



Tilbury Phase 2 LNG Expansion Project

Initial Project Description Summary

February 2020



List of Contributors to the Project Description

| Contributors | Credentials | Section(s) | Relevant Experience |
|-----------------|-----------------------------|---|--|
| Todd Smith | P.Eng. | Section 2 (Project Overview) | 20+ years experience in engineering, construction and business development for energy projects and utilities |
| Ian Finke | P.Eng., MBA | Section 2 (Project Overview) | 20+ years experience in engineering and business development for various industries |
| Olivia Stanley | MA, Public Policy | Section 11 (Engagement and Consultation with Indigenous Groups) | 6 years of Indigenous engagement experience |
| Courtney Hodson | BBA | Section 12 (Engagement and Consultation with Governments, the Public and other Parties) | 4 years of Stakeholder engagement experience |
| Lynne Chalmers | M.Sc., Conservation Ecology | All | 11 years of experience writing environmental impact assessments for oil and gas projects |
| Carmen Holschuh | M.Sc., RPBio | All | 15 years of BC and oil and gas regulatory experience |
| Tara Lindsay | B.Sc., RPP, P.Ag. | All | 12 years of BC and oil and gas regulatory experience |
| Mike Climie | B.Sc., R.P.Bio., P.Biol. | Section 10 (Environmental, Economic, Social, Heritage and Health Effects) | 12 years of BC and oil and gas regulatory experience |
| Andy Smith | M.Sc., R.P.Bio., P.Biol | Section 10 (Environmental, Economic, Social, Heritage and Health Effects) | 20+ years of experience in ecology |

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Acronyms and Abbreviations

| | |
|------------------------|--|
| AIF | Archaeological Information Form |
| AIA | Archaeological Impact Assessment |
| AOA | Archaeological Overview Assessment |
| BC | British Columbia |
| BC CDC | BC Conservation Data Centre |
| BC EAA | BC <i>Environmental Assessment Act</i> |
| BC EAO | BC Environmental Assessment Office |
| BCF | billion cubic feet |
| BC MFLNRORD | BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development |
| BC OGAA | BC <i>Oil and Gas Activities Act</i> |
| BC OGC | BC Oil and Gas Commission |
| BCUC | British Columbia Utilities Commission |
| CAD | Consultative Areas Database |
| CEA | Cumulative Effects Assessment |
| CH ₄ | methane |
| cm | centimetre(s) |
| CNA | Cowichan Nation Alliance |
| CO ₂ | Carbon dioxide |
| CO ₂ e/year | Carbon dioxide equivalent per year |
| CSA | Canadian Standards Association |
| CTS | Coastal Transmission System |
| Delta | City of Delta |
| DFO | Fisheries and Oceans Canada |
| EA | Environmental Assessment |
| EAC | Environmental Assessment Certificate |
| EMP | Environmental Management Plan |
| FEED | Front-End Engineering Design |
| GBA+ | Gender-based Analysis Plus |
| GHG | greenhouse gas |
| ha | hectare(s) |
| HCA | <i>Heritage Conservation Act</i> |
| IA | Impact Assessment |
| IAA | <i>Impact Assessment Act</i> |
| IAAC | Impact Assessment Agency of Canada (replaced CEAA) |
| IBA | Important Bird Area |
| km | kilometre(s) |
| km ² | square kilometre(s) |
| kV | kiloVolt(s) |

| | |
|----------------|---------------------------------------|
| LNG | liquefied natural gas |
| LSA | Local Study Area |
| m | metre(s) |
| m ³ | cubic metre(s) |
| masl | metre(s) above sea level |
| mtpa | million tonne(s) per annum |
| NO | nitrogen oxide |
| NRCan | Natural Resources Canada |
| OBE | Operating Basis Earthquake |
| OCP | Official Community Plan |
| OIC | Order-In-Council |
| PGV | Peak Ground Velocity |
| PJ | petajoule(s) |
| Project | Tilbury Phase 2 LNG Expansion Project |
| QEP | Qualified Environmental Professional |
| ROW | right-of-way |
| RSA | Regional Study Area |
| SARA | <i>Species at Risk Act</i> |
| SSE | Safe Shutdown Earthquake |
| t/d | tonnes per day |
| TBD | to be determined |
| TLU | Traditional Land Use |
| VC | Valued Component |
| WesPac | WesPac Midstream Ltd. |
| WMA | Wildlife Management Area |

1. Introduction

FortisBC Holdings Inc (FortisBC) with its natural gas subsidiary FortisBC Energy Inc. is proposing to expand its existing liquefied natural gas (LNG) facility at 7651 Hopcott Road, on Tilbury Island in the City of Delta (Delta), British Columbia (BC) (Figure 1-1) (the Project Site).

The Tilbury Phase 2 LNG Expansion Project (the Project) is being proposed to increase the production and storage of LNG to improve security of supply to FortisBC's approximately 1.1 million natural gas customers in BC and to supply incremental LNG to the marine transportation and export markets. The Project also introduces opportunities to upgrade existing infrastructure to current design standards and technologies and to align with the Government of BC's CleanBC Plan.

The Project comprises an expansion of up to 162,000 cubic metres (m³) (approximately 4.0 petajoules [PJ]) of LNG storage and up to 11,000 tonnes per day (t/d) of LNG production. The Project will receive natural gas at the Project Site through established pipeline systems. It will connect to FortisBC's existing LNG facilities (such as, vapourization and gas send-out facilities) to support security of natural gas supply to gas utility customers and the proposed WesPac Midstream Ltd. (WesPac) Tilbury Marine Jetty project for marine LNG bunkering and LNG export.

There is a need to increase the LNG storage in the Region as back-up to the Regional gas supply system. LNG production will be constructed as LNG market demand is realized. This could be in the form of two or more LNG production trains built initially or phased over multiple years with ultimate completion anticipated prior to 2028. Detailed engineering and construction for the Project is expected to begin in 2021/22.

The Project is located within Delta, on a long-standing brownfield site owned by FortisBC and zoned as I7: High Impact Industrial for uses including natural gas and petroleum products. The existing FortisBC LNG facility includes the original production and storage facility in operation since 1971 (base plant), a Phase 1 production and storage expansion in operation since 2018 (Phase 1A), and ancillaries including power supply, gas supply, and both natural gas and LNG distribution facilities to serve public utility customers. Parts of the Project are expected to occur within the footprint of the existing 50-year-old liquefaction and storage plant. Facilities that are not a part of this Project include the existing production and storage facilities including Phase 1 expansions as these activities do not trigger a Provincial Environmental Assessment (EA) pursuant to the BC *Environmental Assessment Act* (BC EAA) or Impact Assessment (IA) pursuant to the Federal *Impact Assessment Act* (IAA) and *Physical Activities Regulations* and are independent of the Project.

The Project is reviewable under the current BC EAA (Reviewable Projects Regulation, Part 4) and under Canada's IAA and *Physical Activities Regulations* (commonly known as the Project List). Further details about the Provincial and Federal processes is provided in Section 4.

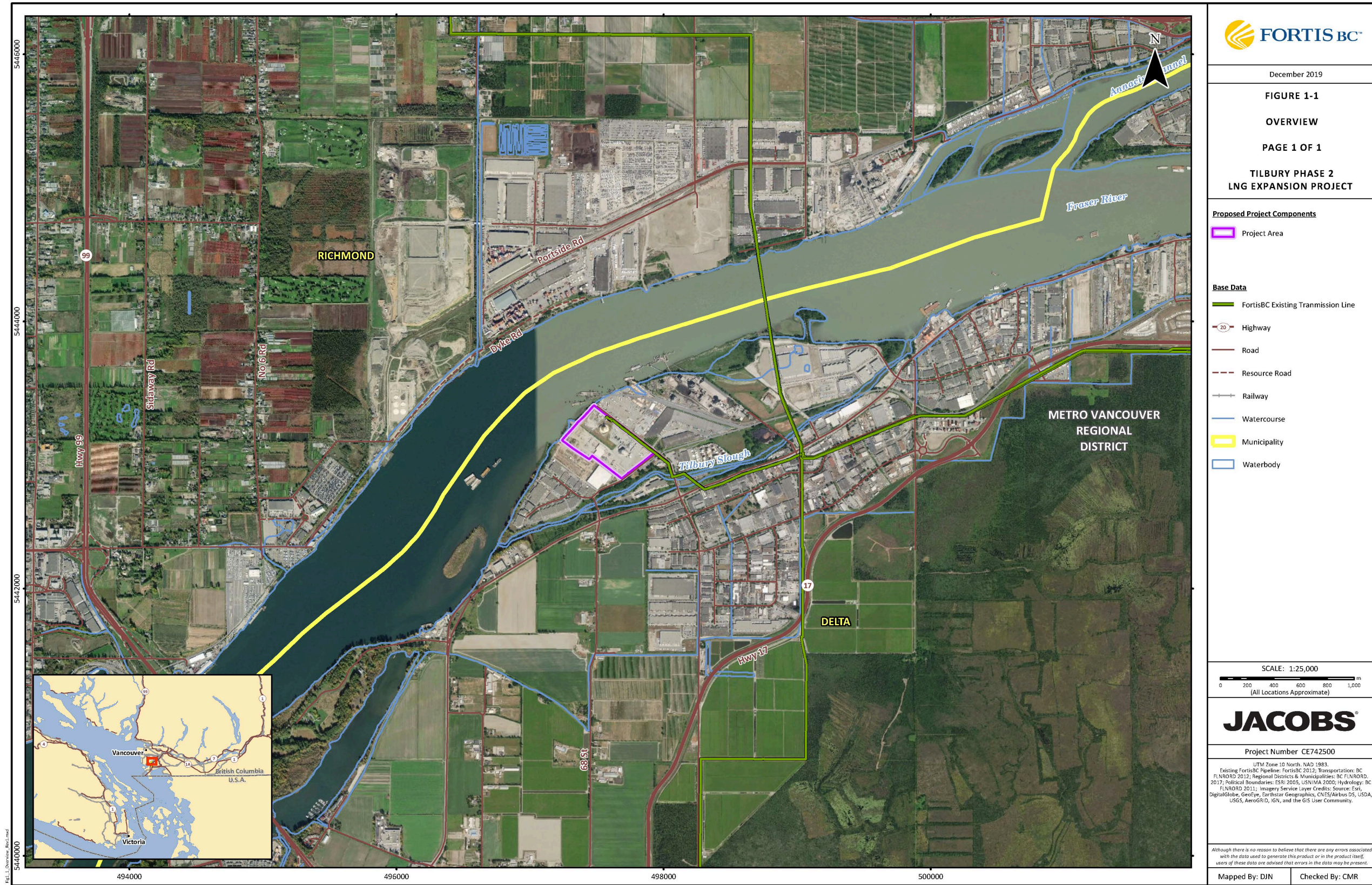


Figure 1-1. Project Overview

1.1 Proponent Information

1.1.1 Project Contacts

Table 1-1. Project Information and Key Contacts

| | |
|-------------------------------|---|
| Project Name | Tilbury Phase 2 LNG Expansion Project |
| Proponent | FortisBC Holdings Inc. |
| Proponent Corporate Address | 16705 Fraser Highway Surrey, BC V4N 0E8 |
| Proponent Website | http://www.fortisbc.com |
| Project Website | https://talkingenergy.ca/project/tilbury-LNG-expansion-project |
| Proponent President and CEO | Roger Dall'Antonia |
| Principle Contacts for the EA | Todd Smith Business Development Manager Tel: 604-785-6514 Email: todd.smith@fortisbc.com |

1.1.2 Corporate Overview

FortisBC Holdings Inc. (FortisBC) has subsidiary companies that include gas, LNG and alternative energy utilities in BC. FortisBC Energy Inc. (FEI) is the gas utility and owner/operator of the Tilbury LNG facility. FEI is a subsidiary of FortisBC, a BC based company, which is a subsidiary of Fortis Inc. a publically traded company on both the TSX and NYSE. Fortis Inc. is also the parent company of FortisBC Inc. (FBC) an electrical utility operating in BC. Combined, FortisBC and FBC employ more than 2,400 people working to deliver natural gas, electricity, and energy solutions to 1.2 million customers across 135 communities in BC. FortisBC owns and operates approximately 49,000 kilometres (km) of natural gas transmission and distribution pipelines, and FBC owns and operates approximately 7,260 km of electric transmission and distribution powerlines and four hydroelectric generating plants. FortisBC's infrastructure assets include BC's largest underground natural gas storage facility and two LNG production and storage facilities.

FortisBC is committed to supporting BC's transition to a low-carbon economy. To do this successfully, a balance needs to be achieved with respect to financial, environmental, and social factors. In 2018, FortisBC released its plan to reduce emissions, the Clean Growth Pathway to 2050, as part of the consultation surrounding the Province's CleanBC strategy. The Clean Growth Pathway outlined four key areas to make substantial reductions in greenhouse gas (GHG) emissions across the Province including positioning BC as a vital domestic and international Liquefied Natural Gas (LNG) provider to lower global GHG emissions.

In September of 2019, FortisBC announced one of the most ambitious emissions reduction targets in the Canadian utility sector by committing to work to reduce customers' emissions by 30 percent overall by the year 2030. FortisBC aims to achieve its "30 by 30" targets in part by supporting a shift away from higher emitting energy sources such as coal, bunker oil, and diesel to cleaner burning LNG in the global market for energy. FortisBC's focus on sustainability is about prioritizing the health and well-being of customers, communities, the environment, and employees. FortisBC is an equal opportunity employer and supports an inclusive and diverse work-force.

FortisBC is committed to building effective Indigenous relationships and to ensuring the structure, resources, and skills necessary to maintain these relationships are in place. To meet this commitment, the actions of FortisBC and its employees are guided by the principles included in FortisBC's Statement of Indigenous Principles included in Section 8.3.1.

Sustaining and enhancing the environment is a priority for FortisBC. FortisBC is committed to delivering safe, reliable energy in an environmentally responsible manner to all of the communities that we serve. As part of meeting this commitment FortisBC will:

- comply with safety and environmental legislation, and operate in accordance with accepted industry practices and standards, and require the same of our contractors
- commit to injury and incident prevention, the conservation of resources, and the prevention of pollution
- identify and manage operational hazards, and minimize risks that have the potential for adverse consequences
- train employees to be aware of and meet their responsibilities in the areas of safety and environmental stewardship
- communicate openly with employees, the general public, and all stakeholders about activities and the potential impacts on safety and environment
- support community-oriented safety and environmental initiatives and programs
- review the safety and environmental policy on a regular basis, regularly monitor safety and environmental performance, and strive for continual improvement

1.1.2.1 The Tilbury LNG Facility

The original Tilbury LNG facility was constructed in Delta on Tilbury Island in 1971 and has been operating successfully as a storage and peak shaving facility for the benefit of natural gas utility customers in BC. A peak shaving facility allows for uninterrupted supply to customers under peak demand (winter) conditions or during periods of gas supply disruption by re-gasifying the stored LNG and injecting it back into the local grid as gas send-out. The original Tilbury LNG facility has LNG production of approximately 60 t/d and LNG storage of 28,000 m³ (0.69 PJ). In addition to the liquefaction and storage tank, the original Tilbury LNG facilities also include LNG vaporizers for returning liquid to a gas, interconnects (gas feed and send-out), liquefaction refrigerant storage and truck loading. Portions of the nearly 50-year-old LNG facility may be retired and removed as part of the normal course of the regulated utility business at some point in the future. These activities will be considered and coordinated with all other activities at the FortisBC Tilbury LNG facility including operation of Phase 1 LNG facilities and construction of the proposed Project and will be subject to authorizations and permits from applicable regulators including the BC Utilities Commission and BC Oil and Gas Commission.

FortisBC began construction of its Tilbury “Phase 1” expansion in 2014, which was approved by the BC government through BC Order-in-Council (O.C. 557/2013) Direction No. 5 to the British Columbia Utilities Commission under the *Utilities Commission Act* (OIC). The OIC approves certain projects that the BC government determined were in the public interest for the public utility to undertake and how costs should be treated by the BC Utilities Commission, the regulator for public utilities in the province. The facilities that make up the Phase 1 Expansion included in the OIC comprise:

- Phase 1A facilities: additional LNG production, storage tank, and truck loading facilities (LNG storage: 46,000 m³ [1.1 PJ]; liquefaction: 700 t/d)
- Phase 1B facilities: connecting to Phase 1 tank, additional LNG production, and distribution
- Coastal Transmission System (CTS) expansion: various FortisBC Energy Inc gas transmission expansion projects including the upgrade of an approximately 1 - 3 km line between Tilbury Gate Station and Tilbury LNG Facility (Tilbury Gate Station).

None of the Phase 1 expansion facilities, either on their own or collectively, trigger an environmental or impact assessment under either Provincial or Federal legislation. The Province has approved Phase 1 to proceed since 2013 and are currently either in operation or engineering stage. Phase 1 would proceed independently of the proposed Project. Phase 1 facilities can be built and operated independent of Phase 2 and are needed and would proceed whether or not the proposed Project proceeds. The Project would

utilize existing and Phase 1 facilities including an interconnect with the Phase 1 230-kV substation (for liquefaction), and connection to the LNG vaporizers (from LNG tank) to provide additional LNG for incremental gas send-out duration to support the natural gas system and resiliency. Phase 1 facilities or activities have been and will be subject to regulatory and permitting review including public and Indigenous consultation requirements through the BC OGC and other agencies. Figure 1-2 shows the Tilbury existing and Phase 1 expansion facilities. Table 1-2 provides a summary of the Tilbury existing and Phase 1 expansion facilities and activities. A description of the proposed Project (Phase 2) is provided in the next section.

WesPac is proposing to construct a marine jetty next to the Project Site to supply LNG to the marine transportation sector and for export. WesPac's project is separate and distinct from the proposed Project. The WesPac project is currently undergoing a combined Federal and Provincial EA, under a substituted Provincial process that is led by the BC EAO that includes assessments for shipping and loading activities that considers the Phase 1 and Project (Phase 2) LNG production and distribution capacities.

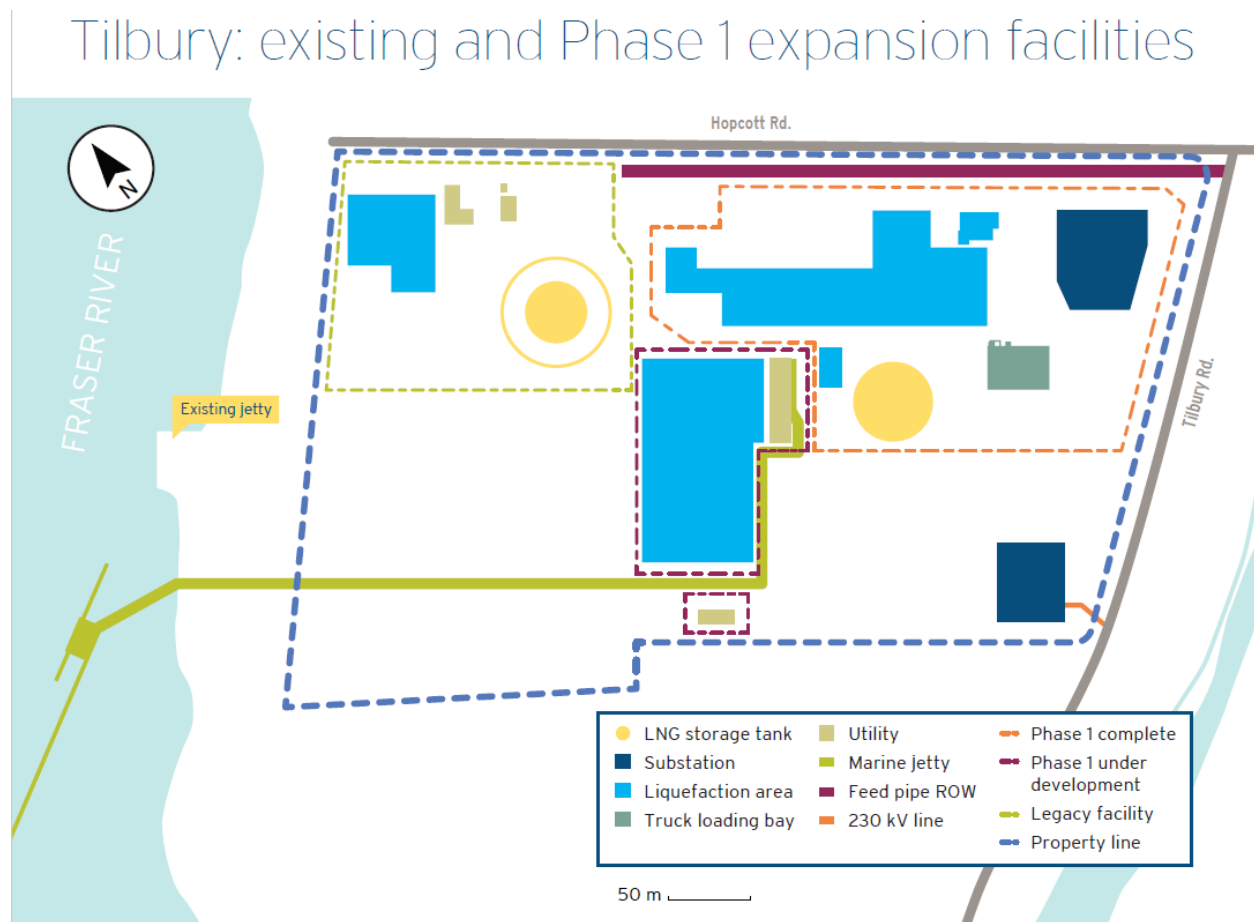


Figure 1-2. Existing and Phase 1 Facilities

Source: FortisBC

Table 1-2. Tilbury Existing and Phase 1 Facilities

| Phase / Expansion | Description | In-Service Date | Size | Owner | Key Regulator |
|--------------------------------|---|-----------------|---|-------|---|
| Tilbury base plant | Original LNG facility | 1971 | Tank: 28,000 m ³ (0.69 PJ) LNG: 60 t/d | FEI | BCUC / BC OGC / Metro Vancouver |
| Tilbury base plant retirement | Retirement and removal of original 50-year-old facilities as required and approved by BCUC and BC OGC | N/A | As above and including related systems | FEI | BCUC / BC OGC |
| Tilbury 1A | Additional tank, load-out facilities and liquefaction | 2018 | Tank: 46,000 m ³ (1.1 PJ) LNG: 700 t/d | FEI | BCUC / BC OGC / Metro Vancouver (emissions) |
| Tilbury 1B | Incremental liquefaction, and gas send-out facilities | 2023 | LNG: up to 2,000 t/day | FEI | BCUC / BC OGC / Metro Vancouver (emissions) |
| Powerline | Additional power supply from BC Hydro's Arnott substation to Tilbury site | 2022 | 6 km of 230 kV powerline | TBD | BCUC (utility service) |
| CTS (Gas transmission upgrade) | Upgrade to gas transmission facilities between Tilbury Gate Station and Tilbury LNG facility | 2022 | 1 – 3 km, 30-inch natural gas transmission pipe | FEI | BCUC / BC OGC |

Notes:

BCUC = British Columbia Utilities Commission

FEI = FortisBC Energy Inc.

TBD = to be determined – Discussions ongoing with BC Hydro

N/A = Not applicable

2. Project Overview

The Project comprises an expansion beyond the existing and Phase 1 facilities of up to 162,000 m³ (4.0 PJ) of LNG storage and up to 11,000 t/d of LNG liquefaction. The LNG storage tank is needed to provide security of public utility service and resiliency against possible interruptions of natural gas supply to the Region (as occurred in the winter of 2018-2019) but will also be sized and designed to have capacity to meet the future demands of the LNG bunkering and export markets. The LNG production will be built in phases of one or more 'liquefaction trains' to meet market demand. The proposed Project, also referred to as Tilbury "Phase 2", is detailed in the Table below and shown in Figure 2-1.

Detailed engineering for the Project is expected to begin in 2021; the tank installation will be a priority whereas liquefaction trains may be phased over multiple years depending on demand. The LNG storage tank is a priority, required to provide security of supply to FortisBC's approximately 1 million natural gas customers including homes, businesses, schools, hospitals, government operations, transportation customers, and industries.

Table 2-1. Tilbury Proposed Phase 2 Facilities

| Phase | Description | In-Service Date | Size | Owner | Key Regulator |
|------------------------|-------------------------|-----------------|--|-----------------|--|
| Tilbury 2 Tank | LNG storage tank | 2024 | Tank: up to 162,000 ¹ m ³ (4.0 PJ) | FortisBC or FEI | BC EAO / IAAC Threshold: 136,000 m ³ |
| Tilbury 2 Liquefaction | LNG liquefaction trains | 2024-2028 | Up to 11,000 t/d | FortisBC | IAAC Threshold: 3,000 t/d |

In late fall of 2018, the region experienced a significant natural gas supply disruption. In light of this incident, FortisBC has re-evaluated resiliency within our system and have concluded that additional local area storage is needed to prevent widespread outages (short duration) and/or allow planned curtailment to avoid a system-wide collapse (loss of system pressure).

Without additional system resiliency, these gas supply disruptions or constraints have the potential of causing widespread and long-lasting natural gas outages for FortisBC's customers and the region as a whole. Natural gas is the primary heating source for many in the region with low temperatures possible through the winter season. The Project's proposed LNG storage and incremental liquefaction will provide additional resiliency to the FortisBC natural gas system.

In addition, demand for cleaner burning fuels is growing globally as new emission regulations come into force. Countries like China are shifting their fuel mix away from coal and oil in order to reduce their GHG emissions and to improve their air quality and health outcomes.

Furthermore, Vancouver is well positioned to be a LNG marine bunkering hub as ship owners are increasingly moving to LNG powered ships in order to meet stringent International Marine Organization emission regulations that come into force in 2020. Availability, price, quality, and infrastructure are all critical to creating this cleaner fueling hub that will allow additional coastal vessels and trans-Pacific shipping companies to commit to securing new vessels powered by LNG instead of bunker or diesel oil. The need for additional and secure supplies of LNG is critical for this industry transition.

With the Project expansion of up to 162,000 m³ (4.0 PJ) of LNG storage, the total Project Site LNG storage could be up to 236,000 m³ including the base plant Tilbury storage tank and the existing 1A storage tank. Should the base Tilbury storage tank be decommissioned and removed, the total Project Site LNG storage will be up to 208,000 m³. Additionally, the Project will increase the production of LNG at

¹ Based on energy density of 23.9 gigajoules/m³ of LNG

the Project Site from less than 3000 t/d to up to 13,760 t/d including the base liquefaction plant or up to 13,700 with the base plant removed.

Figure 2-1 shows the Phase 2 Project facilities (with existing and Phase 1 in background).

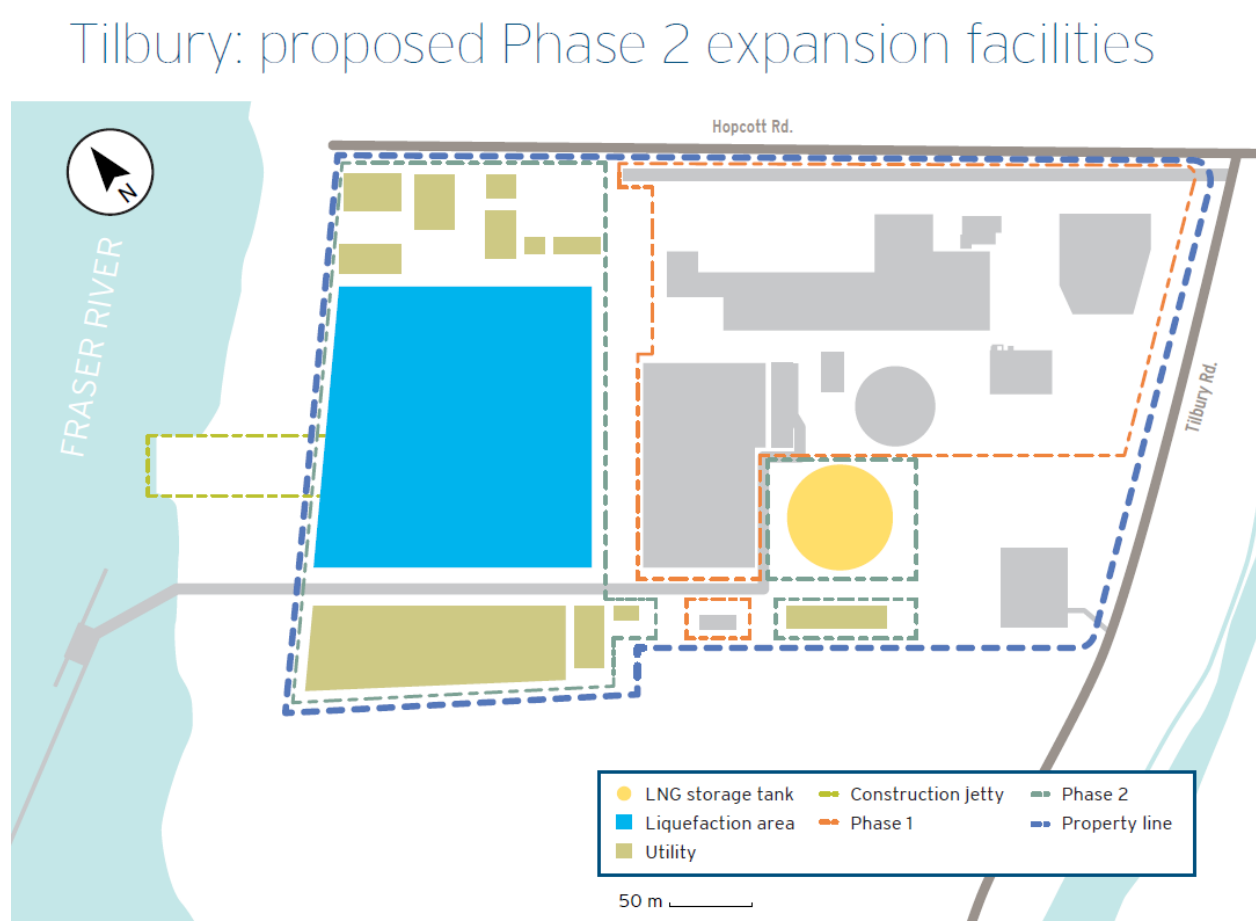


Figure 2-1. Phase 2 Project Facilities
 Source: FortisBC

2.1 Project Location

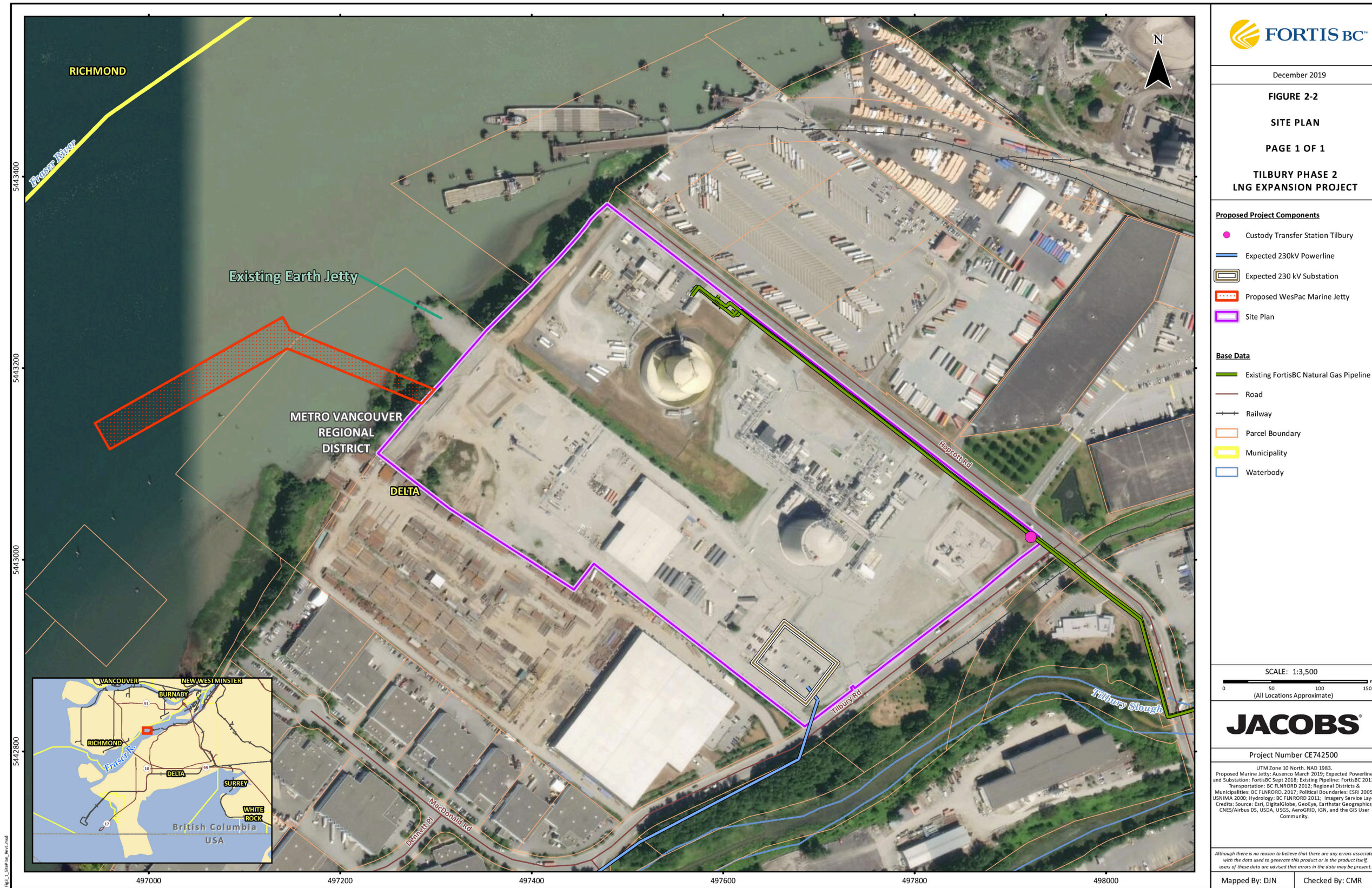
The Project Site is located on the existing Tilbury LNG facility property on Tilbury Island, within the Tilbury Industrial Park, adjacent to the Fraser River in Delta (Figure 2-2). The legal description of the Tilbury site is Lot 1 District Lot 135 Group 2 New Westminster District Plan EPP28232 except Plan EPP 36476. PID: 029-263-301. FortisBC currently operates an existing LNG facility, which occupies the northern portion of the 7651 Hopcott property (closest to the Fraser River). Coordinates of the approximate centre of the Project Site are 49 08'28"N and 123 01' 57"W and elevation is approximately 1 metre above sea level (masl). FortisBC will seek access to the temporary construction jetty along the Fraser River adjacent to the FortisBC property in cooperation with any waterlot leaseholders to support the use of the construction jetty for the Project.

Neighbouring properties are used for industrial purposes with the nearest resident being approximately 700 metres (m) to the southwest of the Project Site, although the closest residential area is approximately 5 km away. Public access to the Project Site is limited, although there is public use of the dike to the north of the property along the Fraser River. The Project is located on private property owned by FortisBC, and there is no land based recreational access to the Project Site.



Photograph 1: View of Tilbury facility with new storage tank in foreground, and original tank in the background.

A summary of Indigenous Groups near the Project Site is provided in Section 8, Table 8-1. FortisBC will update this list as the Project moves forward, with input from Indigenous Groups and as advised by regulatory agencies. Research on Traditional Land Use (TLU) information surrounding the site will be conducted in consultation with the corresponding Indigenous Groups as applicable.



December 2019

FIGURE 2-2

SITE PLAN

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TILBURY PHASE 2
LNG EXPANSION PROJECT

Proposed Project Components

- Custody Transfer Station Tilbury
- Expected 230kV Powerline
- Expected 230 kV Substation
- Proposed WesPac Marine Jetty
- Site Plan

Base Data

- Existing FortisBC Natural Gas Pipeline
- Road
- +— Railway
- Parcel Boundary
- Municipality
- Waterbody

SCALE: 1:3,500
0 50 100 150 m
(All Locations Approximate)

JACOBS

Project Number CE742500

UTM Zone 18 North, NAD 1983.
Proposed Marine Jetty: Ausenco March 2019; Expected Powerline and Substation: FortisBC Sept 2018; Existing Pipeline: FortisBC 2012; Transportation: BC FLNRORD 2012; Regional Districts & Municipalities: BC FLNRORD 2017; Political Boundaries: ESSR 2005, USNIMA 2000; Hydrology: BC FLNRORD 2011; Imagery Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

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

Mapped By: DJN Checked By: CMR

Figure 2-2. Site Plan

2.2 Spatial Boundaries

The EA / IA will consider the potential significant adverse effects of the Project on the five pillars of environmental, economic, social, heritage, and health values. The Project footprint includes the land area directly disturbed by the Project construction activities, including associated physical works and activities. The Local Study Area (LSA) encompasses the area in which the VC is most likely to be affected by the Project. The Regional Study Area (RSA) includes the LSA, and the area beyond the LSA boundaries where the predicted likely residual effects from the Project may act in combination with those of existing and reasonably foreseeable developments and activities to cause cumulative effects.

The preliminary spatial boundaries for assessing Project effects on the pillars, including preliminary VCs, are provided in Table 2-2. These will be further refined following VC selection and further scoping exercises.

Table 2-2. Preliminary Spatial Boundaries

| Pillar | LSA Boundary and Rationale | RSA Boundary and Rationale |
|-------------|---|--|
| Environment | <p>The LSA will be defined for each Environmental VC and will be based on the zone of influence of the Project on the VC. The selection of the LSA will be informed by:</p> <ul style="list-style-type: none"> Guidelines for Air Quality Dispersion Modelling in British Columbia (BC MOE 2008) for potential effects to air quality (to be refined through modelling) British Columbia Noise Control Best Practice Guideline (BC OGC 2009) where potential interactions are anticipated to occur with the acoustic environment the Project footprint plus a 100 m buffer around the Project Site for potential effects to vegetation resources the footprint of the proposed facility plus a 1 km buffer to the northeast, south, and southwest for potential effects to wildlife resources a separate LSA for marine birds to encompass the nearshore waters of the Fraser River freshwater fish habitat in the Fraser River with the potential to be affected by project development for potential effects to fish and their habitat (LSAs from other VCs such as vegetation and wetlands will inform the fish LSA) an approximate 1-km-wide band for potential effects to surface water quality | <p>The RSA will be defined for each Environmental VC and will be based on the potential interaction of the effects of the Project with the effects of other existing or future effects on the same VC. The selection of the RSA will be informed by:</p> <ul style="list-style-type: none"> results of air dispersion modelling BC OGC guidelines on acoustic effects, indicating that the RSA for the acoustic environment will extend 5 km from the Project boundary the RSA for vegetation will consist of a 1 km buffer surrounding the Project boundary the RSA for wildlife resources will consist of a 15 km buffer surrounding the Project boundary. The RSA will be further informed by the nearby locations of National Wildlife Areas and Wildlife Management Areas (WMAs) the RSA for fish and fish habitat consists of the South Arm of the Fraser River downstream of the Project site to Sand Heads including a 500 m buffer upstream. It will be further informed by the locations of nearby sloughs and WMAs |
| Economic | <p>The LSA for Economic conditions includes Delta, which comprises three urban communities: Ladner (administrative centre), Tsawwassen, and North Delta</p> | <p>The RSA for Economic conditions is the City of Delta and Metro Vancouver.</p> |
| Social | <p>The LSA for Social conditions will include:</p> <ul style="list-style-type: none"> Delta, including Ladner (administrative centre), Tsawwassen, North Delta, and boundaries of Indigenous Group communities where it can be reasonably expected that direct, identifiable effects from the proposed Project will occur for potential effects to Infrastructure and Services all lands with a potential viewpoint of Project components for potential effects to Visual Quality. This includes the area within foreground (less than 1 km from the Project boundary) and middle ground (1 to 5 km from the Project boundary); communities with the greatest potential to experience direct community health effects as a result of the Project within Fraser Health Area for potential effects to Community Health and Well-being | <p>The RSA for Social Conditions will include:</p> <ul style="list-style-type: none"> The City of Delta and Metro Vancouver for potential effects to Infrastructure and Services the area beyond the LSA to within 10 km of the Project site for Visual Quality. This RSA will be further refined based on the farthest reasonable distance at which the Project may be visible; all communities within the Fraser Health Area for potential effects to Community Health and Well-being |

Table 2-2. Preliminary Spatial Boundaries

| Pillar | LSA Boundary and Rationale | RSA Boundary and Rationale |
|----------|--|--|
| Heritage | The LSA for the archaeological and Heritage resources assessment will be the area of ground disturbance for the Project. | The RSA for the archaeological and Heritage resources assessment will be the same as the LSA. |
| Health | The LSA for the assessment of potential Health risks to humans from potential changes to air quality will be the same as that for air quality. | The RSA for the assessment of potential Health risks to humans from potential changes to air quality will be the same as that for air quality. |

2.3 Project Components

Table 2-3 provides a brief description of the components for the Project. Updated information will be provided in the EA Application.

Table 2-3. Project Components

| Project Component | Description of Component |
|--|---|
| Temporary Construction Components | |
| Construction support facilities | Material offloading of pre-assembled equipment modules will be required with access from the Fraser River. An existing construction jetty that is expected to be upgraded as part of the WesPac Jetty project and for Phase 1 projects may require additional upgrades to accommodate barge unloading of Project equipment modules during construction. |
| Construction materials delivery | In addition to the larger equipment module delivery by river, existing roadways and Project Site access points will also be used. |
| Construction laydown and staging | In addition to FortisBC’s property, additional off-site laydown and storage space will be required especially during later/overlapping construction phases. Local options will be identified, assessed, and determined based on the specific requirements. Off-site laydown and storage may not be required for Phase 2 storage tank as this is expected to be constructed first and would be erected on-site with materials scheduled to arrive as needed. |
| Construction Infrastructure / Service | Existing Project Site service will be used (such as, power, water) where remote power/lighting is required portable generator systems or temporary construction power will be used. |
| Water management and hydro-testing | Hydro-testing of the LNG tank and certain piping systems will be required. This will involve a significant volume of water and discharging of the water. Given the volumes river water may be utilized which will require filtration / treatment both before using for hydro-testing (to prevent contamination) and post use to allow returning to the river in a state of equivalent or better condition. In addition, rainwater management systems will be required for the Project Site during construction. |
| Operation Components | |
| LNG Storage | Full containment storage tank with up to 162,000 m ³ (4.0 PJ) of working storage. Components of the LNG storage tank include ground improvements, foundations, double wall (full containment) construction, LNG pumps, boil-off gas management system including gas compressors, insulated piping, access stairways, lighting instrumentation, control, and safety systems. |
| Natural gas receiving | Existing FortisBC pipelines and right-of-way (ROW) will be used to bring natural gas to the Project Site. Additional metering/distribution and control skids will be needed to distribute gas to specific liquefaction operating units. |

Table 2-3. Project Components

| Project Component | Description of Component |
|---|---|
| Natural gas processing and liquefaction | <p>Expected to be built in trains / phases depending on market demand for a total installed capacity of up to 11,000 t/d.</p> <ul style="list-style-type: none"> From the metering/distribution and control skid natural gas will enter gas pre-treatment to remove components in the natural gas not compatible with the cryogenic liquefaction process. Pre-treatment includes filtration, separators, and adsorption processes Combustion of waste streams with energy recovery to provide thermal regeneration of certain pre-treatment processes including continuous thermal oxidation and periodic combustion of vent / relief gases Electric drive refrigerant compressors and air cooling used in the liquefaction process Refrigerant unloading, storage and makeup system Instrument air and nitrogen generator systems, firewater system, storm and wastewater handling systems, potable and de-mineralized water systems LNG transfer and boil-off gas management systems Fire, safety, security emergency response, and protection systems designed to meet or exceed applicable standards |
| Supporting Infrastructure | <p>The following facilities will be permanently installed for the life cycle of the Project and will support the safe operation of the facility:</p> <ul style="list-style-type: none"> Site administration, control room(s), site grading, roadways, lighting, security and safety facilities Liquid hydrocarbon/chemical storage and handling facilities (including truck loading) Electrical substations and step-down transformers connected to BC Hydro or FortisBC power systems Additions to potable water, firewater, waste water and storm water systems from existing site systems |

2.4 Project Schedule

The preliminary schedule for the Project is provided in Table 2-4.

Table 2-4. Preliminary Project Schedule

| Task | Start Date |
|--|--------------|
| Submit Project Description to BC EAO and IAAC to initiate EA | Q1 2020 |
| Assessment Certificate application to BC EAO under substituted process (requested) | Q4 2020 |
| Anticipated EA Certificate Approval | Q4 2021 |
| Permitting (synchronous or concurrent permitting with EA Review) | 2021/22 |
| Construction of LNG storage tank | 2022 to 2024 |
| Phased Construction of LNG liquefaction facilities | 2022 to 2028 |
| In-Service | 2024 to 2028 |

2.5 Alternative Means of Carrying Out the Project

The Project proposes to use electrical compressor drives with power provided by BC Hydro. Existing power supply is expected to be expanded as part of current Phase 1 expansion plans to include a 230-kV

power supply to the Project Site from the BC Hydro Arnott substation located less than 6 km away. Alternatives to using BC Hydro-supplied power include self generation and/or gas combustion compressor drives. This alternative would increase emissions.

Numerous gas pre-treatment and liquefaction technology alternatives exist. Selection during FEED will consider economic as well as process, reliability, efficiency, and environmental factors including emissions.

Alternative construction methods include 'stick build' or site fabrication in place of bringing pre-fabricated equipment modules to site and assembly on site. Some Project components will be constructed at site because modularization is either not possible or not feasible while other Project components are well suited to modular construction to reduce site work, congestion and construction schedule. To the extent that FortisBC Operations continue to utilize base plant facilities, the timing and/or scale of the Project could be adjusted.

2.6 Alternatives to the Project

Alternative locations for LNG storage and/or liquefaction have been considered; however, no alternative site has been identified that provides an existing brownfield industrially zoned and LNG operating site, existing infrastructure including gas supply, access to tidewater and availability of expansion space.

Other potential alternatives could include reduced Project size or not proceeding with certain components of the Project. Not proceeding with the Project would put the natural gas supply system in BC and Greater Vancouver region at increased risk of disruption which would have significant economic and public health and safety implications as well as foregoing economic opportunities and global emission reduction opportunities.

3. Construction, Operations, Decommissioning, and Abandonment Phases

3.1 Project Construction and Operations

The Project will require the following site preparation, construction, and operations activities as outlined in Table 3-1.

Table 3-1. Description of Project Activities

| Site Preparation |
|--|
| <ul style="list-style-type: none"> • Site planning by phase • Mobilization of construction equipment, temporary offices and materials to the site by truck • Clearing, filling and grading of mostly paved/disturbed site • Provide construction power • Re-location/improvements to stormwater and erosion and sediment control measures • Ground preparation, geotechnical and archeological assessments and work permitted for the site to improve load bearing of the soil (could include pre-loading and geotechnical ground stabilization) |
| Construction |
| <ul style="list-style-type: none"> • Ground improvements and civil works including foundations and structures • Construction of electrical step-down transformers from 230 kV substation, including associated on-site Project powerlines • Construction of LNG storage tank. Installation of related piping, pumps and boil-off compressors. Piping connections to existing plant (LNG vapourization) and to the Tilbury Pacific LNG Marine Jetty) • Construction of the gas supply interface and pre-treatment systems • Upgrading/reinforcing the construction jetty if required • Transporting equipment modules up the Fraser River, mooring at the temporary construction jetty and offloading at site. It is estimated that 25 vessel/barge deliveries will be required during the 3 year construction period. The vessel/barge deliverables are expected to come from Sandheads lighthouse at the mouth of the Fraser river along the shipping channel of the South Arm of the Fraser river to the Project Site. • Transporting, setting and final assembly construction of liquefaction train modules • Construction of thermal oxidizer/flare for combustion of waste and emergency vent streams • Connections of liquefaction trains to LNG tank, power, utilities, safety, and control systems • Construction of administration/control, maintenance, utility, and safety facilities • Commissioning of phased equipment installation including initial cool-down and fill of LNG lines and Tank • Site clean-up, installation of security • Anticipated emissions, discharges and waste: <ul style="list-style-type: none"> – Atmospheric (air, noise, light) – Collected sanitary waste (liquid and solid) |
| Operation |
| <ul style="list-style-type: none"> • Receipt of natural gas via piping from FortisBC natural gas metering station • Pre-treatment of natural gas to remove components of pipeline natural gas not compatible with liquefaction process • Storage of refrigerants and liquid hydrocarbons and trucking for removal/delivery • Liquefaction of the natural gas (using electric compression drives and air cooling) • Transfer LNG and LNG storage • LNG boil-off gas management • Transfer of stored LNG to distribution (existing vapourization / send-out, LNG marine jetty) • Control, inspection, and maintenance of Project components • Emissions include: <ul style="list-style-type: none"> – Atmospheric (air, noise, light, combustion, emergency flaring/venting) |

3.2 Project Decommissioning and Reclamation

The Project site is zoned for industrial use; therefore, at the end of the Project's operational life (that is, 40+ years) the Project facilities may be decommissioned in accordance with regulations applicable at that time, including BC OGC permitting requirements, and in consideration of preferred land uses at that time.

Decommissioning activities may include:

- De-energizing, decommissioning purging and dismantling of LNG facilities
- Re-purposing and recycling of materials and equipment
- Reclamation of the Project site for alternate use

The Project Site would then be prepared for its next use. The schedule for decommissioning activities will be developed during FEED.

4. Regulatory Context

4.1 BC Environmental Assessment Act

The Project will trigger a Provincial EA pursuant to the BC EAA as it exceeds the trigger for assessment as follows:

“Modification of an existing project if (a) the existing project, or the project after modification, were it a new project, would meet the criteria set out opposite in Column 2, and (b) the modification results in an increase in the capability of the project to store one or more energy resources, other than electricity, by a quantity that can yield by combustion ≥ 3 PJ of energy or, for liquefied natural gas, increase by $\geq 136\,000\text{ m}^3$ ” (Reviewable Projects Regulation, Part 4, Table 8).

The Project includes adding liquefied natural gas storage of up to $162,000\text{ m}^3$ which would increase the total storage at the Project Site to $236,000\text{ m}^3$ with the existing base plant Tilbury tank remaining which exceeds the $136,000\text{ m}^3$ threshold.

FortisBC has met with the BC EAO to provide an overview of the Project and initiated discussions related to EA process and timing and consultation.

4.2 Federal Impact Assessment Act

The Project will also be subject to the Federal Impact Assessment process under the IAA. Section 38(d) of the Physical Activities Regulations includes;

38 *The expansion of one of the following: (d) an existing facility for the liquefaction, storage or regasification of liquefied natural gas, if the expansion would result in an increase in the liquefied natural gas processing or storage capacity of 50% or more and a total liquefied natural gas processing capacity of 3 000 t/day or more or a total liquefied natural gas storage capacity of 136 000 m³ or more, as the case may be.”*

FortisBC has met with the IAAC to provide an overview of the Project and initiated discussions related to IA process and timing and consultation.

The Project includes adding liquefaction of up to 11,000 t/d for a total facility LNG production of up to 13,760 t/d (4.5 mtpa). The Project represents a liquefied natural gas processing increase of more than 50 percent and total liquefied natural gas processing capacity exceeding 3,000 t/d.

The Project includes adding LNG storage of up to $162,000\text{ m}^3$ (4.0 PJ) for a total facility LNG storage of up to $236,000\text{ m}^3$ (5.8 PJ). The Project represents an increase in LNG storage capacity of more than 50 percent and total LNG storage capacity of more than $136,000\text{ m}^3$. Therefore, the Project would be considered a physical activity pursuant to the *Physical Activities Regulations* and is thereby reviewable under the IAA.

Given that both the Federal and Provincial EA processes are triggered, FortisBC will ask that the Province request the Minister of Environment and Climate Change Canada to approve the substitution of the BC EA process for the Federal IA process. If substitution is approved for the proposed Project, it is expected that the BC EAO will conduct the EA/IA in accordance with the conditions set out in the Substitution Decision, and at the end of the assessment process the BC EAO will provide its report to both the Provincial and Federal Ministers for their consideration.

4.3 Other Permits and Approvals

The following section outlines potential additional permits that may be required before the Project construction can begin (Table 4-1). Consultation with regulatory agencies is required to confirm permit

requirements. FortisBC plans to make permit applications concurrent with the EA review process to optimize efficiency of combined processes and schedule.

Table 4-1. Preliminary List of Additional Permits and Approvals for the Project

| Approval | Agency | Legislation/Regulation | Application Considerations |
|---|---------------------------|-----------------------------|--|
| Facility Permit or Amendment | BC OGC | BC OGAA | An amendment to the existing facility permit or new facility permit is required for the construction and operation of the expansion. The amendments could be completed in phases to align with the construction phases. Requires site-specific environmental baseline fieldwork, detailed engineering information, and consultation with Indigenous Groups and public stakeholders prior to EA Application submission. |
| AIF | BC OGC and BC MFLNRORD | BC OGAA | All oil and gas development proposed in BC requires an AIF to be submitted with the Archaeological Information Form to the BC OGC. The AIF indicates whether the proposed development will require a further AIA. Major projects that cover substantial areas typically require an AIA. An AIA was conducted on the Phase 1A portion of the Project Site in 2013. The AIF can be completed prior to finalizing the AIA; however, the approval would be conditional on completion of an AIA. |
| Waste Discharge Authorization | BC OGC | BC OGAA | Disposal of hydrostatic or other waste water to the aquatic environment will require an Authorization. This will be applied for as part of the Facility Permit Amendment Application to the BC OGC. |
| Heritage Inspection Permit | BC MFLNRORD | HCA (Section 12.2) | An AOA would be completed for the Project. The AOA would determine if further archaeological assessment (such as, an AIA), is required. An AIA would require a Heritage Inspection Permit. Engagement with potentially affected Indigenous Groups will be required during the preparation and review of the Application. |
| Heritage Site Alteration Permit | BC OGC | HCA (Section 12.4) | A Heritage Site Alteration Permit will be required to alter (meaning to change in any manner) an archaeological site. Typically follows a Heritage Inspection Permit and/or Heritage Investigation Permit. An AIF must be completed in advance. Engagement with potentially affected Indigenous groups will be required during the preparation and review of the Application. |
| Certificate of Public Convenience and Necessity (for public utility assets) | BCUC | BC Utilities Commission Act | A CPCN approval is needed prior to construction of public utility assets over a dollar threshold. The BCUC conducts public hearings to determine whether the project is necessary and in the public interest based on evidence gathered in the public hearing. |
| First Nations Heritage Permits | Various Indigenous Groups | Indigenous policies | Several Indigenous Groups issue permits for archaeological work conducted in their territory. |
| Request for Review and Fisheries Act Authorization for Paragraph 35(2)(b) | DFO | Fisheries Act | An assessment under the Fisheries Act would be completed by a QEP. A Request for Review by DFO may be recommended by the QEP if clearing of riparian vegetation or instream disturbance could result in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery. After reviewing the Request for Review, DFO will determine if an authorization under the Fisheries Act is required. |

Table 4-1. Preliminary List of Additional Permits and Approvals for the Project

| Approval | Agency | Legislation/ Regulation | Application Considerations |
|--|---------------------|--|--|
| Navigable Waters Application for Approval | Transport Canada | <i>Canadian Navigable Waters Act Section 5</i> | An approval is required for any major works located in, on, over, under, through or across any navigable water, regardless of whether it is listed in the Schedule; or a work (other than a minor work) that is located in, on, over, under, through or across navigable water that is listed in the Schedule. |
| General Permit Applications | BC MFLNRORD | <i>Wildlife Act</i> | Required for amphibian salvage, wildlife sundry, fish research at watercourse crossing and fish salvage. |
| Waste Discharge Permit | Metro Vancouver | <i>Bylaw 299</i> | Required to discharge hydrostatic test and other construction waste water (excluding contaminated water) to the sanitary sewer system. |
| Building Permit | Delta | <i>Local Government Act</i> | A building permit would be required from Delta for new structures on the Project Site. |
| Development Permit | Delta | <i>Local Government Act</i> | Form and Character and Environmental Protections Development Permits may be required for the changes to the Project Site. Consultation is required with Delta to confirm Development Permit requirements. |
| Demolition Permit | Delta | <i>Local Government Act</i> | A demolition permit would be required for the demolition of existing structures. |
| Tree Cutting Permit | Delta | <i>Bylaw 7415</i> | A Tree Cutting Permit is required from Delta for removal of any trees with a diameter of 20 cm or greater measured at 1.4 m above its base. |

Notes:

AIF = Archaeological Information Form

AOA = Archaeological Overview Assessment

BC MFLNRORD = BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development

BC OGAA = BC *Oil and Gas Activities Act*BC OGC = BC *Oil and Gas Commission*

cm = centimetre(s)

DFO = Fisheries and Oceans Canada

HCA = *Heritage Conservation Act*

QEP = Qualified Environmental Professional

5. Federal Involvement – Financial Support, Lands and Legislative Requirements

There are no Federal lands or reserves that will be used for the purpose of carrying out the Project. The Project will not require Federal financial support and is located in an area that has not been the subject of Federal regional environmental studies. During construction, equipment and supplies may be delivered via the Fraser River to the Project Site. The portion of the Fraser River next to the Project Site is understood to be within Provincial jurisdiction. The closest federal lands to the Project Site are on the southern tip of Tilbury Island. The parcels are narrow strips of land in the riparian area of the Fraser River and a side channel. The closest parcel is 150 m to the southwest and encompasses a portion of the Tilbury Island dike, which is used as a public walking trail and directly across the Fraser River from the Project Site (approximately 900 m north) is a complex of federally owned industrial parcels on Lulu Island. The businesses directly adjacent to the river include Lulu Island Terminal, Coast 2000 Terminals, and Westran Portside Terminal. Potential Federal permits and approvals are listed in Section 4.2 and 4.3.

6. Emissions, Discharges and Waste

Project activities associated with all phases of the Project, including construction, operations, and decommissioning, have potential to affect the atmospheric environment through the emission of criteria air contaminants (CACs) and Greenhouse Gases (GHG).

Table 6-1 provides a preliminary estimate of Project-related GHG emissions (expressed in terms of carbon dioxide equivalents) and their sources per project phase. A discussion of these and other emissions, discharges and waste is provided in sub-section 6.1.

Table 6-1. Estimated Direct GHG Emissions per Phase

| Phase | Duration | Emission Type(s) | Emission Source(s) | CO ₂ e/year |
|------------------|-------------------|--|--|--|
| Construction | 3 years | CO ₂ , CH ₄ , NO, other hydrocarbons and particulate matter. | <ul style="list-style-type: none"> • construction vehicles and equipment • Delivery of material (including gravel for grading) • ground stabilization • concrete for tank and foundations • perlite in cold box (uses giant furnaces) • marine traffic • clearing and grading | <ul style="list-style-type: none"> • 2,235 tonnes of CO₂e/year |
| One-time Venting | Single occurrence | CH ₄ | <ul style="list-style-type: none"> • commissioning / cool-down of process equipment and tank with LNG | <ul style="list-style-type: none"> • 6,560 tonnes of CO₂e |
| Operations | 40+ years | CO ₂ , CH ₄ , NO, other hydrocarbons and particulate matter. | <ul style="list-style-type: none"> • operation of electric drive compression liquefaction facility • operational vehicles and equipment • thermal oxidizers, gas flare and fired heaters • transportation, Project Site maintenance, and equipment operations • transferring LNG, resulting in fugitive emissions | <ul style="list-style-type: none"> • 203,000 tonnes of CO₂e/year (direct) • 23,500 tonnes of CO₂e/year (acquired energy) |
| Decommissioning | 2 years | CO ₂ , CH ₄ , NO, other hydrocarbons and particulate matter. | <ul style="list-style-type: none"> • construction vehicles and equipment • disposal of material | <ul style="list-style-type: none"> • 2,514 tonnes of CO₂e/year |

Notes:

CH₄ = methane

NO = nitrogen oxide

GHG emissions are usually expressed as carbon dioxide equivalents (CO₂e), which represent GHG emission quantities in terms of their global warming potential (GWP) relative to CO₂.

TBD = To be determined

In accordance with the Draft Strategic Assessment of Climate Change guidance, the Net GHG emissions are estimated to be 9 million tonnes CO₂e. This estimate is based on FortisBC's preliminary understanding of the Project activities and equipment and includes the following elements:

- Direct GHG emissions;
- Acquired energy GHG emissions;
- Transferred surplus energy GHG emissions;
- carbon dioxide (CO₂) captured and stored;
- Avoided domestic GHG emissions; and
- Offset credits.

This estimate of Net GHG emissions will be updated during future stages of the assessment process based on refined Project information.

6.1 Other Emissions, Discharges and Waste

Other expansion-related emissions, discharges, and waste may include, but are not limited to:

- Light, noise, and vibration emissions
- Emissions of atmospheric contaminants
- Silt and soil from roads and soil storage areas
- Sanitary waste
- Construction water such as process water discharges, equipment and facilities wash down water, along with dust suppression water runoff
- Stormwater runoff
- Firewater runoff in the event of an emergency;
- Solid wastes, such as household and industrial wastes associated with facility operations
- Hazardous waste such as used motor and hydraulic oils, contaminated filters, used chemical cleaning fluids, and paints

Project design and planning phases will consider the following measures to reduce emissions to the land, air, and water during construction, operations, and decommissioning:

- Air quality and noise will be monitored during construction, operation, and decommissioning, as necessary
- Equipment selection will consider efficiency and emissions including GHG contribution
- Equipment, machinery, and vehicles will be maintained to reduce emissions and prevent spills
- Discharges from the facility will be controlled in accordance with codes and regulatory requirements
- Solid and liquid waste will be stored in containers and transported to appropriate disposal and recycling facilities
- Sanitary sewage and stormwater management will follow regulatory requirements
- Contaminated areas on the Project Site will be managed in accordance with acceptable regulatory standards

During construction, FortisBC will implement an Environmental Management Plan (EMP) to drive compliance with environmental requirements.

During operations, FortisBC will refer to their existing Environmental Management System, environmental standards, and guidance documents that will be updated, where required, as a result of the Project.

6.1.1 Construction

Transportation of construction materials and equipment can contribute to increase in fugitive dust emissions. Marine transportation of equipment modules can contribute to emissions from vessels. Vehicles and equipment release criteria air contaminants. Equipment, machinery, and vehicles will be maintained to reduce emissions. Higher levels of truck deliveries would occur at certain times of the construction schedule (such as, concrete pours) where as many as 65 deliveries per day could be expected for short periods. Other periods of construction could have very few deliveries; an average day would consist of six deliveries .

Construction noise will be generated through various activities and may increase daytime ambient sound levels from vehicles and equipment. Any light emissions during nighttime activities will be based on safety and security lighting. Noise and light impacts will be considered in design decisions to mitigate impacts from construction and operations activities.

Test water will be treated and discharged onsite, disposed of at an approved facility or discharged into the sanitary sewer system, in accordance with applicable regulations. Construction stormwater management and sediment and erosion control measures will be included in the EMP.

Solid wastes will be generated from site preparation and construction activities. Solid waste will be disposed of or recycled at appropriate facilities.

The storage, handling and disposal of hazardous waste will be managed in accordance with regulatory requirements and measures outlined in the EMP.

6.1.2 Operations

During operations, the main sources of air emissions (NO, carbon dioxide, sulfur dioxide, hydrocarbons, and particulate matter) are from thermal oxidizers, gas flare, and fired heaters. Other sources of air emissions may include transportation, Project Site maintenance, and equipment operations.

During operations, potential sources of noise include air coolers, cooling towers, compressors, pumps, and vehicle traffic. Similar to the construction phase, any nighttime light emissions will be the result of on-site lighting for health and safety purposes. All noise and light emissions will be managed in accordance with FortisBC standards and will meet regulatory requirements.

Water discharges will be processed on-site and will be disposed of through existing wastewater management infrastructure, in accordance with applicable regulatory requirements.

Solid and liquid wastes may be generated from operation of the facility and will be managed in accordance to an updated operations plan for the facility. Where feasible, the volume of waste generated during operations will consider opportunities for material reduction at source, re-use, recycling, and recovery. Solid waste will be disposed of or recycled at appropriate facilities.

Refer to Section 7.9 for mitigation and management procedures addressing operational accidents and malfunctions.

6.1.3 Decommissioning

Emissions, discharge, and waste associated with decommissioning and closure will include air emissions from combustion engines, noise emissions from machinery activities, storm-water runoff, and waste from equipment and structure removal. Emissions will be short-term, only during the decommissioning phase. Decommissioning activities will follow regulatory requirements and FortisBC policies and plans in place at the time of decommissioning.

7. Environmental, Economic, Social, Heritage and Health Effects

This section includes a brief overview of the potential environmental, economic, social, heritage, and health effects, and proposed mitigation, as they are currently understood, that may arise from construction, operation, decommissioning, and abandonment for the Project. The understanding of potential effects of the Project will be further refined through development and engagement activities and will be addressed during the development of the VC selection document, and ultimately in the Application for an EAC.

7.1 Environmental Impacts on federal lands, in a province other than British Columbia, or outside of Canada.

The Project Site is located on private land owned by FortisBC within the Municipal boundaries of Delta and a portion of the Fraser River, within provincial jurisdiction. Potential changes to the environment as a result of carrying out the Project are not anticipated to interact with or impact Federal lands, a Province other than BC, or outside of Canada.

7.2 Physical Environment

The Project Site is located adjacent to the Fraser River, in the Fraser Lowlands of the Georgia Depression Physiographic Region. The climate is maritime with cool wet winters averaging 4°C and 160 mm per month and warm mild summers averaging 18°C and 36 mm of precipitation per month (ECCC 2019). The Project Site is in an industrial setting within a major urban centre. Existing conditions are well understood.

7.2.1 Geology and Soils

The Fraser River flows through glacio-fluvial and alluvial deposits, ending in a delta approximately 10 km downstream of the Project Site. The Project Site is located on the floodplain of the Fraser River. The elevation is approximately 1 masl and the water table fluctuates between 0.5 and 1 m depth (Golder 2013). Surficial materials are composed of silt and clay loams to a depth of approximately 5 m, overlying approximately 25 m deep Fraser River sand, which overlays > 100 m deep marine deposits (Golder 2013). The slope of the land ranges from 0-2 degrees throughout the Project Site. Soils are poorly draining and typically saturated during the winter months.

7.2.2 Natural Hazards

No geotechnical hazards such as mass wasting have been identified that would affect the Project Site. Seismicity was identified as a natural hazard that has the potential to adversely affect the Project.

7.2.3 Water and Aquatic Systems

The Project Site is located between the Fraser River and Tilbury Slough, a side channel of the Fraser River. The northwest property boundary varies between 20 and 30 m from the Fraser River. A dyke is maintained by Delta between the property boundary and the Fraser River. The southeast property boundary is located approximately 100 m from Tilbury Slough. Site drainage is maintained by a series of drainage ditches that drain into Tilbury Slough via a culvert. The Project Site has been mostly cleared for industrial purposes and has no natural watercourses.

Expansion construction will be primarily in the upland areas away from the Fraser River and Tilbury Slough except for upgrades to the existing construction jetty, which may include the installation of piles, placement of fill and rip rap and vegetation removal. Dredging around the jetty may be required to increase river depth depending on the condition of the jetty at the time of construction. It is expected that the upgrades would be temporary, and the construction jetty would be restored following construction. No

impacts to water and aquatic systems are anticipated to result from increased marine traffic during project construction.

Potential effects to water and aquatic systems may include localized changes in flow direction, velocity, scouring and sedimentation as a result of construction. Hydrostatic testing will require a large discharge of water into the sanitary sewer system or the Fraser River, if approved. Sediment and erosion control measures will be implemented to mitigate water quality impacts. Hydrostatic test water will be tested prior to discharge to ensure all regulatory standards are met.

7.3 Biological Environment

7.3.1 Vegetation

The Project Site is situated in the Coastal Douglas-Fir Biogeoclimatic Zone (CDF) and is characterized by warm dry summers and mild wet winters (Delong et al. 1991). The Project Site was previously cleared of natural forest and has been heavily disturbed, with the majority of the Project Site being used for industrial purposes. Vegetated areas within the Project Site include drainage ditches along the southeast perimeter of the site and riparian vegetation on the bank of the Fraser River. Vegetation cover includes native and introduced species common to disturbed areas in the region. A narrow band of young deciduous-dominated forest occupies part of the riparian area.

No critical habitat for vegetation species at risk is located on the Project Site. Known occurrences of two provincially and federally listed species, Vancouver Island beggarticks (*Bidens amplissima*; SARA Schedule 1, Special Concern, BC Blue-Listed) and streambank lupin (*Lupinus rivularis*; SARA Schedule 1, Endangered, BC Red-Listed) are found within 1.5 km of the Project Site (BC CDC 2019) and suitable habitat may occur within the Project Site. Thirty-four listed ecological communities occur within the CDF in Delta, but none are anticipated to occur on the Project Site due to its disturbed nature.

Potential project effects include removal of vegetation for construction purposes, the potential for introduction of or spread of invasive species and indirect effects that may result from a change to drainage patterns. Construction jetty upgrades will result in a short-term reduction of instream and riparian vegetation. Effects to upland vegetation communities will be limited since vegetation has been previously removed from most of the Project Site. Mitigation measures will include surveys for provincially and federally-listed plant species prior to construction, preventing the spread of noxious weeds and invasive, non-native species, minimizing disturbance to the riparian zones of the Fraser River and Tilbury Slough and preparing an EMP following completion of detailed design.

7.3.2 Wildlife

Wildlife use is primarily limited to the few underutilized portions of the Project Site. Nesting may occur within the riparian area of the Fraser River and marine mammals and waterfowl are known to use the river for foraging and as a transportation corridor. Thirty-four provincially or federally-listed species are known to occur within the Greater Vancouver Regional District (BC CDC 2019). An occurrence of the provincially Red-listed and SARA-listed barn owl (*Tyto alba*) was documented in Tilbury Slough in 1996 and critical habitat for the provincially Red-listed and SARA-listed Pacific water shrew is located within approximately 2 km of the Project Site. Birds have been documented nesting in trees adjacent to the Project Site and waterfowl and other species regularly use the Fraser River for foraging and transportation. Drainage ditches may provide suitable habitat for amphibian species. Marine mammals, including harbour seals (*Phoca vitulina*) (not SARA-listed, BC Yellow-listed) and California sea lion (*Zalophus californianus*) (not SARA-listed, BC Yellow-listed) are found within the brackish water of the Fraser River (BC CDC, 2019).

Construction of the Project is not expected to substantially change habitat for potential species at risk in the area due to the previously disturbed nature of the Project Site. The main habitat value for wildlife occurs in conjunction with the perimeter drainage ditch and the riparian areas next to the Fraser River, which will be partially affected by the Project. Construction activity would likely temporarily displace small mammals, marine mammals, and birds from using nearby adjacent areas during the construction phase, however, alternative habitat is available in the surrounding area. Impacts resulting from increased marine

traffic during construction may include the potential for collision with marine mammals, however it is anticipated to be low risk. The resulting potential effect is considered minimal.

Mitigation will include avoidance of vegetated habitat to the greatest degree practicable, pre-construction wildlife surveys where necessary, for example bird nest surveys if vegetation clearing occurs during nesting season, contingency plans for the discovery of wildlife species at risk and erosion and sediment controls to maintain habitat quality and quantity.

Migratory Birds Convention Act

Forty-one birds listed by the *Migratory Birds Convention Act* (Government of Canada 1994) have the potential to occur within the region (BC CDC 2019); of these, 15 are considered rare or accidental (summarized from Toochin 2018 and eBird 2019). Migratory birds have the potential to migrate through or nest within or adjacent to the Project Site. Suitable breeding habitat for most species is absent from the Project Site with the exception of riparian forest on the Fraser River that may be suitable for some songbirds such as olive-sided flycatcher (*Contopus cooperi*) (SARA- and COSEWIC-listed, provincially Blue-listed).

Vegetation removal will cause a reduction in potentially suitable nesting and foraging habitat for migratory birds and construction activity may cause migratory birds to temporarily avoid the Project Site and immediately adjacent areas. Potential effects are considered minimal due to the highly disturbed nature of the site and the small area of vegetated habitat affected. Mitigation measures as described above are expected to result in minimal risk to the Project associated with migratory birds.

7.3.3 Fish, Amphibians and Their Habitat

The Fraser River estuary is known to support 78 different species of fish, including seven salmon species and several Provincially-listed Red- and Blue-listed species, and Federal Species at Risk, including white sturgeon (Lower Fraser River Population) (*Acipenser transmontanus*; provincially Red-listed, listed as Threatened by Committee on the Status of Endangered Wildlife). White sturgeon spawning habitats are expected to be located further upstream of the Project Site in less depositional environments; however, the shoreline habitats near the Project Site may provide important rearing habitats for juvenile white sturgeon. Other aquatic species that may occur include eulachon, four species of trout and several salmon populations (BC CDC 2019).

The shoreline habitats adjacent to the Project Site, including in and around the proposed jetty workspace, are expected to provide important rearing habitats for several salmonid species, particularly in areas with tidal marsh vegetation and riparian cover. The drainage ditch in the center of the property contains a small, wetland like habitat that may support amphibians.

Activities associated with construction and operation of the jetty that may impact fish and fish habitat include site preparation, removal of existing structures, dredging, fill placement, removal of instream riparian vegetation, construction of temporary pilings and jetty, and increased river traffic. This may result in alteration or loss of habitat, disruption of habitat or mortality or injury to fish and amphibians. No impacts to fish and fish habitat are anticipated to result from increased marine traffic during project construction.

Mitigation measures will include avoidance of aquatic habitat to the greatest degree practicable, pre-construction surveys and salvage where necessary, for example if removal of the ditches or associated vegetation be required, contingency plans for the discovery of wildlife species at risk and erosion and sediment controls to maintain habitat quality and quantity.

7.4 Economic Conditions

The Project Site is located within the City of Delta in Metro Vancouver. Census data from 2016 indicates that the labour force participation rate for Metro Vancouver was 65.7 percent and the unemployment rate was 6.7 percent (Statistics Canada 2017a). Currently, employment demand is anticipated to increase

1.2 percent on average every year up to 2028, which is faster than the average annual growth of 1.1 percent in BC (WorkBC 2018).

The primary occupations in Metro Vancouver included sales and service, business, finance and administration, trades, transport and equipment operators (Statistics Canada 2017a). The largest industries in Metro Vancouver were wholesale and retail trade, health care and social assistance, professional, scientific, and technical services (WorkBC 2018).

The Project will result in a wide range of economic benefits including employment, contracting, and bidding opportunities, as well as government revenues through taxes and royalties. The Project is expected to provide approximately 110 incremental permanent jobs during its operational life.

7.5 Social Conditions

The Project Site is located on Tilbury Island, in Delta within Metro Vancouver and includes a portion of the Fraser River on the north end of Tilbury Island. The Project Site is located on industrial lands and not within the boundaries of any Provincial parks, conservation areas, Agricultural Land Reserves, or ecological reserves.

At the time of the 2016 Census, Metro Vancouver had a population of 2,463,431 and Delta had a population of 102,238, each with population growth rates of 6.5 percent and 2.4 percent respectively (Statistics Canada 2017b). Agriculture and farming have historically been the economic drivers in Delta; however, Delta has seen considerable industrial development (Delta 2019a).

Positive employment and income effects of the project may include supporting recreation and tourism, increased local employment and goods/services driven by the workers. Accommodation for construction and operation workers is not expected to have a noticeable effect as the Project Site is located in an urban environment. No effect on the use or availability of current infrastructure and services is anticipated.

The Fraser River is an important transportation route and is home to numerous industrial facilities and cargo terminals. It is also frequently used for commercial and recreational purposes. Impacts to the use and availability of the Fraser River are expected to be negligible because the increase river traffic and construction activities associated with the temporary construction jetty represent a negligible incremental increase to existing river traffic. Existing navigation channels, safety requirements and communication with other river users are expected to effectively manage potential effects to navigation safety and river use by recreational and commercial users. Potential effects on the rights of Indigenous peoples, including current use of lands and resources for traditional purposes resulting from project activities, including increased marine transportation during construction, have been addressed in section 8.4.

FortisBC's consultation plan for the Project will consider population effects including availability and access to local housing, provision of services and infrastructure and potential impacts to community well-being as a result of the expansion. When assessing potential socio-economic Project effects, the principles of Gender-based Analysis Plus (GBA+) will be applied to determine whether there are different impacts for subsets of the population.

7.6 Heritage Resources Conditions

An AIA was conducted in the area southeast of the existing facility for the Tilbury Phase 1A expansion. Although there were no significant archaeological remains within the AIA, ground-altering activities associated with expansion construction have the potential to alter archaeological or historical sites, features, and objects located in areas where previous AIA work has not been conducted.

Given that areas with heritage resource potential have not all been subject to a desktop-based assessment or field inspection, there remains a data gap and detectable heritage resources may be present and potentially be affected by expansion activities. FortisBC will conduct field investigations in areas with archaeological or historical potential prior to, or concurrent with, expansion construction

activities. If heritage resources are encountered during subsequent studies, avoidance (that is, re-design of expansion components) of heritage resources will be the primary mitigation when feasible.

7.7 Health Setting

The construction of the expansion will result in short-term increases in noise levels, air emissions from construction equipment operation, increased marine traffic during construction, and dust from vehicle use of access roads. This may cause adverse potential health effects to residents, Indigenous Groups, and nearby recreation users.

It is expected that operation of the Project will result in noise and air emissions. FortisBC will work to minimize Project emissions to the air, land, and water and emissions will be within applicable regulatory requirements.

The EA will conduct noise and air quality assessments and modeling to understand the potential effects of the Project on air quality and the acoustic environment, and to ensure that appropriate mitigation is conducted to avoid or reduce those potential effects.

7.8 Anticipated Cumulative Effects

A Cumulative Effects Assessment (CEA) will be completed for the Project. The CEA will evaluate the residual environmental and socio-economic effects directly associated with the Project, in combination with the likely residual effects arising from other projects and activities that have been or will be carried out in the Project study areas.

A detailed methodology and rationale will be provided in FortisBC's Application for an EAC. The EAC Application and the CEA will be informed by:

- approved land use plans that designate the most appropriate activities on the land base
- baseline studies and historical data that factor in the effects of past development and set out the current conditions
- potential overlapping impacts due to present developments

Potential trans-BC-boundary effects will be determined during the development of the EAC Application, but could include, for example, air quality and GHG emissions.

7.9 Accidents and Malfunctions

The EAC Application will provide a summary of potential accidents or malfunctions which could occur in connection with the Project, the potential effect of such incidents on the environment, and mitigation measures that will be implemented as part of the Project design.

Potential accidents or malfunctions could result in release of LNG, flammable liquids or pressurized gas from ruptured piping or equipment during commissioning or operation resulting in the risk of overpressure, fire and injury to personnel. Natural gas, the refrigerants used in the liquefaction process and LNG vapours are flammable in a specific range of fuel to oxygen ratio. Methane, the main component in natural gas and LNG, is flammable in a range of between approximately 5 to 15 percent methane gas to air ratio. In this ratio the mixture would burn if there is an ignition source present. LNG is a cryogenic liquid, meaning it is extremely cold and if spilled or released can cause localized freezing and/or burns on contact with skin. The design, construction and ongoing operation/maintenance of LNG facilities shall meet stringent codes and standards requirements. Hazard Identification, Hazard and Operability Studies and Safety Integrity Level Studies are conducted during phases of engineering and design. Permitting, is done through BC OGC including reviews of design and risk assessments. Prevention is a key focus however emergency management plans are also developed to develop response plans according to industrial codes / standards and in partnership with local emergency responders. Training, drills and

practice emergency exercises are conducted with emergency responders to ensure response plans are effective and ready throughout the life of the Project.

7.10 Effects of the Environment on the Project

The primary effects of the environment on the Project include seismic events and flooding.

7.10.1 Seismicity

Southwestern BC, including the Lower Mainland, is located within a seismically active area. Research conducted by Natural Resources Canada (NRCan), the Geological Survey of Canada, and others has led to revisions of the National Building Code with respect to the probability of a seismic event. This has led to the modification of geologic models for building design related to seismic events.

Based on these updated geologic models, NRCan has developed an online calculator to estimate seismic hazard at any given location in Canada (NRCan 2017). Using this calculator, Peak Ground Velocity (PGV) values were calculated for the Project Site to provide an indication of seismic hazard. The PGV value for the Project Site is 0.564 metres per second, giving it a seismic hazard value of high. This is confirmed by seismic hazard mapping (NRCan 2010), which categorizes the seismic hazard in the Lower Mainland as high.

7.10.1.1 Seismic Design and Mitigation

The current edition of the Canadian Standards Association (CSA) Z276, which applies to LNG production, storage, and handling, specifies two levels of earthquake motions that need to be considered during facility design.

- 1) Operating Basis Earthquake (OBE), based on a 10 percent probability of exceedance within a 50-year period (corresponding to a 1:475-year event or approximately 1:500 years). This is the same as the design basis earthquake used in the present National Building Code. The structures and systems will be designed to remain operable during and after the OBE.
- 2) Safe Shutdown Earthquake (SSE), based on a 5 percent probability of exceedance within a 50-year period (approximately 1:1,000 years return period). There will be no loss of containment capability of the tank and it will be possible to isolate and maintain the LNG container during and after the SSE.

The LNG facility will be designed to the higher standards encompassed in the proposed revisions of the various codes, incorporating the most recent knowledge and predictions of the potential seismic motions. The proposed CSA Z276 requirements for the OBE and SSE seismic events will be used as a minimum standard.

7.10.2 Flooding

Tilbury Island is located on the flood plain of the Fraser River, near its confluence with the Pacific Ocean. The Project Site is approximately 1 masl and is protected from flooding by a dike along the River, at the north end of the property. Flooding on the Fraser River is usually related to the spring freshet, when snowmelt in the upper reaches and tributaries of the Fraser River combine to fill the system. However, flooding in the Lower Mainland can occur when low pressure storms, bringing heavy rains and winds, combined with high tides (Delta 2019b).

Delta administers an extensive system of dikes and drainage structures built to protect the City from flooding. The system has been rebuilt a number of times over the years and is currently engineered to withstand a 200-year flood event (Delta 2019b). As previously mentioned, flood protection measures, as outlined by Delta during the building permit process, will be incorporated into building design and/or ground improvement plans.

7.11 Proposed Monitoring Programs

To confirm the effects of the Project and the effectiveness of the applied mitigation, FortisBC will develop and implement monitoring programs during the construction and operations phases of the Project, as appropriate and in collaboration with Appropriate Government Authorities. The monitoring programs will be developed in collaboration with Indigenous Groups during the preparation of the EAC Application and will be refined throughout the EA process. An Environmental Management Program will also be completed following detailed design.

8. Engagement and Consultation with Indigenous Groups

8.1 Identified Indigenous Groups

A review of the Consultative Areas Database (CAD) has identified 17 Indigenous Groups whose established or asserted traditional territories overlap with the Tilbury LNG facility. Squamish Nation and Kwantlen First Nation were not identified in the CAD report but have been included in this list due to their interest in the WesPac Tilbury Marine Jetty project, which is located near the proposed Project. Additionally, Métis Nation British Columbia has been included, as well as the People of the River Referrals Office.

Table 8-1 provides a summary of the locations of each Indigenous Group and approximate distances of their administrative offices from the Project Site. The estimated distances do not represent traditional territories, rights, title or use of the area for traditional purposes. See Appendix B of the Initial Project Description (IPD) for detailed maps of traditional territories, treaty lands and reserve locations.

Table 8-1. Identified Indigenous Groups that may be affected by the Project (shown in alphabetical order)

| Indigenous Group | Location* and First Nations Land Management Act Status | Approximate Distance of Administrative Office from the Project* |
|------------------------------------|---|---|
| Cowichan Tribes ^{a,b} | The Cowichan Tribes is made up of seven traditional villages. Today, the Cowichan Tribes have nine reserves (Cowichan 1, Cowichan 9, Est-Patrolas 4, Kakalatza 6, Kil-Pah-Las 3, Skutz 7, Skutz 8, Theik 2 and Tzart-Lam 5), which are located on southeast Vancouver Island in Duncan, near Cowichan Bay and the Cowichan River. The main community, Cowichan 1, is located in Duncan and is the closest to the Project Site. See Figure 11-1 in Appendix B of the IPD for specific locations of each reserve within the Hul'qumi'num Treaty Group collective traditional territory. The marine traditional territory spans across the Strait of Georgia to include a narrow corridor on the mainland, which includes the Project area (BC Treaty 2019a). Cowichan Tribes has signed a framework agreement under the First Nations Lands Management Act. | 64 km |
| Halalt First Nation ^{a,b} | Halalt First Nation has two reserves (Halalt Island 1 and Halalt 2). The main community, Halalt 2, is located on southeast Vancouver Island in Chemainus. Halalt Island 1 is the closest to the Project Site on Willy Island, east of Vancouver Island at the mouth of the Chemainus River. See Figure 11-1 in Appendix B of the IPD for specific locations of each reserve within the Hul'qumi'num Treaty Group collective traditional territory. The Hul'qumi'num Treaty Group Statement of Intent consists of core territory and a marine territory. Core traditional territory encompasses a portion of southern Vancouver Island from north of Duncan to Ladysmith, west to Cowichan Lake, east to the Gulf Islands, including the strait of Georgia and the South Arm of the Fraser up to its confluence with the North Arm; the marine territory extends past that confluence to Yale, which includes the Project area (BC Treaty 2019a). Halalt First Nation has not signed a framework agreement under the First Nations Lands Management Act. | 57 km |
| Katzie First Nation | Katzie First Nation has five reserves (Barnston Island 3, Graveyard 5, Katzie 1, Katzie 2, and Pitt Lake 4), which are located on the lower mainland in Pitt Meadows, Langley, and Barnston Island. Katzie 1 is the main community and Barnston Island is the closest to the Project Site. See Figure 11-2 in Appendix B of the IPD for specific locations of each reserve within the Katzie traditional territory. Katzie First Nation asserts TLU rights within its traditional territory, which includes Pitt Meadows, Maple Ridge, Coquitlam, Surrey, Langley, and New Westminster, including the Project area. (BC Treaty 2019b). Katzie First Nation has signed a framework agreement under the First Nations Lands Management Act. | 27 km |

Table 8-1. Identified Indigenous Groups that may be affected by the Project (shown in alphabetical order)

| Indigenous Group | Location* and First Nations Land Management Act Status | Approximate Distance of Administrative Office from the Project* |
|---|--|---|
| Kwantlen First Nation | Kwantlen First Nation has seven reserves (Langley 2, Langley 3, Langley 4, Langley 5, McMillan Island 6, Pekw'xe:yles and Whonnock 1) in, centred around the confluence of the Stave and Fraser rivers. The main community, McMillan Island, is the closest to the Project Site located in the Fraser river, north of Fort Langley. See Figure 11-3 in Appendix B of the IPD for specific locations of each reserve within the Kwantlen traditional territory. Kwantlen traditional territory extends from Richmond and New Westminster in the west, to Surrey and Langley in the south, east to Mission, and to the northernmost reaches of Stave Lake (Kwantlen First Nation n.d.). Kwantlen First Nation has signed a framework agreement under the First Nations Lands Management Act. | 34 km |
| Lake Cowichan First Nation ^b | Lake Cowichan First Nation has one reserve, known as Cowichan Lake or Ts'uubaa-asatx, which is located on Vancouver Island, approximately 30 km west of Duncan, on the east end of the Town of Lake Cowichan. See Figure 11-1 in Appendix B of the IPD for the specific location of Cowichan Lake within the Hul'qumi'num Treaty Group collective traditional territory. Lake Cowichan First Nation has signed a framework agreement under the First Nations Lands Management Act. | 83 km |
| Lyackson First Nation ^{a,b} | Lyackson First Nation has three reserves (Lyacksun 3, Porlier Pass 5 and Shingle Point 4). All three reserves are located on Valdes Island, between Gabriola Island to the north and Galiano Island to the south, directly opposite of the mouth of the Fraser River in the Strait of Georgia. Shingle Point 4 is the main community and Lyacksun 3 is the closest to the Project Site. See Figure 11-1 in Appendix B of the IPD for specific locations of each reserve within the Hul'qumi'num Treaty Group collective traditional territory. The marine traditional territory spans across the Strait of Georgia to include a narrow corridor on the mainland, which includes the Project area (BC Treaty 2019a). Lyackson First Nation has not signed a framework agreement under the First Nations Lands Management Act. | 57 km |
| Métis Nation British Columbia | Represents approximately 90,000 self-identified Métis people throughout BC, including 39 Métis Chartered Communities. The Provincial office is located in Surrey, BC. | 25 km |
| Musqueam First Nation | Musqueam First Nation has three reserves (Musqueam 2, Musqueam 4 and Sea Island 3), which are located along the west coast of the lower mainland in Vancouver, Richmond, and Delta. Musqueam 2 is the main community, located at the mouth of the North Arm of the Fraser River, within the City of Vancouver. Musqueam 4 is the closest to the Project Site, located near Canoe Pass on the south arm of the Fraser River. See Figure 11-4 in Appendix B of the IPD for specific locations of each reserve within the Musqueam traditional territory. The Musqueam Consultative Area overlaps the project area and the Musqueam Declaration of 1976 asserts Aboriginal rights to the lands from Howe Sound eastward to the height of land, including the watershed draining into English Bay, Burrard Inlet, and Indian Arm; south including the Coquitlam River to the Fraser River; across to the south bank of the Fraser River and proceeding downstream in the South Arm to the sea (Musqueam, 1976). Musqueam Nation has signed a framework agreement under the First Nations Lands Management Act. | 15 km |

Table 8-1. Identified Indigenous Groups that may be affected by the Project (shown in alphabetical order)

| Indigenous Group | Location* and First Nations Land Management Act Status | Approximate Distance of Administrative Office from the Project* |
|--|---|---|
| Penelakut Tribe ^{a,b} | Penelakut Tribe has four reserves (Galiano Island 9, Penelakut Island 7, Tent Island 8 and Tsussie 6). These are located directly opposite of the mouth of the Fraser River in the Strait of Georgia on Galiano Island, Kuper Island, Tent Island and in Chemainus on southeast Vancouver Island. Penelakut Island 7 is the main community and Galiano Island 9 is the closest to the Project Site. See Figure 11-1 in Appendix B of the IPD for specific locations of each reserve within Hul'qumi'num Treaty Group collective traditional territory. Core traditional territory includes a portion of southern Vancouver Island from north of Ladysmith, west to Lake Cowichan, east to the Gulf Islands. The marine traditional territory spans across the Strait of Georgia to include a narrow corridor on the mainland, which includes the Project area (BC Treaty 2019a). Penelakut Tribe has signed a framework agreement under the First Nations Lands Management Act. | 48 km |
| People of the River Referrals Office | Virtual office providing administrative, research, and technical support to several Stó:lō Communities within S'ólh Téméxw. | 78 km |
| Seabird Island Band ^d | Seabird Island has two reserves (Pekw'xe:yles and Seabird Island). The main community is Seabird Island, located in the District of Kent on the Fraser River 3 km east of Agassiz. Pekw'xe:yles is the closest to the Project Site located on the north bank of the Fraser River within the District of Mission. See Figure 11-6 in Appendix B of the IPD for specific locations of each reserve within the Stó:lō traditional territory. Seabird Island Band has signed a framework agreement under the First Nations Lands Management Act. | 95 km |
| Semiahmoo First Nation | Semiahmoo has one reserve, fronting Semiahmoo Bay at the Canada-United States border, approximately 1 km southeast of White Rock. See Figure 11-5 in Appendix B of the IPD for the specific location of the Semiahmoo reserve within the Semiahmoo traditional territory. Semiahmoo First Nation has not signed a framework agreement under the First Nations Lands Management Act. | 24 km |
| Shxw'ōwhámél First Nation ^d | Shxw'ōwhámél First Nation has four reserves (Kuthlath 3, Ohamil 1, Pekw'xe:yles and Wahleach Island 2). Ohamil 1 is the main community located on the left bank of the Fraser River, 7 km north of Laidlaw. Pekw'xe:yles is the closest to the Project Site located on the north bank of the Fraser River within the District of Mission. See Figure 11-6 in Appendix B of the IPD for specific locations of each reserve within the Stó:lō traditional territory. Shxw'ōwhámél First Nation has signed a framework agreement under the First Nations Lands Management Act. | 105 km |
| Skawahlook First Nation ^c | Skawahlook First Nation has three reserves (Pekw'xe:yles, Ruby Creek 2 and Skawahlook 1). Ruby Creek 2 is the main community located on the right bank of the Fraser River, adjacent to the District of Kent. Pekw'xe:yles is the closest to the Project Site located on the north bank of the Fraser River within the District of Mission. See Figure 11-6 in Appendix B of the IPD for specific locations of each reserve within the Stó:lō traditional territory. The Stó:lō traditional territory, known as S'ólh Teméxw, extends from Yale to Langley, BC (Stó:lō Service Agency. n.d.). Skawahlook First Nation has signed a framework agreement under the First Nations Land Management Act. | 106 km |
| Soowahlie First Nation ^d | Soowahlie First Nation has three reserves (Grass 15, Pekw'xe:yles and Soowahlie 14). Soowahlie 14 is the main community located on the left bank of the Chilliwack River, 13 km south of Chilliwack. Pekw'xe:yles is the closest to the Project Site located on the north bank of the Fraser River within the District of Mission. See Figure 11-6 in Appendix B of the IPD for specific locations of each reserve within the Stó:lō traditional territory. Soowahlie First Nation has signed a framework agreement under the First Nations Land Management Act. | 77 km |

Table 8-1. Identified Indigenous Groups that may be affected by the Project (shown in alphabetical order)

| Indigenous Group | Location* and First Nations Land Management Act Status | Approximate Distance of Administrative Office from the Project* |
|--------------------------------------|--|---|
| Squamish First Nation | Squamish Nation has 24 reserves distributed between the Squamish-Lillooet Regional District and Metro Vancouver Regional District, from southwest of Whistler to Vancouver, including Gibson's Landing and the area north of Howe Sound. The largest proportion of Squamish members reside on several urban reserves in the City of Vancouver, North and West Vancouver, and the District of Squamish. The closest reserve to the Project Site is Kitsilano 6. See Figure 11-8 in Appendix B of the IPD for the names and specific locations of each reserve within the Squamish traditional territory. Squamish traditional territory includes the cities of Vancouver, West Vancouver, North Vancouver, Burnaby, Port Moody, the District of Squamish, and the Municipality of Whistler, but does not include the Project area (Squamish 2013b; BC Treaty n.d.). Squamish First Nation has signed a framework agreement under the First Nations Land Management Act. | 18 km |
| Stó:lō Nation | The Stó:lō Nation is an amalgamation of 11 Stó:lō communities, with many reserves located throughout the Fraser Valley. Member Nations include Aitchelitz First Nation, Leq'á:mel First Nation, Matsqui First Nation, Popkum First Nation, Shxwhá:y Village, Skawahlook First Nation, Skowkale First Nation, Squiala First Nation, Sumas First Nation, Tzeachten First Nation, and Yakweakwoose First Nation. Aitchelitz First Nation, Leq'á:mel First Nation, Matsqui First Nation, Shxwhá:y Village, Skawahlook First Nation, Skowkale First Nation, Squiala First Nation, Sumas First Nation, Tzeachten First Nation, and Yakweakwoose First Nations have signed a framework agreement under the First Nations Land Management Act. | 78 km |
| Stó:lō Tribal Council | Members of the Stó:lō Tribal Council include Chawathil First Nation, Cheam First Nation, Kwaw-kwaw-Apilt First Nation, Seabird Island Band, Shxw'ówhámél First Nation, Soowahlie First Nation and Sq'éwlets First Nation. These communities have many reserves located throughout the Fraser Valley. The Chawathil First Nation, Cheam First Nation, Kwaw-kwaw-Apilt First Nation, Seabird Island Band, Shxw'ówhámél First Nation, Soowahlie First Nation and Sq'éwlets First Nation have signed framework agreements under the First Nations Land Management Act. | 97 km |
| Stz'uminus First Nation ^a | Stz'uminus First Nation has four reserves (Chemainus 13, Oyster Bay 12, Say-la-quas 10 and Squaw-hay-one 11). Chemainus 13 is the main community and is the closest to the Project Site, located on southeast Vancouver Island directly opposite of the mouth of the Fraser River in the Stuart Channel. See Figure 11-7 in Appendix B of the IPD for specific locations of each reserve within the Stz'uminus traditional territory. Stz'uminus First Nation has signed a framework agreement under the First Nations Land Management Act. | 61 km |
| Tsawwassen First Nation | Tsawwassen First Nation has 725 ha of Treaty Lands located on the upland areas between the Tsawwassen ferry terminal and the container port at Roberts Bank. Another 62 ha of fee simple land is located near Boundary Bay and on the Fraser River along Canoe Pass. The main Tsawwassen community is on the southern aspect of the Fraser River delta, on the west side of the peninsula that separates Boundary Bay from the Salish Sea. The Project is not on Tsawwassen treaty lands. See Figure 11-9 in Appendix B of the IPD for specific locations of Tsawwassen Treaty Lands and Treaty Related Lands within the Tsawwassen First Nation Treaty Area. Tsawwassen First Nation has not signed a framework agreement under the First Nations Land Management Act. | 13 km |

Table 8-1. Identified Indigenous Groups that may be affected by the Project (shown in alphabetical order)

| Indigenous Group | Location* and First Nations Land Management Act Status | Approximate Distance of Administrative Office from the Project* |
|-----------------------|--|---|
| Tsleil-Waututh Nation | Tsleil-Waututh Nation has three reserves (Burrard Inlet 3, Inlailawatash 4 and Inlailawatash 4A). Inlailawatash 4 and 4A are located at the mouth of the Indian River and head of the Indian Arm of the Burrard Inlet. Burrard Inlet 3 is the main community and is closest to the Project Site, located in North Vancouver on the shore of the Burrard Inlet, approximately 2 km east of the north end of the Second Narrows Bridge. See Figure 11-10 in Appendix B of the IPD for specific locations of each reserve within the Tsleil-Waututh traditional territory. Tsleil-Waututh Nation has not signed a framework agreement under the First Nations Lands Management Act. | 19 km |

^a Members of the Cowichan Nation Alliance

^b Members of the Hul'qumi'num Treaty Group

^c Members of the Stó:lō Nation

^d Members of the Stó:lō Tribal Council

* (Government of BC 2019; INAC 2019; Métis Nation British Columbia 2019; Stó:lō Research and Research Management Centre 2016; WesPac 2015, 2019)

* Google maps

8.1.1 Proximity to Land Used for Traditional Purposes

Through existing relationships and early engagement with Indigenous Groups on the Project, FortisBC has some understanding of traditional land and resource use in proximity to the Project area. Each of the Indigenous Groups identified above has, or asserts claims of, rights and title to the lands, water, and resources within their traditional territories. Traditional use activities include, but are not limited to fishing, hunting, trapping, and gathering activities for food, materials, trade, medicines, and traditional ceremonies (WesPac 2015).

The Fraser River is the longest river in British Columbia, running for 1,375 km from the western side of the Rocky Mountains to the Strait of Georgia (The Canadian Encyclopedia 2019). It has several major tributaries and forms Canada's fifth largest watershed, the Fraser River Basin (Fraser Basin Council 2013). The Fraser River has historically been an important transportation route and food source for Indigenous peoples along its entire length (The Canadian Encyclopedia 2019; Fraser Basin Council 2013). The lower Fraser River has been used throughout history by Coast Salish peoples who inhabited the area and used its resources for gathering plants, hunting, fishing, and trading (Lehigh Hanson 2019; Mission Museum n.d.). Because of the importance of the Fraser River as a transportation route, many village sites were located along the waterway (Mission Museum n.d.). Archaeological studies have documented evidence of large settlements and seasonal camps along the banks of the Fraser River, particularly on the north bank immediately opposite of the Project site (Lehigh Hanson 2019).

Today, many Indigenous Groups continue traditional practices in the Fraser River, including fishing for all species of Pacific Salmon for food, social and ceremonial purposes (Lehigh Hanson 2019). During early consultation, Halalt First Nation has stated that the historic Cowichan Nation Alliance (CNA) exclusive Aboriginal title area includes the entirety of Tilbury Island. The CNA have commenced legal action to reclaim the historic village site of Tl'uqtinus and other proximal lands in what is present day Richmond and Delta, including the right to fish in the south arm of the Fraser River (CNA 2019). Historically, Tl'uqtinus was an important site for fishing, berry gathering and cultivation, settlement, and trading (WesPac 2015). The historic village site of Tl'uqtinus is located approximately 515 m north of the project site. The trial began September 9, 2019.

The Musqueam Nation has a proven right to fish in Canoe Passage as defined in the Supreme Court of Canada Sparrow case (Supreme Court of Canada 1990).

Refer to Section 11.2 of the IPD for further information on land used for traditional purposes, including established or asserted Indigenous rights, title, and other interests. Through ongoing consultation and engagement with Indigenous Groups, FortisBC will further identify lands used for traditional purposes, specific activities that occur in these areas and their distances from the Project site. This information will be expanded upon in the Detailed Project Description and Impact Assessment.

8.2 Summary of Preliminary Engagement Activities

FortisBC conducted preliminary engagement activities in advance of filing this Initial Project Description. The preliminary engagement approach is characterized as follows.

8.2.1 Preliminary Engagement Approach

1. An email notification of upcoming early engagement activities was sent on July 2, 2019 to all Indigenous Groups with consultative areas overlapping the Phase 2 Project area. The notification included an approximate date of July 9, 2019 upon which the Draft Initial Project Description would be sent and the requested date of July 31, 2019 to return comments. The purpose of this notification was to provide advance notice to allow Indigenous Groups to appropriately resource review if they wished to comment on the early draft.
2. High-level IPD was sent on July 12, 2019 to Indigenous Groups with consultative areas overlapping the Phase 2 Project area. Indigenous Groups were asked to provide comments on the initial project description by August 2, 2019. This period is 21 days.
3. Five Indigenous Groups responded to the initial communication regarding the IPD. Table 8-2 is a summary of the correspondence received. During the early engagement activities, the project team participated in meetings with Indigenous Groups, responded to questions and discussed next steps regarding the regulatory process.
4. Upon receipt of comments the draft IPD was revised to reflect any comments received from Indigenous Groups.
5. The revised IPD was circulated to all Indigenous Groups that provided comments on the initial draft or indicated an interest in the Project by responding to initial Project communications. The revised IPD was provided on September 16, 2019 with a request that any comments be received by October 2, 2019. Indigenous Groups were advised that FortisBC would continue to address comments received after this date but they may not be reflected in the draft submitted to regulators. Indigenous Groups were also advised that the Project was in early engagement stages and there would be additional opportunities for engagement through the BC EAO process.

Preliminary engagement has focused primarily on information sharing about the Project, the next steps in regulatory review, and responding to questions, and recording concerns expressed. At this stage of the Project, we understand that additional work is required for Indigenous Groups to scope out the nature of their concerns. Additional detail about engagement activities for each Indigenous Group is provided in the IPD.

8.2.2 Key Areas of Interest

Table 8-2 presents a summary of key areas of interest by Indigenous Groups to-date. Additional details about issues raised by each Indigenous Group is provided in the IPD.

Table 8-2. Key Areas of Interest by Indigenous Groups to Date

| Key Areas of Interest | Key Areas of Interest Details |
|---------------------------------------|--|
| Business opportunities and employment | <ul style="list-style-type: none"> • Support for community initiatives • Employment and skills training for members |
| Capacity Funding | <ul style="list-style-type: none"> • Support for participation and technical expert review |
| Cumulative Impacts | <ul style="list-style-type: none"> • Impact of additional development within the project area and along the Fraser River |
| Heritage Resources | <ul style="list-style-type: none"> • Presence and protection of Heritage Sites |
| Permitting and Consultation | <ul style="list-style-type: none"> • Adequate time for Indigenous participation in the EA / IA process and development of the consultation plan |

8.3 Consultation Plan

8.3.1 FortisBC Statement of Indigenous Principles

FortisBC is committed to building effective Indigenous relationships and to ensuring we have the structure, resources, and skills necessary to maintain these relationships.

To meet this commitment, the following principles will guide the actions of the company and its employees:

- FortisBC acknowledges, respects, and understands that Indigenous Peoples have unique histories, cultures, protocols, values, beliefs, and governments.
- FortisBC supports fair and equal access to employment and business opportunities within FortisBC companies for Indigenous Peoples.
- FortisBC will develop fair, accessible employment practices and plans that ensure Indigenous Peoples are considered fairly for employment opportunities within FortisBC.
- FortisBC will strive to attract Indigenous employees, consultants, and contractors and business partnerships.
- FortisBC is committed to dialogue through clear and open communication with Indigenous communities on an ongoing and timely basis for the mutual interest and benefit of both parties.
- FortisBC encourages awareness and understanding of Indigenous issues within its workforce, industry, and communities where it operates.
- To achieve better understanding and appreciation of Indigenous culture, values, and beliefs, FortisBC is committed to educating its employees regarding Indigenous issues, interests, and goals.
- FortisBC will ensure that when interacting with Indigenous Peoples, its employees, consultants, and contractors demonstrate respect, and understanding of Indigenous Peoples' culture, values, and beliefs.
- To give effect to these principles, each of FortisBC's business units will develop, in dialogue with Indigenous communities, plans specific to their circumstances.

As outlined by the FortisBC Statement of Indigenous Principles, engagement activities related to the Phase 2 expansion project will be guided by a commitment to clear and open communication in a timely manner with local Indigenous Groups.

The Proponent will undertake a combination of the following based feedback from Indigenous Groups.

- Introductory meetings to share information about the project, seek a point-of-contact and identify group-specific consultation policies, protocols, or preferences
- Meetings to discuss the proposed Project, provide project updates, and discuss topics of interest
- Project Site visit
- Invite participation in, and provide feedback on AIA and other studies
- Provide capacity funding to support community-specific assessments or studies
- Offer to facilitate community specific meetings
- Correspond throughout the pre-application and application phases via Project updates, written correspondence (emails, letters), and phone conversations
- Work with groups to identify training, economic, and employment opportunities

FortisBC has developed a comprehensive Engagement Plan, outlining a process that is inclusive of Indigenous Groups potentially affected by the Project. FortisBC will incorporate the principles of GBA+ by deliberately seeking out participation from diverse groups within communities to support an accurate scoping and assessment of potential issues of importance to communities.

8.4 Preliminary Assessment of Potential Impacts to Indigenous Groups Resulting from Project Activities

The following is a preliminary assessment of potential impacts to Indigenous Groups as a result of the project. The potential effects identified in Table 8-3 below apply to all project phases and activities, including construction of the temporary construction jetty and associated increases in marine traffic during construction. Further understanding of these impacts is expected to result from consultation and engagement with Indigenous Groups throughout the assessment process. Mitigation measures and appropriate management plans will be developed based on comments received from Indigenous Groups through the EA process.

Table 8-3. Preliminary Identification of Potential Effects to Indigenous Groups Resulting from Project Activities

| Category | Potential Effects |
|---|---|
| Established or asserted Indigenous rights, title, and other interests | <ul style="list-style-type: none"> • Changes to accessibility of traditional lands, waters, and resources • Changes to the quality of traditional lands, waters, and resources • Changes to availability of traditional lands, waters, and resources • Change in traditional economic activities such as hunting, fishing and gathering for materials, subsistence, and trade • Change in sense of place and cultural continuity due to changes in accessibility and environmental quality |
| Current use of land and resources for traditional purposes | <ul style="list-style-type: none"> • Changes to accessibility of TLU sites • Changes to habitat quality • Changes to the availability, quantity and quality of traditional lands, waters and resources • Changes to traditional land use experience due to sensory disturbance such as noise and light • Changes to cultural continuity and intergenerational knowledge transfer due to changes in accessibility and environmental quality |

Table 8-3. Preliminary Identification of Potential Effects to Indigenous Groups Resulting from Project Activities

| Category | Potential Effects |
|--|---|
| Health and socio-economic conditions | <ul style="list-style-type: none"> • Sensory disturbance due to increased noise and light levels • Decrease in air quality due to air emissions and dust from vehicle use of access roads • Potential safety risks due to increased traffic and industrial activities • Change in traditional economic activities such as hunting, fishing and gathering for materials, subsistence and trade • Change in sense of place and cultural continuity due to changes in accessibility and environmental quality • Increase in employment and contracting opportunities |
| Physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological, or architectural significance | <ul style="list-style-type: none"> • Disturbance or alteration to heritage resources, sites, structures, or features of cultural importance • Change in access to heritage resources, sites, structures, or features of cultural importance • Disturbance or alteration of landscape, waterscape or viewscape impacting cultural experience of lands, waters and resources |

9. Engagement and Consultation with Governments, the Public and Other Parties

9.1 Summary of Preliminary Engagement Activities

The following section outlines consultation that FortisBC has been conducting with government, the public and other parties on Projects of the Tilbury LNG facility since 2012.

9.1.1 Government

Since 2012, FortisBC has regularly communicated and met in-person with Municipal, Provincial, and Federal governments to provide updates and respond to questions about the company and the Tilbury LNG facility. Through these meetings, FortisBC gained an understanding about community values, and sought recommendations on consultation and engagement. In general, government stakeholders are interested in how FortisBC ensures the safety of its facility, general information about LNG and potential project impacts. FortisBC regularly meets with Delta to inform them of Project updates and provides advanced notice of FortisBC-related activities taking place in their community. FortisBC also engages municipal staff, local first responders, and other stakeholders in full-scale emergency exercises at the Tilbury LNG facility. FortisBC met with the BC EAO and CEA Agency (now called IAAC) in June 2019 to initiate Project discussions.

9.1.2 Public and Other Interested Parties

FortisBC recognizes that the public expects meaningful consultation and engagement and expects work to be conducted in a safe and environmentally responsible manner. Through public engagement, FortisBC will identify issues that have been raised by different interested groups and individuals and will develop a table of issues outlining how each issue will be addressed.

FortisBC uses a number of communication channels to share information with the public including the company's major projects website: TalkingEnergy.ca, a dedicated Project email and phone number, and through social media platforms.

The company is also actively involved in events in the communities near the Tilbury LNG facility, which provide the public with an opportunity to learn more about the company and the facility. To educate the community about the properties of LNG, FortisBC works with partners in the community to organize opportunities for the company to share its knowledge. These events include a live LNG demonstration, panel discussions, and presentations to industry and business associations.

FortisBC has actively engaged with local community and environmental groups to support their programs and share information about the Project. Consultation activities to date include in-person meetings to discuss the Project, and presentations to community groups.

9.2 Proposed Stakeholder Consultation Activities

The focus of FortisBC's stakeholder consultation on the Project will be to ensure that government, the public and other interested parties are informed about the Project, have access to information, and are encouraged to provide feedback throughout the duration of expansion.

9.2.1 Government

FortisBC will continue to meet regularly with local elected officials to keep them informed on the Project and seek their input to help address potential concerns of local residents, businesses, and constituents.

FortisBC will work with Delta city staff, the BC OGC, and other Appropriate Government Authorities regarding permitting requirements to maintain transparency, ensure compliance, and address feedback throughout the process.

The company will also explore more opportunities to put on live demonstrations to educate stakeholders and help the public better understand the properties of LNG. FortisBC will continue to seek participation from Municipal staff and local stakeholders in future emergency preparedness exercises.

9.2.2 Public and Other Interested Parties

The next phase of engagement on the Project with the public will begin with an initial notification letter sent to landowners and businesses near the Tilbury facility. The letter will include contact details and a link to the project website should they have any questions or would like more information.

FortisBC will continue to participate in and support events and organizations that are important to the local communities. Continuous presence will allow FortisBC to engage with members of the community on a regular basis, to seek input and address questions and potential concerns throughout the process.

FortisBC will develop an engagement plan to ensure open dialogue is maintained with government, public and interested stakeholders and to meet the company's consultation objectives.

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