnel to the Marine Terminal Site and Refinery Site via road, rail, and ship.

Project Phases and Physical Activities

The key phases associated with Project development include construction, commissioning and start up, operations, and closure (de-commissioning and reclamation).

Construction of the Project is expected to take approximately five years. A number of the site activities will be undertaken in parallel to enable efficient and timely construction of the Project. The sequence of activities to be undertaken during the construction phase is as follows:



- Development of on-site roads, upgrades and widening of the Wedeene Forest Service Road, culvert installations, bridge upgrades
- Early works mobilization
- Tie-in to utility lines
- Site establishment and site preparation (e.g., drilling and mapping soil horizons, dredging, surveying, geotechnical assessment, de-watering, installation of diversion ditches, blasting, clearing, grubbing, topsoil salvage and stockpile, site grading)
- Construction and pre-commissioning of the Bitumen Receiving Facility and railyard, Refinery, Tank Farm, Fuel Delivery Pipeline Corridor, Material Offloading Facility, utility and vessel berths)
- Progressive reclamation of temporary disturbed areas
- Re-use of non-potentially acid generating (n-PAG) rock generated from blasting activities as construction material at the Marine Terminal Facility
- Minimal clamshell dredging to construct the Material Off-loading Facility and disposal of material on-land.

Commissioning and start-up activities will be undertaken at various stages following installation of the processing facilities and associated infrastructure to ensure equipment and systems supporting the efficient and safe function of major Project components.

The operational phase of the Refinery is expected to last at least 50 years, with the following key activities:

- Continuous operation of the receiving rail yard
- Production, storage, and export of processed fuels
- Upgrading and maintenance of refinery processes, equipment, tank farm and marine terminal facilities
- Temporary shut-down for maintenance purposes every 5 years of the Refinery and Tank Farm facilities
- Safety related flaring and gas leak detection
- Solid and liquid waste management and disposal
- Progressive reclamation of disturbed areas
- Maintenance dredging as needed.

During the Project Closure and De-commissioning phase, Project components will be dis-assembled, sold, disposed of in appropriate facilities, or re-purposed. A Closure and Reclamation Management Plan will be developed to guide decommissioning, reclamation, and closure activities. The Project Site will be



reclaimed to an appropriate end land use objective, as approved by relevant government agencies and in compliance with Project EA conditions.

Waste Discharges

Solid, liquid and gaseous wastes will be generated from various components of the Project. Kitimat Clean will optimize the Project design to minimize the generation of atmospheric emissions and wastes. All waste streams will be identified and classified to help determine the appropriate handling and disposal / management practices for the waste material generated. Management plans will be developed and will include procedures for the handling, storage and disposal of waste including the monitoring of emissions and liquid discharges.

Air Emissions

The Refinery is expected to generate a number of atmospheric emissions from the gas turbines, hydrocarbon and acid gas flaring and various processes during operations. These will include greenhouse gases, volatile organic compounds, oxides of sulphur (SO_x), oxides of nitrogen (NO_x), ammonia (NH₄), particulate matter (PM₁₀, PM_{2.5}), and fugitive emissions (hydrocarbons and dust). Emissions will be managed in accordance with an Air Quality Management Plan.

Liquid Effluents

The Project will generate a number of effluents streams including domestic sewage treatment and treatment plant effluent. Stormwater will also be collected on-site in two Surface Water Management Ponds. All effluent, including water from the Surface Water Management Pond will be used to make-up process water requirements for the refinery. There will be no effluent discharges to the receiving environment.

Solid and Domestic Waste

Waste generated at the Refinery site is expected to include putrescible wastes (food waste, food oil), paper, wood, sewage sludge, and waste oil (not waste refinery oil). All waste material will be disposed of in accordance with a Solid and Domestic Waste Management Plan.

Blasted and Dredged Material

Construction of the Material Terminal Site in-water works will require the need to blast rock benches into the channel side to accommodate the vessel and utility berths, and materials off-loading facility. A total of approximately 30,000 m³ of material (20,000 m³ rock; 10,000 m³ of overburden) will be removed from along the shoreline and stored on-land in a stockpile. Where possible, clean n-PAG material will be re-used for construction purposes.



Hazardous Wastes

Potential sources of hazardous waste from the refinery includes hydrocarbon contaminated soil, medical waste from the onsite medical clinic, wastewater treatment plant sludge, batteries, and paints. Hazardous waste will be appropriately transported, stored, and disposed of in accordance with the Hazardous Waste Regulation under the *Environmental Management Act*, the *Transportation of Dangerous Goods Act*, and the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations under the *Canadian Environmental Protection Act*.

Project Schedule

The initial stages of the Project include conceptual and detailed engineering studies, and submissions of EA and permitting applications to the responsible regulatory authorities. The Application for an EA Certificate is anticipated to be submitted by the end of Q2 2017. The Proponent expects that EA approvals and permits for the Project will be obtained by the end of 2018, followed by the commencement of pre-construction activities. Construction of the Refinery will commence in Q1 2019 and is scheduled to take up to five years (2019-2023). Upon completion of the Construction Phase, commissioning and start-up of the Refinery will take another 6 months prior to full operation of the Refinery (2024). The Refinery is planned to operate for 50 years prior to de-commissioning. De-commissioning of the Project is estimated to require 5 years. A summary of key Project milestones is provided in Figure 3.

Key Project Activities	2016	2017	2018	2019	2020	2021	2022	2023	2024	2073	2074	2078
Stakeholder Consultation & Engagement	[Pink bar spanning 2016-2078]											
Aboriginal Group Consultation & Engagement	[Light Green bar spanning 2016-2078]											
Environmental Assessment Process & Authorization	[Green bar spanning 2016-2018]											
Permitting Process & Authorization	[Blue bar spanning 2016-2019]											
Engineering Studies	[Yellow bar spanning 2016-2019]											
Procurement & Construction				[Purple bar spanning 2019-2023]								
Commissioning & Start-Up									[Cyan bar spanning 2024]			
Operations										50 years		
Closure and De-Commissioning											5 years	



Federal Funding

No direct federal funding is required or provided for the Project.

Environmental Setting

The proposed Project is located between two parallel mountain belts (the discontinuous St. Elias-Insular mountains and the Coast-Cascade mountains) with Lakelse Lake to the north. To the south of the Project is the Kitimat Arm of the Douglas Channel, a deepwater fjord.

Kitimat Valley is influenced by maritime inflows from the Pacific Ocean that result in mild temperatures year round. Average summer temperatures are about 20°C while the average winter temperature is about 0°C. Average annual precipitation ranges from 2,200 to 2,300 millimeters (mm) with the majority occurring in winter in the form of snowfall (300 mm from November – March) while summer months are comparatively drier (60 to 90 mm).

The Kitimat airshed has been extensively studied in recent years due to existing and proposed industrial development activities in the Kitimat area. There are five continuous ambient air quality monitoring stations within a 50 km radius of the Project monitoring carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM_{2.5} and PM₁₀), sulphur dioxide (SO₂) and hydrogen sulphide (H₂S).

The Project is situated within the Kitimat River watershed catchment which drains an area of 1,456 km² into the Kitimat Arm of the Douglas Channel. Major streams crossing the Refinery Site and Fuel Delivery Pipeline Corridor include Raley Creek, Wedeene River, Little Wedeene River, Anderson Creek, Moore Creek and a number of unnamed tributaries. Many of these systems are fish-bearing and collectively provide habitat for Chinook, Chum, Coho, Pink and Sockeye Salmon; Cutthroat, Rainbow and Bull Trout; and Dolly Varden. These fish species meet the definition of an Aboriginal, Commercial or Recreational fishery under the *Fisheries Act*. There are two short, un-named, small streams that are located within the Marine Terminal Site footprint.

The Marine Terminal Site is located in the Kitimat Arm of Douglas Channel. The intertidal habitat types at the Marine Terminal site are found to primarily consist of rock walls and ramps with some shallow platforms as well as boulder beaches, while subtidal substrate is predominantly bedrock with overlying surface sediments, which consists of fines (primarily gravel and silt) and boulders. Eelgrass beds are primarily found in the Kitimat River estuary distant from the Marine Terminal to the northeast.

The marine waters surrounding the Project and its shipping activities support diverse marine species. Aquatic species present in the Douglas Channel and along the local shipping route include Coho, Chum, Pink, Sockeye and Chinook salmon; Pacific Herring; English Sole and Halibut; Dungeness Crab, shrimps and bivalves. Marine mammals that frequent the Douglas Channel and the shipping route include Killer Whale (Resident and Bigg's), Humpback Whale, Dall's porpoise, Harbor Porpoise, Steller Sea Lion and seals.



The proposed Project is located within the Ecodistrict No. 945, Coastal Gap Ecozone (No. 191) of the Pacific Maritime Ecozone, and within the Coastal Western Hemlock Biogeoclimatic (BGC) Zone (CWH). While the Marine Terminal and the Fuel Delivery Pipeline fall within the Submontane variant of the Very Wet Maritime subzone (CWHvm1), the Refinery falls within the Submontane variant of the Wet Submaritime subzone (CWHws1). CWHws1 is adjacent to CWHvm1 at similar elevations inland. Forests of CWHvm1 are typically comprised of Western hemlock, Amabilis fir and Western red cedar, along with Sitka spruce and yellow cedar, while forests of CWHws1 are typically comprised of Western hemlock, Amabilis fir and Western redcedar, along with Sitka spruce and lodgepole pine. There is one Old-Growth Management Area (Legal) found on the Refinery Site. Bog Adder's-mouth Orchid is also known to potentially occur in the Project area.

Wetlands are present in the general Project area and on the Refinery Site, with limited occurrences along the Fuel Delivery Pipeline Corridor. The most common wetland types are non-forested fens and bogs, which occur in scattered depressions and occasionally on slopes. Non-forested fens are typically dominated with willows, sedges and grasses, while sphagnum mosses are common but not dominant. In non-forested bogs, sphagnum mosses are dominant with the presence of dwarf lodgepole pine, Labrador tea and other ericaceous shrubs. The presence of red or blue-listed wetlands within the Project footprint with the potential to occur in the CWHws1 (e.g., western red cedar-sitka spruce-skunk cabbage wetland swamp) and CWHvm1 (e.g., Sitka willow-sitka sedge wetland swamp) biogeoclimatic zones will be determined during field studies.

Wildlife habitat in the Project area supports a number of large and small mammal species, including blacktailed deer, moose, grizzly bear, black bear, Pacific marten, striped skunk, potential marbled murrelet habitat, and snowshoe hare. Documented amphibian species that occur in the area include coastal tailed frog, Columbia spotted frog, northwestern salamander, long-toed salamander, and western toad. A variety of migratory and resident species of songbirds, raptors, waterfowl, and seabirds also occur in the area. A number of migratory bird species listed under the *Migratory Birds Convention Act* (1994) have the potential to occur in the Project area, including Canada goose, western sandpiper, greater white-fronted goose, mallard, mew gull, herring gull, California gull, and common merganser.

Species and ecological communities of conservation concern potentially found in the general Project area include seven plant species (e.g., cryptic paw, eminent bluegrass, white Adder's-mouth Orchid) and 19 plant communities; one terrestrial mammal species (grizzly bear), two amphibian species and five bird species (e.g., marbled murrelet); as well as three fish species and five marine mammal species. The Refinery Site is not located within designated critical habitat of any listed species at risk and there are no known occurrences of species at risk in the Project footprint. Potential marbled murrelet habitat is widely distributed throughout the vicinity, including within the Refinery Site, Fuel Delivery Pipeline Corridor, and the Marine Terminal Site.

Tenures for commercial, recreational and other development activity (e.g., forestry, mineral exploration) are held in the vicinity of the Project. There are active cutblocks crossing the Refinery Site and the northern end of the Fuel Delivery Pipeline Corridor. Logging has occurred historically over a large portion



of the Marine Terminal Site. One mineral tenure overlaps the Refinery Site, and one crosses a very small segment of the Fuel Delivery Pipeline Corridor. A heli-ski commercial recreation tenure is located to the west and outside of the Project footprint. There is a guided freshwater recreation tenure held for the Kitimat River. There are no drinking water intakes within the Project footprint. There are three water licenses that occur along the current alignment of the Fuel Delivery Pipeline Corridor. The Project footprint crosses five registered traplines. There are 8 groundwater wells in the footprint of the Fuel Delivery Pipeline Corridor.

Potential Environmental Effects

Air Quality and Climate

Construction and operation of the Project is expected to generate CO₂, CO, volatile organic compounds (VOCs), sulphur oxide (SO_x), nitrogen oxides (NO_x), ammonia (NH₄), PM₁₀, PM_{2.5}, and fugitive emissions (hydrocarbons and dust). Dispersion of criteria air contaminants generated during construction and operational activities will be identified and assessed during the EA process, and adequate mitigation measures identified.

Noise

Construction and operational activities associated with the development of the Project is anticipated to generate noise level in excess of the current ambient levels. Noise modeling to evaluate potential effects on receptors (humans, wildlife) in the area of the Project during construction, operations, and de-commissioning will be completed as part of the EA process along with the identification of mitigation measures to minimize effects.

Soils and Terrain

Construction activities such as site clearing and foundation preparation, earthworks and blasting may physically disturb and alter the soils and terrain at the Refinery Site, Marine Terminal Site and along the Pipelines Corridor. Detailed mitigation measures will be identified and implemented to minimize adverse effects of construction on soils and terrain. This will be included in a Construction Management Plan that will be prepared during the EA.

Groundwater

The refining process has been designed to be a closed-loop system, with all effluent streams from the refinery processes directed to a wastewater treatment system and used to meet the Refinery make-up water process requirements. No effluent generated from the Refinery will be discharged to the receiving environment. In addition to the treated water that will be used for the refinery processes, the remaining balance of water requirements for the refinery will be made up from available groundwater and stormwater resources. Approximately 840 m³/hr. (125,000 bpd or 230 liters/second) of groundwater will



be needed during Operations, which has the potential to affect groundwater supply for other users in the regional area. An estimated 10 groundwater wells will be required for the Project.

Effects on groundwater quality are not anticipated as a result of the Project; the Tank Farm will be equipped with primary and secondary containment and an Emergency Spill Response Plan will be implemented. Requirements under the *Water Sustainability Act* will be met for groundwater protection and abstraction.

Surface Water

Construction and operational activities of the Project have the potential to degrade surface water quality in the vicinity of the Project, and alter surface water flows as a result of diversion and de-watering activities. No liquid wastes will be discharged from the refinery as all effluent streams will be treated before being re-used in the various refinery processes. A water balance will be developed and water quality modeling undertaken to determine the potential effects on all surface water bodies and identify mitigation measures to minimize these flow and quality effects. A Stormwater Management Plan will also be implemented to manage run-off and control erosion and sedimentation during Construction site preparation, clearing, and earthworks activities.

Fish and Aquatic Resources

The Project has the potential to cause serious harm to Aboriginal, Commercial, and Recreational fish and fish habitat as defined under the *Fisheries Act*, as well as other aquatic resources (i.e., benthic invertebrates, sediment quality) in streams in the footprint, local and regional Project area as a result of:

- Physical loss, alteration or disturbance to fish habitat from site preparation, clearing, fish salvage, and crossings (bridge upgrades, pipeline and transmission line crossings)
- Increased or decreased stream flows with the potential to affect fish habitat productivity (e.g., flooding, scouring)
- Surface water degradation (high turbidity, total suspended solids, nitrogen residues, accidental spills)
- Sedimentation and erosion of fish habitat.

A detailed assessment of potential adverse effects to fish and fish habitat and aquatic resources will be undertaken during the EA process. If required, a Fish Habitat Offsetting Plan will be developed in discussion with DFO and a Fish and Aquatic Resources Management Plan will be developed and implemented for all Project phases to mitigate the potential for significant adverse effects.

Terrestrial Ecology

The construction and operation of the Project is expected to result in the direct loss, alteration (e.g., edge effects, foliar injury) and fragmentation of vegetation resources through site preparation clearing and earthworks activities; the introduction of invasive species; and air and fugitive emissions. Potential effects



on ecological communities at risk (i.e., wetlands, old-growth forests, rare plants) will be evaluated and a Vegetation Management Plan will be implemented to mitigate adverse effects.

Wildlife and Wildlife Habitat

The Project area supports a variety of terrestrial wildlife species and provides suitable staging and overwintering habitat for migratory birds, waterfowl and shorebirds. Potential effects on terrestrial wildlife and wildlife habitat, migratory birds listed under the *Migratory Bird Convention Act* and species at risk associated with Project construction and operation include changes in wildlife habitat availability (including habitat loss and habitat alteration), sensory disturbance to wildlife, mortality or injury, and an increased potential for bear-human conflicts. A detailed assessment of adverse effects to terrestrial wildlife and wildlife habitat and aquatic birds, including species at risk will be undertaken during the EA and mitigation measures will be proposed to minimize these effects

Marine Resources

Construction and operation activities of the Project have a potential to adversely affect marine plants (as defined in s. 47 of the *Fisheries Act*), fish and marine mammals through site preparations, clearing, blasting and dredging, and piling activities associated with the marine structures and shipping activities. Potential effects include changes in sediment and water quality from maintenance dredging, fish habitat alteration as result of marine terminal berth structures and dredging activities, and direct mortality or physical injury or disturbance to fish and marine mammals from elevated underwater noise as a result of pile driving and vessel movement. Marine foreshore disturbance has the potential to affect fish, plants, animals, invertebrates and their habitats. A detailed assessment of adverse effects to the marine environment and resources will be undertaken during preparation for the EA application and detailed mitigation measures proposed to minimize these effects.

Potential Economic Effects

The majority of economic effects from the Project are expected to be beneficial. Potential adverse economic effects may result from:

- Effects of changes to labor availability for the proposed Project as well as other businesses and Projects in the region
- Indirect effects of increased marine traffic on commercial fishing and tourism opportunities
- Loss of income after the Project is de-commissioned.



Potential Social Effects

The Project has the potential to result in beneficial and adverse social, land use, and visual quality effects to local and regional communities and commercial tenure holders in the Project area. Potential adverse effects include:

- Project-induced demographic changes on local community networks and culture
- Project-induced demographic changes on local services, amenities, and infrastructure including health care, education, temporary housing, transportation, emergency services, and recreational facilities
- Reduced access and loss of user enjoyment for recreation, tourism and navigational capabilities
- Increased local traffic and effects on public safety
- Effects on visual quality of existing viewsapes for the public, recreational users, and Aboriginal groups as a result of activities such as flaring, VLCC tanker shipping and associated marine vessel operation
- Effects of Project-related activities on residents, commercial tenure holders, trapline industrial property owners, other stakeholders and their current use of lands and resources.

Potential Human Health Effects

The following potential human health effects are anticipated as a result of the Project:

- Effects of increased air emissions during construction and operations
- Effects of increased noise levels associated with construction phase activities
- Effects of increased noise levels during the operations phase associated with vehicle movement, train cars and maintenance works
- Effects of increased traffic on local populations, including potential increase in accidents and injuries
- Reduced community well-being (i.e., increased stress) as a result of noise and light emissions, increased traffic, and increased populations in the Project area
- Potential effects on the quality of country foods.

Potential Effects on Heritage and Archaeological Resources

Heritage and archaeological resources in British Columbia are protected under the BC *Heritage Conservation Act*. Early discussions with Aboriginal groups as well as government representatives indicate that the potential for heritage and archaeological resources within the proposed Project footprint is low. A BC Ministry of Industry and Small Business Development Study conducted by Management Services in 1986 entitled "A Selection of Undeveloped Strategically Located Industrial Sites in British Columbia, Canada" states that archaeological potential on the Wedeene site is limited.



Regardless, there could be unknown artefacts with the potential to be disturbed, altered, or destroyed as a result of Project activities. An overview assessment and site investigation will be undertaken during the EA process. A Heritage Management Plan including chance-find procedures will be implemented prior to any ground disturbance activities.

Potential Indirect Environmental Effects on Aboriginal People

Potential effects on Aboriginal peoples as a result of Project-induced changes to the environment, including health, socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes, or any structure that is of historic archaeological, paleontological, or architectural significance will be evaluated during the EA process.

During preparation for the EA application, the Proponent will work with Aboriginal groups to undertake traditional knowledge/traditional land use (TK/TLU) studies, ethnographic studies, and socio-economic studies, and identify potential direct and indirect Project effects as well as develop mitigation, management, and accommodation measures as needed.

A preliminary list of potential indirect effects on Aboriginal peoples is presented in Table 5.

Table 5: Potential Indirect Effects on Aboriginal People

Categories	Potential Indirect Effects on Aboriginal People
Socio-economic	<p>Potential effects to fisheries, tourism, and other commercial or industrial interests in the Project area.</p> <p>Potential effects to current use of, or access to, lands and resources for traditional purposes.</p> <p>Demographic changes on local community networks and culture; and Increased pressure on local services and amenities, including health care, education, temporary housing, transportation emergency services, and recreational facilities.</p>
Human Health	<p>Potential effects on quality of country foods as a result of air emissions, soil and lake acidification</p> <p>Potential effects on availability of country food resources due to habitat loss, alteration, sensory disturbance, and serious harm to fish habitat.</p> <p>Safety hazards caused by Project construction and operation.</p>
Physical and Cultural Heritage	<p>Potential modification, damage, or loss of archaeological, spiritual, or cultural heritage features or practices.</p> <p>Potential modification, damage, or loss of any structure, site, or thing that is of historical, archaeological, paleontological or architectural significance (e.g., Culturally Modified Trees).</p>
Traditional and Cultural Activities	<p>Potential for reduced availability, loss of, or access restrictions to marine, terrestrial, wildlife or fish resources currently used for traditional harvesting, hunting, or fishing purposes in the Project Site or along shipping lane.</p> <p>Potential changes to or loss of access to asserted traditional land use areas in the Project Site or along shipping lane.</p>



Accidents and Malfunctions

The effects of accidents and malfunctions that could potentially arise during the construction and operation of the Project will be assessed during preparation for the EA application to satisfy any federal requirements under CEAA and/or any provincial requirements. An assessment of the Project related accidents and malfunctions on the immediate and surrounding environment will be undertaken. This assessment is anticipated to include the potential effects associated with incidental spills, fire, traffic issues, or third party damages.

Cumulative Effects

A number of past, existing, and reasonably foreseeable future projects occur or are planned in the Project area. A cumulative effects assessment will be conducted to meet federal and provincial requirements. This assessment will evaluate the potential for residual adverse effects of the Project to interact with the residual effects of past, present, and reasonably foreseeable future projects and activities in the Project area.

Transboundary Effects

The Project footprint is located approximately 235 km from the Canada-USA border and 965 km from the BC-Alberta border. Atmospheric emissions during Project Construction and Operations are not anticipated to result in any transboundary environmental effects beyond the province or to the USA, based on a preliminary review of the design of the proposed Project, the Project location, and available regional information. Although the Project is not situated on federal land, the Project will contribute approximately 11.1 million tonnes of CO_{2e} to the Kitimat airshed, which will contribute to Canada's national greenhouse gas (GHG) emissions annually during operations.

Surface water drains from the Project area into the Kitimat Arm of the Douglas Channel, which is approximately 500 km from the USA waters. Since there are no effluent discharges from the Project, there is no potential for transboundary surface water quality effects.

The Project marine shipping route between BC and Alaska of USA is frequently used by marine vessels, including BC ferries and other commercial vessels. Routine shipping activities are not anticipated to induce adverse transboundary effects (e.g., air quality, health) to the USA.