

**Construction Permit Application
Fraser Grain Terminal
11041 Elevator Road, Surrey, BC**



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File: 1866-001.01
June 2017

FGT
FRASER GRAIN TERMINAL

EXECUTIVE SUMMARY

Project Overview

Fraser Grain Terminal Ltd. is proposing to construct a grain export facility, Fraser Grain Terminal (FGT or the “Project”) to receive, store and ship bulk grain products. Fraser Grain Terminal Ltd. (the “Proponent”) is a Canadian family-owned and operated grain company with more than 100 years of experience in agribusiness and locations across Canada. Serving more than 10,000 Canadian farmers and producers, we market grain to over 40 countries. The Project is located adjacent to Fraser Surrey Docks, at 11041 Elevator Road in Surrey, BC (the “Site”) on Vancouver Fraser Port Authority (VFPA) land designated as Port Terminal.

The Proponent has submitted this Project and Environmental Review (PER) Application (the “Application”) to VFPA for a PER Project Permit. This Application has been prepared in accordance with the Category D Application Submission Requirements for PER Process No. 15-041 (version issued 24 March 2017) and addresses requirements for General Submission, Project Description, Drawings, Studies and Reports, and Consultation.

The Project will trans-ship up to 3.5 million tonnes per annum (Mt/a) grain products including wheat, barley, oil seeds, and pulses. Grain will be received by rail and either loaded directly to vessels or stored temporarily prior to loading. A small proportion of the total volume will be loaded to containers or trucks for local distribution. Layout of the new facility is shown in the figure below and includes state-of-the art grain handling features to minimize noise and dust. The 24-month construction period will follow demolition of two existing buildings¹, and construction will include the following new components:

- Unloading station and transfer tower with fully-enclosed conveying equipment and a built-in dust suppression system.
- Up to 34 above-ground steel storage bins (24 x 3,000 t and 10 x 500 t)
- Travelling shiploader with telescoping cascading spout to reduce dust during vessel loading, replacing existing shiploader
- Semi-loop rail track and holding tracks to reduce railcar shunting during unloading
- Container loading facility and storage yards
- Rail and truck loading facility
- An administration building and maintenance shop

¹ The demolition work is the subject of PER Application 15-255.

The Project will support Canadian farmers, increase efficiency in grain exports and build strong business relationships with international customers. Since 2014, Canadian exports of grain and specialty crops have increased by more than 20%. This Project will help address key constraints in exporting Canadian grain by:

- Improving utilization of the limited western Canada rail capacity, and
- Enhancing capacity of port industrial land for grain handling.



Required Studies and Project-Related Effects

Vancouver Fraser Port Authority identified Application submission requirements to address the engineering and environmental requirements to satisfy their regulatory mandates for assessment. The FGT Application summarizes design, design analysis and effects assessments and provides all reports as attachments. The Application includes a **Project Description and Description of Operations** that includes the Project's engineering specifications.

To address construction, the Application includes the following reports and studies:

- **Habitat Assessment (including Nesting Birds Survey and Species at Risk):** Terrestrial and aquatic species (including birds and species at risk) and their habitats were assessed for potential Project-related effects. Temporary effects to aquatic and terrestrial resources can generally be mitigated through construction best practices. The Project is projected to result in the permanent loss of 1.12 ha of vegetated area, 20 m² of green-coded aquatic habitat under the existing berth and 70 m² of non-fish-bearing freshwater habitat (due to infilling of an existing ditch). With appropriate mitigation in place, Project construction is unlikely to cause significant adverse effects to terrestrial and aquatic resources. New rail track that parallels Elevator Rd overlaps with critical habitat for the federally-listed plant streambank lupine. Currently, this habitat is vegetated with trees, shrubs and grasses and has little suitability for this species, which prefers gravelly open sites, such as railway ballast. Discussions are currently underway with the regulator regarding permitting requirements under the federal *Species at Risk Act*.
- **Archaeological Resources:** An archaeological overview assessment describes areas of low, moderate and high archaeology potential within the Project Site and recommended measures for construction including the use of a Chance Find Procedure.
- **Construction Environmental Management Plan (CEMP):** The CEMP describes site environmental management and mitigation for construction, particularly for soil and water management. A **Soil and Groundwater Management Plan, Hazardous Material assessment and Chance Find Procedure** for archaeology are appended to the CEMP. The CEMP also addresses mitigation for construction-related noise and air quality effects, as well as temporary impacts to aquatic and terrestrial species and habitat.

For the operations phase of the Project, the Application includes the following studies and reports:

- **Noise Assessment:** Noise levels during operations were modeled based on the proposed design. The assessment determined that, in 2020, Total Noise Rating Level were projected to increase by less than 1dBA for most receivers with a maximum increase of 2dBA at some receivers. The change in the percentage of people highly annoyed is predicted to range from 0% to 3% well below than the Health Canada criterion of 6.5%.
- **Air Quality Assessment:** Air quality during operations was modelled based on the proposed design. The assessment predicted that particulate matter emissions in 2020 will substantially decrease compared to existing conditions. This improvement in air quality is predicted to occur, even with the increased throughput, primarily due to implementation of best available technologies (e.g., the cascading shiploader).
- **Hazardous Materials Handling:** Describes how the hazardous materials will be managed during construction.
- **Geotechnical Report:** Describes site seismic and geological hazards, and recommended measures for design and construction.
- **Stormwater Pollution Prevention Plan:** Describes daily terminal operation related to storm water management.

- **Traffic Impact Study:** The study reviewed interactions between road and rail traffic, under existing conditions and with the Project in place and found Project-related traffic effects on Fraser Surrey Port Lands were minimal.
- **Rail Operations Plan:** Describes the proposed rail operations.
- **Marine Traffic:** Describes proposed vessel design, vessel traffic levels, and anchorage requirements and includes an operational plan for berthing/unberthing.
- **Best Available Technology Not Entailing Excessive Cost (BATNEC) Report:** The assessment found that use of BATNEC and operational best practices, the Project has the potential to improve air quality in the area surrounding the Project.
- **Energy Efficiency Study:** The study compared typical facility electrical energy consumption levels with the Project's use of energy-efficient technology and methods and found that the Project be between 5% and 21% more energy efficient than a facility that uses traditional technologies and methods.
- **Lighting:** Proposed exterior lighting (e.g., location, type, orientation and level of illumination) was assessed and found that Project-related light trespass and sky-glow effects were minimal, due to effective lighting design and distance to local residences. Construction-related effects of Project lighting are unlikely given the daylight operating hours of the Project, existing light environment and distance from sensitive receptors (at least 250 m).
- **View and Shade Impact Analysis:** 3D rendering was used to assess potential Project effects on community views and shade. The analysis concluded that, in general, the Project will have minimal impact on views and shade, given that the Site is surrounded by industrial and transportation land-uses and that these land uses would buffer nearest public places, residences and community facilities from adverse effects.
- **Alternative Siting Options:** Alternative configurations of proposed building and structures were assessed based on economic, technical, social and environmental perspectives.
- **Fire Protection and Life Safety:** Fire risk and dust explosion hazards were assessed for the Project and safety countermeasures are recommended as part of plant design and operation.
- **Flood Protection:** Describes vulnerability of the Site to flooding.

Consultation

The Proponent is working with the VFPA to ensure that community interests are considered as part of the PER Process. Public and stakeholder consultation and Aboriginal engagement activities occurred during the Preliminary Review Phase (prior to the submission of this Application) and will occur during the Application Review Phase and during construction implementation.

- **Preliminary Public Comment Period Engagement Summary Report:** Findings from the Preliminary Public Comment Period are summarized for the Project. The public, stakeholders were actively engaged during a Comment Period from November 3 to December 1, 2016. Consultation materials and activities included a public website, information brochures, online feedback forms, notification letters, newspaper advertisements and community meetings including Coffee Shop

Drop-in sessions. Materials and outreach was designed to introduce the Project to interested parties and answer any preliminary comments or questions.

- **Preliminary Public Comment Period Input Consideration Report:** The report demonstrates how comments and questions received during the Preliminary Public Comment Period are being considered in developing the scope of technical and environmental studies, and will continue to be incorporated through the design phase of the Project.
- **Stakeholder Engagement:** The Proponent engaged neighbouring businesses during the Preliminary Review Phase. Stakeholder responses from the preliminary comment period are summarized in the two reports described above.
- **Preliminary Comment Period First Nations Engagement Summary:** Guided by VFPA, the Proponent commenced early-engagement activities with multiple First Nations in February 2016. Introductory letters were sent to 14 First Nations, followed by Project update emails. The Proponent has met with all First Nations who indicated their interest in the Project and requested a meeting.
- **Application Review Phase Engagement and Consultation:** The Proponent, in collaboration with VFPA, will provide the public and stakeholders with Project details, technical study results and proposed mitigation. Future engagement with key stakeholders is anticipated to include letter notifications, a public comment period, meetings, online outreach, and a community open house. Future engagement with First Nations is anticipated to include meetings, emails, information sessions, workshops, and sharing of Project documents.

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LIST OF ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

Abbreviation	Definition
AEP	Annual Exceedance Probability
AGT	Alliance Grain Terminal
AIS	automatic identification system
Application	Application for Category D Application Submission Requirements for PER No. 15-041
BATNEC	Best Available Technology not Entailing Excessive Cost
Bekaert	Bekaert Canada Ltd.
BKL	BKL Consultants Ltd.
CEMP	Construction Environmental Management Plan
CMC	CMC Engineering and Management Ltd.
DMD	DMD & Associates Ltd.
EG	Enns Gauthier Landscape Architects Inc.
Exp	exp Services Inc.
FGT	Fraser Grain Terminal
FGT lease area	the former Bekaert lease area, including land exchanged with FSD
FSD	Fraser Surrey Docks
FSPL	Fraser Surrey Port Lands
Hemmera	Hemmera Envirochem Inc.
JV Facility	An existing agri-products handling facility jointly operated by P&H and FSD
LOA	Overall vessel length
Mt/a	Million tonnes per annum
OCP	Official Community Plan
P&H	Parrish and Heimbecker, Limited
PARY	Port Authority Rail Yard
PER	Project and Environmental Review
PM	Particulate matter
Project	Fraser Grain Terminal, Fraser Grain Terminal Export Facility
Proponent	Fraser Grain Terminal Ltd.
QEP	Qualified Environmental Professional
Site	11041 Elevator Road in Surrey, BC
STCW	Standards of Training, Certification and Watchkeeping for Seafarers
Submission Requirements	Category D Application Submission Requirements for PER No. 15-041
t	tonnes
VFPA	Vancouver Fraser Port Authority
VTS	Vessel Traffic Service
WSP	WSP Parsons Brinckerhoff

1.0 GENERAL SUBMISSION REQUIREMENTS

Fraser Grain Terminal Ltd. is proposing to construct a grain handling facility (the “Project”) to receive, store and ship bulk grain products. See **Figure 1** and **Figure 2** for Site location and construction boundary. The Project is located adjacent to Fraser Surrey Docks (FSD), at 11041 Elevator Road in Surrey, BC (the “Site”) on Vancouver Fraser Port Authority (VFPA) land designated as Port Terminal.

Fraser Grain Terminal Ltd. (the “Proponent”) has submitted this Project and Environmental Review (PER) Application (the “Application”) to VFPA for a PER Project Permit. This Application has been prepared in accordance with the final Category D Application Submission Requirements for PER Process No. 15-041 (issued 24 March 2017). To assist the reader in navigating the document and demonstrate compliance with the submission requirements, a Table of Concordance has been prepared and is included as **Attachment 1**.

The Application includes supporting studies provided as attachments (“Attachments”). Where Attachments have appended documents, these are identified as Appendices.

1.1 APPLICATION

1.1.1 Application Form

See attached Category D Application form (**Attachment 2**).

1.1.2 Application Fee and Documentation Deposit

Information is included in **Attachment 3**.

1.2 BUILDING PERMIT

The Proponent recognizes that a Building Permit will be required. The Proponent will follow VFPA guidance on the Building Permit requirements and submit a permit application following receipt of PER approval for construction. The anticipated permitting schedule is shown in **Figure 3**. This schedule assumes that the PER Project Permit will be received in November 2017 and the Project Construction will commence in January 2018.

1.3 PROJECT TEAM MEMBERS CONTACT INFORMATION

The list of key Project team participants is provided in **Table 1-1** below.

Table 1-1 Project Team Members Contact List

Team Member	Address	Contact Number
Casey McCawley Director of West Coast Operations Parrish and Heimbecker Ltd.	#640 – 355 Burrard St. Vancouver, BC V6C 2G8	604-697-2550
Tanya Hayes Project Coordinator Parrish and Heimbecker Ltd.	#640 – 355 Burrard St., Vancouver, BC V6C 2G8	604-697-2556
Michel Vander Noot Engineer of Record CMC Engineering and Management Ltd.	#300 – 1160 Douglas Road, Burnaby, BC. V5C 4Z6	604-294-6483, ext. 102
Robin Taylor Senior Environmental Assessment Manager Hemmera Envirochem Inc.	18th Floor, 4730 Kingsway Burnaby, BC V5H 0C6	604-669-0424, ext 289
Darrell Desjardin Special Advisor, Ports Hemmera Envirochem Inc.	18th Floor, 4730 Kingsway Burnaby, BC V5H 0C6	604-669-0424, ext 210
Morgan Tanner Aboriginal Engagement Hemmera Envirochem Inc.	18th Floor, 4730 Kingsway Burnaby, BC V5H 0C6	604-669-0424, ext. 493
Sarah Bowie Fish and Wildlife Hemmera Envirochem Inc.	18th Floor, 4730 Kingsway Burnaby, BC V5H 0C6	604-669-0424, ext. 441
Caroline Astley Vegetation Hemmera Envirochem Inc.	18th Floor, 4730 Kingsway Burnaby, BC V5H 0C6	604-669-0424, ext. 223
Kirsty Dick Community and Stakeholder Engagement Lucent Quay Consulting Inc.	#430 – 688 West Hastings Street Vancouver, BC V6B 1P1	604-637-6456
Mark Bliss Acoustics BKL Consultants Ltd.	#308 – 1200 Lynn Valley Road North Vancouver, BC V7J 2A2	604-988-2508, ext. 102
Chris Kosher Air Quality WSP Canada Inc.	#200 – 1985 West Broadway Vancouver, BC V6J 4Y3	604-736-5421
Mike Enns View and Shade Enns Gauthier Landscape Architects Inc.	#202-175 East Broadway, Vancouver, BC, V5T 1W2	778-379-3173
Andre Ekkert Fraser Surrey Docks Liaison Fraser Surrey Docks Limited Partnership	11060 Elevator Road Surrey, BC V3V 2R7	604-356-9753

2.0 PROJECT DESCRIPTION REQUIREMENTS

This section addresses the project description requirements of Section 2 of the Submission Requirements.

2.1 GENERAL SCOPE

2.1.1 Applicant Background

The Proponent is Fraser Grain Terminal Ltd is a Canadian family-owned and operated grain company with more than 100 years of experience in agribusiness with locations across Canada, including the Alliance Grain Terminal (AGT), a joint venture located on the south shore of the Burrard Inlet. Serving more than 10,000 Canadian farmers and producers, we have a worldwide distribution that includes 40 countries.

The Proponent, in partnership with FSD, have been operating a port terminal facility that has been handling agri-products at FSD since 2011 (JV Facility). This consists of a small rail unloading facility, a 18,000 t storage shed (Shed #1), portable conveyors to load vessels and a shiploader. In 2015, selected as the baseline year for the environmental assessment, this existing JV Facility handled more than 800 000 t of agri-products.

2.1.2 Project Overview

The Project proposes to trans-ship approximately 3.5 million tonnes per annum (Mt/a) of grain products including wheat, barley, oil seeds, and pulses. Grain will be received by rail and either loaded directly to vessels or stored temporarily prior to loading. A small proportion of the total volume will be loaded to containers or trucks for local distribution. The new facility will include state-of-the art grain handling features to minimize noise and dust and will replace an aging and obsolete manufacturing warehouse on vacant port land that has not been used for more than two years.

The Project location and anticipated construction boundary² are shown on **Figures 1** and **2**. A 24-month construction period will follow demolition of two existing buildings³, and construction will include the following new components:

- Unloading station and transfer tower with fully-enclosed conveying equipment and a built-in dust suppression system
- Up to 34 above-ground steel storage bins (24 x 3,000 tonnes (t) and 10 x 500 t)
- Travelling shiploader with telescoping cascading spout to reduce dust during vessel loading, replacing existing shiploader
- Semi-loop rail track
- Realignment of an existing rail track

² Additional temporary laydown areas that do not involve ground disturbance may be required and will be negotiated at a later date.

³ The demolition work is the subject of PER Application 15-255.

- Extension to the PARY tracks 94, 95 & 96 (existing holding tracks) to reduce required shunting during unloading
- Container loading facility and storage yards
- Rail and truck loading facility
- An administration building and maintenance shop

During operation, the Project facility will receive and unload bulk grain arriving by railcar. The product will either be loaded directly onto a vessel or stored in silos. Grain stored in the silos will eventually either be loaded to a vessel or container, destined for export; or to a railcar or truck, destined for the local market.

The Project land was formerly leased by Bekaert Canada Limited, a steel wire manufacturer. The Site, including several buildings, is currently vacant and includes two derelict buildings.

2.1.3 Project Rationale

Two major constraints exist in getting farmers' grain to overseas customers: limited port industrial land and limited western Canadian rail capacity. As such, the Proponent proposes to build a modern grain terminal on the Fraser River. The agri-products shipped through the Project will originate from a combination of grain produced by Parrish & Heimbecker and third-party shippers. The Proponent has joint operating experience, including a successful partnership at AGT in Vancouver and a terminal in Thunder Bay.

The federal government mandates railways to move grain under the *Fair Rail for Grain Farmers Act* (S.C. 2014, c. 8). Moreover, fines are imposed for railways not achieving the weekly volume targets. The Proponent recognizes that:

- Reducing bottlenecks in the grain supply chain is a high priority for the federal government.
- The North Shore or Burrard Inlet terminals are currently constrained by congestion.
- Turnaround time for trains serving the Project could be 2.5 days less than those servicing the North Shore or Burrard Inlet terminals.

Efficient container loading is a key component of Project design. The typical method of unloading railcars directly to containers is slow and inefficient. The Project facility will be designed to load containers directly from the same bulk storage used to load vessels. The container stuffing operation will be handled separately from the rail receiving and unloading operations. Products destined for container shipment, will be received by rail and placed in storage silos also used for vessel loading. Products destined for containers will therefore be drawn from storage silos. The railways need to ship over 100 car trains and want the cars unloaded as quickly as possible.

2.1.4 Project Components

This description of the Project is primarily based on the Fraser Terminal Project Description and Description of Operations (**Attachment 5**). The Project property includes:

- The former Bekaert lease area, including land exchanged with FSD (the FGT lease area),
- The adjacent FSD lease area, and
- The adjacent Port Authority Rail Yard (PARY) licence area.

Project lease boundaries are shown on **Drawing 1419-G-05-111 (Attachment 4A)**.

Project components are shown in **Figure 4** and **Figure 5**. While majority of construction works and operations will occur on land, marine works (e.g., piling) will also be constructed. The proposed Project components are described below by lease and licence area. Project drawings are provided in **Attachment 4A**, with drawing reference numbers provided in **Table 3-1**.

2.1.4.1 FGT Lease Area

On the FGT lease area, the following new infrastructure rail, unloading and loading, storage, conveying, containers, buildings and utilities will be built:

Rail System

- New semi-loop rail for the unloading of railcars, which will transit through an unloading building and connect to the PARY tracks.
- Realignment of an existing spur line, which will connect to the semi-loop rail track transiting through a railcar loading building.
- Semi-loop rail track and holding tracks to reduce railcar shunting during unloading (semi-loop on FGT and FSD lease area).

Unloading System

- An unloading station, including an unloading hopper, a railcar door opener and car indexer, which will be housed within a steel-frame building. The receiving conveyor and unloading pit will be installed in the basement of the unloading pit.
- A leg pit adjacent to the unloading building.

Process Tower

- A steel-frame tower will house processing equipment (e.g., legs, bulk weighers, shipping bin, samplers, diverter valves).

Grain Storage System

- Corrugated steel silos (up to 24 x 3,000 t and 10 x 500 t) will be mounted on circular concrete pony walls.

- Totally enclosed shuttle conveyor system and reclaim belt will be constructed to respectively fill silos and transfer product.
- A 1 m thick foundation slab will be poured on top of the existing concrete slab, to support the silos.
- A solid concrete trench and pit will be constructed to accommodate a reclaim conveyor and bucket elevator⁴.

Conveying System

- A network of totally enclosed transfer conveyors will include elevated conveyors running inside steel trusses and supported by steel bents and towers, and conveyors at ground level.

Container Stuffing

- A container stuffing facility will include a loading leg, conveyor, surge bin container tilting and weighing platform, emergency truck loadout station, and a sampler.
- An asphalt and concrete paved area will be built for the storage of containers.

Rail and Truck Loading

- Rail and truck loading facilities will include a steel-frame building, a totally enclosed feed conveyor, a bulk weigher, three surge bins, an automated railcar loading spout, and indexer, a weighback bin, a loading spout for bulk trucks and emergency loadout, an agri-product sampler with automated carousel and a platform truck scale.

Buildings

- A pre-fabricated steel administration building will be erected on a new concrete slab and will house administration offices, laboratory, and rooms for controls, employee dining, employee changing, IT maintenance and sample storage.
- A pre-fabricated steel building will be erected on a new concrete slab to house a maintenance shop.

Other Infrastructure and Ancillary Systems

The following systems will be located on the FGT lease area:

- Hydraulic power (including potential hydraulic actuators).
- Compressed air distributed through network of small, screw-type compressors placed at strategic locations throughout the plant.
- Fire protection system including:
 - Fire detection and alarm system for structures: Final design for occupied facilities (e.g., office building and lab) will comply with National Building Code fire protection requirements and have stand-alone fire alarm systems.
 - Site facility design where there is little or no human presence will consider best available technology and good engineering practice for the prevention of explosions and protection of

⁴ The foundation design for the silos is under discussion with Metro Vancouver to determine requirements to protect Metro Vancouver's watermain.

- lives and assets. Protective technology will include manual pull stations, smoke detectors, point-type heat detectors, and temperature detection in conveyors and bucket elevators.
- Site fire protection includes location of hydrants and fire lanes, fire access route and means of egress.
 - Fire Access Plan includes routing for primary and alternate routes for access to and egress from the terminal.
 - Electrical system includes design of components for continuous heavy-duty operations.
 - Most of the existing power distribution system will be retained.
 - New installations include two distribution transformers and 14 prefabricated electrical rooms.
 - Lighting: The lighting design includes roadway lights, floodlights, wall mount-down lights, and lighting controls.
 - Security: Security fencing will enclose the Site and include gated access: a staffed main gate, remotely-operated gates for the rail system, and cardlocked gates for dock-side access.
 - Dust control system design includes:
 - Product flow speed regulators
 - Totally enclosed material handling equipment
 - A baffle system above the unloading hopper
 - Cascade-type loading spout on the shiploader
 - Cartridge-type aspiration fans and air filters
 - Central vacuum systems.

Civil Services

Civil design includes that for utilities such as water supply, sanitary sewer, stormwater, and electrical. No natural gas services are required for the Project. The following were considered in the design of Project civil services:

- Needs for domestic, sanitary and electrical power services will have lower demand loads than that required for the previous tenant.
- The existing domestic water supply feed to the Site lacks sufficient pressure for fire-fighting services at the upper elevations of the facility
- Very little fugitive dust or spilled grain is expected at the Project facility that could make its way to the storm sewer.

Design of Project civil works includes:

- Water supply:
 - A new ring distribution pipe will be installed around the facility to service domestic and fire-fighting requirements.
 - Domestic water pressure will be augmented by a booster pump for use in fire-fighting.

- Sanitary Sewer:
 - The existing facility's holding tank is located in the south-west corner of the property, and uses a duplex pump system to feed a force main that discharges to the sanitary sewer.
 - The Project's sanitary design includes several small pump stations that feed a collection system that discharges to the existing holding tank and reduces the required depth of the new piping system.
- Storm Sewer:
 - The total area of the Project property is similar to that of the previous tenant and the total surface drainage load will remain similar.
 - Multiple new structures and buildings required modification of the drainage and stormwater collection system.
 - The stormwater system design includes oil and grit separators to limit potential discharge of contaminants to the storm sewer system.
- Electrical Services:
 - The existing medium voltage feed (25kV), a buried line running from Robson Road, will be retained, along with the existing electrical room.
 - Sub-feeds from this electrical room will be buried where required.
 - All other buried wiring (control or power) will be run in plastic conduit approximately 1.0 m below the ground surface, in accordance with applicable codes and guidelines (BC Electrical Code, CSA 22, BC Hydro guidelines, etc.).
 - All piping work will be carried out in accordance with the Master Municipal Construction Documents Association.
 - Where feasible, trenching and excavations will not exceed 2.0 m in depth.

2.1.4.2 Port Authority Rail Yard (PARY) Licence Area

Changes to the existing rail system in the PARY licence area required for 3.5 Mt/a throughput include:

- Extending Tracks 94, 95, and 96 at the PARY.
- Relocating several existing turnouts and installing new turnouts.
- To connect to existing trackage at the JV facility:
 - A new turnout will be added on the existing JV lead line to bifurcate rail traffic into the Project facility.
 - The JV's exit track will be re-aligned to an existing track east of Robson Road.
 - The Project's exit track will take over the JV facility's existing track east of Robson Road.

2.1.4.3 FSD Lease Area

In the area leased from FSD, new shiploader and conveyor infrastructure will include:

- A travelling shiploader at Berth #4 and a portion of Berth #3;
- Semi-loop rail track and holding tracks to reduce railcar shunting during unloading (semi-loop on FGT and FSD lease area).
- Realignment of JV rail track.
- Shipping conveyors from property boundary to the shuttle conveyor;
- A totally enclosed shuttle conveyor along Berths #3 and #4 to supply the shiploader; and
- A new bucket elevator and conveyor to replace the existing vessel loading conveyors located on Berth #3.

2.1.5 Project Setting

The Project Site is on the south side of the Fraser River in Surrey, British Columbia (**Figure 6**). The Project is situated in an industrial area adjacent to Highway 17 (South Fraser Perimeter Road) within Surrey's Whalley town centre and is approximately 100 m from the boundary of the Corporation of Delta (Delta). The City of New Westminster is located directly across from the Project on the north side of the Fraser River.

The Project is located entirely on federal lands designated by VFPA's Land Use Plan as Port Terminal (PMV 2014). The Project Site has operated as an industrial port facility since the early 1930's.⁵ Lands surrounding the Project west of Highway 17 are designated as commercial, industrial, and mixed use. East of Highway 17, land use is predominantly residential and institutional (school).

The majority of the Project area has been leased directly from VFPA by the Proponent, with the remainder on a license over adjacent FSD lands. The land leased directly from VFPA was formerly leased by Bekaert Canada Limited, a steel wire manufacturer. As agreed with VFPA, discussions will be held between CP Rail, Rabanco, and VFPA during the review period to define a lease agreement for the PARY track extension areas, as these are outside the FGT lease area. The Project Site, including several buildings, is currently vacant and approximately 10.3 ha (25.5 ac) in size.

The nearest sensitive human receptors are residences on Regal Drive, Royal Crescent, and 96 Avenue in Surrey which are located approximately 100 m from the Project Site boundary (**Figure 6**). The nearest schools are Royal Heights Elementary school, located on 11665-97 Avenue in Surrey, and Annieville Elementary School, which is located on 112 Street in Delta. Both schools are approximately 800 m from the Project Site (**Figure 6**). The nearest parks include Annieville Park and Kendale Place Mini-Park in Delta, and Ravine Park, Royal Heights Park, and Tom Hopkins Ravine Park in Surrey (**Figure 6**).

⁵ The Project and adjacent Port lands are designated Industrial in the City of Surrey Official Community Plan (2014).

In the context of biophysical receptors, the Project Site is located adjacent to the Fraser River, ~75 m from Gunderson Slough, and ~50 m from Shadow Brook (**Figure 6**). The Fraser River is a regionally-important, fish-bearing waterbody. Shadow Brook, the nearest fish bearing watercourse to the Site (**Figure 6**), runs under Robson Road and Elevator Road via a series of culverts, and drains into Gunderson Slough.

2.2 PROJECT CONSTRUCTION

The Project involves construction of the following:

- Buildings (storage area, receiving area, transfer tower, container loading building, railcar/truck loading building, office building, maintenance building)
- Installation of services (water and sewer systems, mechanical and electrical)
- Installation of a shipping system (wharf, transfer system, and gallery), and
- Road and rail line construction.

Construction activities include pile driving for the shipping system, pouring of concrete for building foundations, and erection of buildings and structures. Limited excavation will be required and is anticipated to require management and disposal of contaminated soil and groundwater.

Construction activities are described in below. Project operations are described in **Section 2.3**.

2.2.1 Construction Schedule and Staging

Construction is planned to start shortly after receipt of the Project permit from the VFPA. Construction is planned to commence once demolition activities⁶ are complete and is anticipated to take approximately 24 months from mobilization to commissioning. VFPA requirements. **Figure 7** shows the proposed construction schedule for the Project. **Section 2.3.2** of CMC's Project Description (**Attachment 5**) details the sequence of equipment use by activity for the Project.

Construction works have been planned according to functional areas of the Site such as storage, receiving, shipping, and container loading. Construction is anticipated to be sequenced as follows:

- Month 1:
 - Install Site services (e.g., project office) and utilities (water, sewer)
 - Prepare storage and laydown and
- Month 2 to Month 11:
 - Concrete works (pour for raft foundation, silo foundations and ring beams)
 - Excavation in receiving area
 - Construct office and maintenance buildings

⁶ The demolition work is the subject of PER Application 15-255.

- Month 6 to Month 11:
 - Install storage cones and silos
- Month 7 to Month 13:
 - Install galleries, bents and towers in storage area
 - Install foundation and galleries, bents and towers for shipping transfer system
 - Install foundation and galleries, bents and towers for wharf transfer gallery
 - Install foundation, rails and shiploader on wharf
 - Install rail main loop and spur line
 - Grade and pour foundation for container loading area and erect container loading building
 - Mechanical, electrical services
- Month 14 to Month 24:
 - Complete mechanical, electrical services
 - Complete road accesses
 - Start-up, testing and commissioning.

Note that construction sequencing described above may change once a contractor is retained.

Construction Equipment

Equipment to be used during Project construction are summarized in **Table 2-1**. A detailed list and sequencing of equipment is provided in **Section 2.3.2 of Attachment 5**.

Table 2-1 Equipment to be Used by Construction Activity

Construction Equipment	Construction Services	Civil Services (Water, Sewer System, Roads)	Storage Area			Receiving Area					Transfer System				Wharf				Rail Works (Main Loop and Spur Line)	Container Area		Buildings		Utilities		Clean Up		
			Storage Area Preparation	Storage Area Concrete	Storage Area Steel	Receiving Area Excavation and Piling	Receiving Area Concrete	Receiving Area Steel	Receiving Area Equipment	Receiving Area Building	Main Transfer Tower Concrete	Main Transfer Tower Steel and Equipment	Transfer System Piling and Concrete	Transfer System Steel and Equipment	Wharf Transfer Gallery; Piling and Concrete	Wharf Area; Water Side Piling and Concrete Works	Wharf Area; Rail and Steel Works	Shiploader Erection		Container Storage Areas	Container Loading Structure	Office Building	Maintenance Building	Mechanical Equipment Installation	Electrical Equipment Installation			
Rough terrain 30 T crane(s)	1			1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	*	*	
Skid-steer loader(s)	1	2																	1	2								2
Forklift(s) 3 T capacity	1									1		1		1		1	1			1	1	1	1	1				
Miscellaneous cars and trucks for personnel and deliveries	M	M	M	M		M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			M
5 T truck(s) with integral folding boom crane		2		1	1		1	1	1	1		1	1	1	1		1	1	1		1	1	1	1				1
5 T excavator(s)		2				2							1		1				1		1	1	1	1				
Compactors		2																										
Concrete saw			1			1							1		1				1		1	1	1	1				
Tower cranes				2																								
50 T crane				1																								
Concrete pump(s)				2			2				2		2		1	1					1	1	1	1				
Ready-mix concrete truck(s)				6			6				6		6		3	3				3	3	3	3	3				
Concrete vibrators				5			4				4		4		2	2				2	2	2	2	2				
Miscellaneous hand tools: hammers, impact wrenches, etc.				M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M		M	M	M	M				M
Welders				6	2		2	2	1		2		2	2	2		2	1		2	2	1	1					
200 T crawler crane				1							1		1	1			1											
200 T hydraulic crane				1																								
Articulating boom lifts				2					2		2		1	1							1	1	1	1				
Sheet pile driving unit (vibrator type)						1																						
Pile driving unit (vibrator type)						1							1	1	1													
Tieback anchor drill unit						1																						
Dump trucks						4								2	2	2			2		2	2	1					1
Jackhammer																1			2				1					
Air compressor																1			1									
Service barge and tug																	1											
Rail laying machine																			1									
Spreader/grader																			1	1								

M = miscellaneous

Note: the numbers in the table represent the number of construction equipment units required for the task.

* = All equipment installation already covered by other events

2.2.2 Construction Traffic

Attachment 4 shows Site access, parking and traffic routes (see **Table 3-1** for drawing number).

Anticipated traffic volume is shown in **Table 2-2**.

Table 2-2 Traffic Volume

Item	Value	Remarks
Trucks (Delivery and/or Removal)		
Total Number of Working Days	270 days	Based upon published schedule.
Total Trucks	3,744 trucks	Based upon calculations for each phase of the work.
Average Number of Trucks	14 trucks / day	Total trucks / total days
Activity on a Typical Busy Day	40 trucks / day	Approximation for typical busy day.
Maximum Expected Truck Volume during construction phase	83 trucks / day	Calculation for heavy activity day.
Workers' Vehicles		
Average Vehicle Occupancy	1.5 persons / vehicle	Approximation
Average Attendance	99 people	Total expected manpower / total number of work days
Associated Number of Vehicles	66 vehicles	Attendance / occupancy.
Peak Attendance	198 people	Approximation for busiest period (2 x average)
Associated Number of Vehicles	132 vehicles	Attendance / occupancy.

2.3 PROJECT OPERATIONS

General activities during Project operations will consist of unloading trains, loading vessels for export, and loading railcars and bulk trucks for local markets. The agri-products will arrive at the facility in bulk railcars and be transferred to the unloading pit. From the unloading pit, the grain is directed either to vessels or to storage silos. A small amount of the annual terminal throughput will be received by railcars or bulk trucks for distribution to the local market.

2.3.1 Existing and Proposed Capacities and Throughput

Capacities and throughput of the proposed Project are summarized in **Table 2-3** below. Further detail is provided in the Traffic Impact Study (**Attachment 9**). Peak periods of activity will be dependent on ocean going vessel (OGV) and train arrivals and may arrive at any time of the day/night.

Table 2-3 Summary of Proposed Throughput Capacities

Description	Facility	Quantity	days/a	h/day	Throughput
Incoming					
Trains	JV Shed 1	22 trains/a @ 5,000 t 39 trains/a @ 11,200 t	22 39	8 19	≈ 547,000 t/a*
	Proposed Fraser Grain Terminal	309 trains/a @ 11,200 t	309	≈ 13 ≈ 16	≈ 3,500,000 t/a
Total Incoming					≈ 4,008,000 t/a

Outgoing					
OGV					
Vessel Loading	JV Shed 1	≈ 18 ships/a @ ≈ 30,400 t	≈ 43	24	≈ 547,000 t/a*
	Proposed Fraser Grain Terminal	≈ 62 ships/a @ ≈ 42,400 t	≈ 67	24	≈ 2,631,000 t/a
Sub-total by OGV					≈ 3,178,000 t/a
Land					
Railcar loading	Proposed Fraser Grain Terminal	8.8 cars/d @ 90 t	253	10	200,000 t/a
Bulk truck loading	Proposed Fraser Grain Terminal	2.6 trucks/d @ 45 t	253	10	30,000 t/a
Container filing	Proposed Fraser Grain Terminal	95 TEU/d @ 25 t	253	10	600,000 t/a
Sub-total by Land					830,000 t/a
Total Outgoing					≈ 4,008,000 t/a

*Note: Currently permitted

During operations, parking for Project employees, visitors, and trades will be provided around the proposed administration building and maintenance shop. Based on employee, visitor and handicapped parking requirements, 57 parking spots have been designed. The general arrangement for parking stalls is included in **Attachment 4A** (see **Table 3-1** for drawing number).

2.3.2 Hours of Operation and Employment

The hours of operation at the existing JV Facility over the years have varied from 8 hours to 24 hours per day depending on railcar receipts and vessel schedule. Project hours of operation are anticipated to be similar to those of the existing JV Facility. The Project facility is anticipated to operate seven days a week, except statutory holidays.

The expected personnel required for full operation at the planned capacity is shown in **Table 2-4**. A total of 51 full-time equivalents (FTE) are estimated. The Project does not currently employ staff at the Site.

Table 2-4 Expected Direct Project Employment

Positions	Personnel (FTE)
Office	9
Operations	32
Maintenance	8
Quality Control	2
Totals	51

2.3.3 Proposed Increase in Terminal Capacity

The JV Facility loads vessels at the existing FSD Berth #3. The railcars for this operation make use of the PARY trackage which is connected to the JV Facility unloading station. The throughput for the JV Facility for the years 2011 to 2015 is shown on **Table 2-5** below.

With the commissioning of the proposed Project, the existing JV Facility will be dedicated to handling specialty agri-products. All other grains will be redirected to the Project facility as it will be able to more efficiently ship products and maintain quality. As noted earlier, Project throughput is estimated at 3.5 Mt/a. There is no existing throughput via truck and vehicular traffic.

Table 2-5 JV Facility Throughput from Train to Vessel 2011 - 2015

Year	Number of Vessel Calls	Throughput (tonnes)
2011	7	122 599
2012	12	261 817
2013	31	405 182
2014	31	436 511
2015	56	805 543

2.4 OVERVIEW OF POTENTIAL PROJECT EFFECTS AND PROPOSED MITIGATION MEASURES

This section provides an overview of potential Project effects from construction and operations activities to land, water, air, land and adjacent community and businesses. This assessment is based on the scope identified in the Submission Requirements, interactions and effects and mitigation are summarized below in **Table 2-6**.

Studies completed to support of the Application are listed in **Section 4.0**.

Table 2-6 Summary of Potential Project-related Interactions, Effects and Mitigation

Project Scope	Description of Interaction	Further Details	Potential Effects	Potential Mitigation		
				Attachment	Application Section Title	Application Section #
Hazardous Materials Handling	Hazardous materials will be used in the construction and operation of the Project. Spills or poor disposal practices may allow hazardous materials could result in exposures to human or environmental receptors.	Spill Prevention, Emergency Response, and Hazardous Materials Handling Plan	<ul style="list-style-type: none"> Potential for health effects to humans and the environment from exposure to hazardous materials. 	Attachment 6: Spill Prevention, Emergency Response, and Hazardous Materials Handling Plan	Hazardous Materials Regulations and Hazardous Materials Storage	4.1
Marine and Upland Geotechnical	Upland: Pouring of raft slab foundations for the silos and buildings. Piles under the main receiving tower, receiving pits, and gallery support bents. Marine: Up to 69 new piles to support travelling shiploader will be installed through the wharf deck. Riprap will need to be cleared from pile locations and then replaced following pile installation.	Sections 2.2, 4.7, and 4.16	<ul style="list-style-type: none"> Upland: Noise and air quality effects due to Project-generated traffic and equipment; potential for spills and concrete-affected wastewater reaching sensitive aquatic receptors Marine: Potential for overpressure or direct effects to marine life due to impact pile driving; sediment resuspension due to removal and replacement of riprap; potential for spills due to marine equipment operation. 	Attachment 20: CEMP	CEMP	4.16
Stormwater Pollution	Stormwater runoff during construction and operations flows over land or impervious surfaces such as paved roadways, parking lots and building rooftops into catchbasins, ditches and directly to watercourses and the stormwater treatment system.	Stormwater Pollution Prevention Plan	<ul style="list-style-type: none"> Stormwater runoff may accumulate debris, soil and sediment, and contaminants that could adversely affect water quality and fish and fish habitat. Stormwater quality may affect sewage treatment operations. 	Attachment 8: Stormwater Pollution Prevention Plan	Stormwater Pollution Prevention Plan	4.3
Traffic Impacts	Construction traffic will enter and exit the Site via the proposed new road access across Port Authority land from Robson Road. This new access road is expected to be completed prior to the start of Project construction. Attachment 27 provides written confirmation that agreements are in place between Fraser Grain Terminal Ltd. and Fraser Surrey Docks to build the access road, independent of the FSD coal facility project. Construction activities will cause a slight increase in road traffic, and key activities such as concrete pours will involve short-term increases in truck traffic. ¶	Site Plan Traffic Impact Study	<ul style="list-style-type: none"> Slight increase in local traffic during Site construction. Additional increase in truck traffic during key activities, such as concrete pours. Operational effects are anticipated to be minimal. 	Attachment 20: CEMP Attachment 9: Traffic Impact Study	Site Access, Mobilization, and Laydown Area	4.4 4.16
Rail Operations	Project operations will introduce an additional 309 trains per year, and increase density of rail tracks in the PARY yard.		<ul style="list-style-type: none"> See Noise Study See Air Assessment <p>Operational effects are anticipated to be minimal. Biophysical effects at PARY are anticipated to be minimal</p>	Attachment 13; Environmental Noise Assessment Attachment 14: Environmental Air Quality Assessment	Rail Operations Plan	4.5
Marine Traffic	Handysize, Handymax, Panamax vessel profile similar to existing. Berthing and unberthing, loading, bunkering while at the Project Site as well as mooring and anchorage in transit.	Marine Traffic	<ul style="list-style-type: none"> Potential interactions with other vessel traffic while in transit to anchorage or berthing at the Project; Vessel numbers to increase to about 80 per year Spills to the wharf or Fraser River during bunkering or loading Increased noise and air emissions due to increased vessel numbers over existing. 	Attachment 13; Environmental Noise Assessment Attachment 14: Environmental Air Quality Assessment Attachment 6: Spill Prevention, Emergency Response, and Hazardous Materials Handling Plan	Marine Traffic Noise Study; Air Assessment; Spill Prevention, Emergency Response, and Hazardous Materials Handling	4.1 4.9 4.10

Project Scope	Description of Interaction	Further Details	Potential Effects	Potential Mitigation		
				Attachment	Application Section Title	Application Section #
Noise	Noise emissions from construction equipment, vehicles, piling and other activities. Construction work will be completed during daytime hours, therefore nighttime noise is not anticipated. Operations activities (receiving product from trains, train and truck movements, transferring product to vessels and silos and loading) may increase total noise levels, however noise from the Project will not be the dominant noise source in the area.	Noise Study	<ul style="list-style-type: none"> Construction vehicles and light and heavy equipment noise and Project-induced traffic may affect noise levels in the vicinity of the Site. If impact pile driving is used, this will affect noise levels in the vicinity of the Site Increase in the Total Noise Rating Level is modeled during operations to be less than 1 dBA for the majority of receivers. 	Attachment 20: CEMP Attachment 13; Environmental Noise Assessment	Noise Study Potential Mitigation	4.9 4.16
Air Quality	Construction-related vehicle and equipment and fueling emissions and dust generation from exposed soils, and tracking of materials within and from the Site. During Project operations, increased air emissions due to Project-related train, vehicle and vessel movements operations, and loading and unloading of agri-products.	Air Assessment	<ul style="list-style-type: none"> During construction, vehicle and equipment emissions (e.g., particulate matter (PM10), hydrocarbons, volatile organic compounds, carbon monoxide, nitrogen oxides, and sulphur dioxide) and fugitive dust emissions may affect air quality in the vicinity of the Site. During operations, Project-related particulate matter and combustion emissions are predicted to be less than existing ambient levels 	Attachment 20: CEMP Attachment 14: Environmental Air Quality Assessment	Air Quality Mitigation Potential	4.10 4.16
Energy Efficiency	Energy loads during operation of the plant (motor loads, lighting, and miscellaneous house loads) and energy conservation measures inherent in current design (type of equipment and operational methods).	Energy Efficiency Study, BATNEC Report	<ul style="list-style-type: none"> Adverse effects due to inefficient electrical energy consumption mitigated by design. 	Attachment 15: Energy Efficiency Study Attachment 12: BATNEC Report	Energy Efficiency Study BATNEC Report	4.11 4.8
Lighting	Lighting required outside of normal construction hours (e.g., if required for concrete pours) may impact the adjacent community and businesses. Operations lighting may impact the adjacent community and businesses.	Lighting Analysis and Lighting Plan	<ul style="list-style-type: none"> Due to daytime operations, construction-related disturbance from light pollution due to the Project to the local community is anticipated to be minimal During operations, light sources with the most potential off-site light trespass impacts are the stanchion mounted lights (Type 3) for the Container Storage Area and Shipping Area Upper Levels and the floodlights located on the walkway that illuminate the ships. These lights are aimed downward and away from residences located 250 m away from the Site. Given the distance of Site lighting from local residences, light trespass due to the Project Site is likely to be consistent with the LZ3 Lighting Zone definition and therefore not a significant factor. 	Attachment 16: Lighting Plan and Lighting Review Memo	Lighting Study	4.12 4.16
View and Shade Effects	Visibility of Project infrastructure from surrounding communities. Potential for shading due to Project infrastructure on surrounding community features and residences.	View and Shade Study Report	<ul style="list-style-type: none"> The proposed building heights for the new facility are anticipated to have minimal potential to affect views from the surrounding communities. The highest potential for affected views to the Site are from the north, along the New Westminster and Queensborough water fronts facing south and south west No shading effects to residences are predicted. 	Attachment 17: View and Shade Study Report	View Study Impact Assessment and Recommendations	4.13
Alternative Siting	Building configuration on Site and potential to adversely affect community features and views from the community. Configuration are reviewed from economic, technical, community and environmental perspectives.	Alternative Siting Options Report	<ul style="list-style-type: none"> Configuration was selected based on financial and environmental factors. 	Attachment 18: Alternative Siting Options	Alternative Siting Options	4.14
Archaeology	No archaeological resources have been found on Site, however there still remains a possibility on encountering a chance find during excavation, particularly if excavation depth is greater than fill depth (average 2.5 m).	Archaeological Potential – Preliminary Assessment report and Archaeological Overview Assessment	<ul style="list-style-type: none"> During construction, disturbing or otherwise adversely affecting intact archaeological resources during excavation or other works involving deep disturbance of soils. N/A during operations. 	Attachment 20: CEMP Appendix D: Chance Find Procedure	Archaeological Resources	4.15

Project Scope	Description of Interaction	Further Details	Potential Effects	Potential Mitigation			
				Attachment	Application Section Title	Application Section #	
Soil and Groundwater	<p>Previous soil and groundwater contamination has been identified at the Project Site, and known areas of contamination will be generally avoided during construction earthworks. Unexpected contamination may be encountered during excavation.</p> <p>Potential leaks and spills from construction vehicles and equipment could adversely affect soil and/or groundwater.</p> <p>Poorly managed construction waste could adversely affect soil and / or groundwater.</p>	CEMP	<ul style="list-style-type: none"> Encountering unexpected soil and / or groundwater contamination during excavation. Potential leaks and spills from construction vehicles and equipment. Mishandling of construction waste. 	Attachment 20: CEMP	Contaminated Soil and Groundwater Management	4.17	
					Spill Response Plan	4.16	
					Fuel Management Plan	4.16	
					Waste Management	4.16	
Habitat Assessment and Nesting Bird Survey	<p>Terrestrial habitat</p> <p>The Project Site is an industrial, previously disturbed area with little native vegetation; vegetation mainly consists of weedy and invasive plant species. Vegetation removal on the Site will be carried out during construction.</p> <p>The forested area east of the Site represents bird nesting habitat and foraging and cover habitat for small and medium sized mammals. This area could be impacted by the future construction of a rail loop.</p>	Habitat Assessment Report and Nesting Bird Survey Report	<ul style="list-style-type: none"> Temporary construction disturbance and 1.12 ha permanent loss of vegetated area (predominantly invasive and non-native species). Introduction of invasive plant species through imported soil and/or equipment. If clearing is required in the period when bird nesting could occur: <ul style="list-style-type: none"> Destruction of active nests or breeding areas Temporary disturbance of birds present during Project activities Injury or mortality to birds as a result of equipment operation Temporary disturbance of wildlife present during Project activities Injury or mortality to wildlife as a result of equipment operation 	Attachment 21: Habitat Assessment Attachment 20: CEMP	Vegetation and Wildlife Management	4.16 4.18	
					<p>Aquatic habitat</p> <p>Most of the proposed construction works are located approximately 120 m from the Fraser River.</p> <p>Sedimentation due to earthworks could enter the Fraser River or Gunderson Slough via Site drainage and affect the aquatic environment. This would be of particular concern in areas which are being cleared for future construction of roads, rail lines or other infrastructure in proximity to Site ditches. Sedimentation could also adversely affect the storm drain system.</p> <p>Dewatering and concrete-affected water could affect the aquatic environment if discharge is not contained and treated.</p> <p>Marine pile installation (vibratory hammer) will be required. Piling activities could also pose effects on the aquatic environment due to habitat disturbance.</p>	Habitat Assessment Report	<ul style="list-style-type: none"> Marine habitat effects: Temporary disruption during pile driving and minor permanent loss of about 20 m² of low productivity nearshore habitat (FREMP 2015) due to installation of new piles in the Fraser River. Temporary disturbance of 700 m² of riprap during piling. Potential for overpressure effects (injury or mortality of fish) due to impact pile driving during marine works. Adverse effects (e.g., injury or mortality to fish) due to introduction of deleterious substances during construction works or resulting from equipment operation. Freshwater habitat effects: Change in habitat quality due temporary loss of riparian vegetation from clearing for the semi-loop rail track. Infill of 70 m² of non-fish bearing (Class C) ditch habitat due to culvert installation
	Concrete Works and Grouting	4.16					
	Marine Works	4.16 4.18					
		Species at Risk Assessment	Critical habitat for an at-risk plant species (streambank lupine) is located just east of Elevator Road where a portion of the rail loop will be constructed.	Species at Risk Assessment and Habitat Assessment Report			
	Sensitive Habitat Features and Species				4.16 4.18		

Project Scope	Description of Interaction	Further Details	Potential Effects	Potential Mitigation		
				Attachment	Application Section Title	Application Section #
Fire and Dust Hazards	Accumulation of dust inside buildings and other enclosed spaces or near ignition sources.	Preliminary Review of Applicable Codes and Standards, Process Hazard Analysis and Operational Fire Safety Plan	<ul style="list-style-type: none"> Risk of dust fires and explosions due to accumulation of grain dust in enclosed spaces or adjacent to ignition sources. Risks include fire or explosion occurring; fire spread beyond the area of origin; injury or death; and building damage. The Project was designed to minimize these risks. 	Attachment 22: Preliminary Review of Applicable Codes and Standards, Process Hazard Analysis and Operational Fire Safety Plan	Fire Protection and Life Safety	4.19
Flood Protection	Potential for Site inundation during a 200 year flood and effects to Project facilities.	Flood Protection Report	Under a 200-year flood scenario, new structures were not inundated, except for traveling mechanical components of the shiploader.	Attachment 23: Flood Protection	Flood Protection	4.20

3.0 DRAWING REQUIREMENTS

Drawings and associated information needs as identified in the Submission Requirements are listed in the **Table 3-1: Drawing Concordance**. These drawings (current as of 3 April 2017) have been prepared by qualified professionals and are provided in PDF format in **Attachment 4**. A separate digital file will be provided with the AutoCAD files.

Table 3-1 Drawing Concordance

Drawing Requirements	CMC Drawing Number (Attachment 4A series 1419-G-05)	Advisian Drawing Number (Attachment 4B series 307071-01159-00-MA-DSK)	Stantec Drawing (Attachment 10 series CT)
Location			
Plan showing the relationship of the proposed Project to surrounding area at a 1:7000 scale	111		
Site Plan			
Lease and property boundaries, easements and right-of-ways.	111, 200		102, 103
Legal high water mark where applicable.	222, 604, 605		
Location and dimensions of all existing and proposed buildings, structures, equipment, and marine structures.	200, 210-212, 220-222, 230-241, 245, 250-255, 260-264, 270-275, 280, 281, 303, 402, 403, 601-605, 610-612, 700-710, 720, 721		
Access points including roadways, driveways, parking areas, walkways, berths, gangways, docks.	282, 300-303		
Area of demolition or construction staging/laydown area.	400, 401, 408		
Buildings, Structures & Equipment			
Elevations of front, rear, and two sides with dimensions.	240, 274, 275, 280, 281, 708, 710		
Floor levels and height above and below finished grades.	240, 264, 274, 275, 280, 281, 708, 710		
Building floor plans of all storeys including door, window and skylight locations.	280, 281		
Roof plans with dimensions and elevations of roof parapet, mechanical and elevator/stair housing.	238, 240, 263, 274, 280, 281		
Finishing details and materials.	240, 274, 275, 280, 281		

Drawing Requirements	CMC Drawing Number (Attachment 4A series 1419-G-05)	Advisian Drawing Number (Attachment 4B series 307071-01159-00-MA-DSK)	Stantec Drawing (Attachment 10 series CT)
Excavation depths anticipated (receiving pits, foundations, trenches for utilities, etc.), including depth of excavation required to construct any below-ground infrastructure.	233-237, 245, 261, 272, 401, 403		
Signage (location, dimensions and lighting details).	700-710		
Information on Site loading for foundation design criteria and any other anticipated loads.	Notes on 001		
Marine Structures			
Site plan specific to proposed marine works only. Identify existing marine structures and those intended to be removed or relocated or will be impacted (e.g. storm water outfall impacted by rip rap placement).	220-222, 601-605, 610-612	1503	
Dimensions, and cross-sections of front, rear and two sides of proposed marine structures including dolphins, piles, docks, piers, gangways, floats, fenders, bollards, rip rap, navigational lighting, navigation aids, ranges, dredging channels, dams, and areas to be filled etc.	220-222, 301, 302, 401-403, 601, 602, 604, 605, 610-612	1501, 1503-1506	
Dimensions and characteristics of proposed materials.	610-612	1501, 1503-1506	
Structures in relation to the tidal Higher High Water and Lower Low Water lines including water depth.	222, 601, 604, 605	1505, 1506	
Plan of proposed dock facility to include location and SWL of mooring securing points.	220, 610	1504	
Confirm the design vessel (maximum size that can be accommodated) at the berths on the plans.	220-222, 601, 604, 605	1501	
Lot Grading and Utilities			
Separate plans showing existing and proposed utilities.	410-414		
Lot grading plan showing existing/proposed paving and drainage. Separate to two plans if required for clarity.	404-406		
Discrete Site plan showing existing/proposed fire hydrants and emergency vehicle access routes.	300, 310, 410, 411, 413, 414		
Proposed service connections to utilities or systems (water, sewer, storm water, power, gas), both above and below ground.	410-414		
Provide written confirmation of which other authorities or jurisdictions need to provide consent or conduct works to establish connections to utilities, and confirmation that capacity exists within those 3rd party networks.	411		

Drawing Requirements	CMC Drawing Number (Attachment 4A series 1419-G-05)	Advisian Drawing Number (Attachment 4B series 307071- 01159-00-MA-DSK)	Stantec Drawing (Attachment 10 series CT)
The Applicant is responsible for location of all existing utilities. VFPA will provide known utility information, but location of buried utilities must be confirmed by the applicant.	410		
Lighting Plan			
Lighting shown on the Site plan for all proposed exterior lighting including the location, type of bulbs, orientation, and level of illumination on the ground. For further information, please review Port of Vancouver's Lighting Guideline, available at: http://www.portvancouver.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/	700-710		
Parking and Access			
Widths of proposed roadways and driveways.	282, 300		
Dimensions of maneuvering areas including turning radii.	300		
Fire access routes or lanes to be shown on a Site plan.	300, 310		
Proposed employee and/truck parking area with dimensioned and numbered parking stalls.	282, 300		
Typical cross sections and proposed grades of all streets, and details of curbs, gutters, sidewalks, and other improvements.	409		
Rail			
Existing and proposed rail tracks, switches, and other associated rail works.	500-504, 520-521		100-103
Description of the rail operations expected, and how rail cars are delivered to the Site and managed while on the Site.	500-521		100-103
Vegetation Plan			
Existing trees and vegetation types (including listed plant species, biodiversity/species richness, invasive species types and relative abundance) landscaping, fencing, and location, quantity, and type of proposed vegetation removal (including number of trees to be removed, if applicable).	Refer to Habitat Assessment (Attachment 21)		
Proposed vegetation mitigation plan, including a plan showing the location of replanting, the species of plants proposed (native species are strongly preferred, and may be required), fencing, invasive species monitoring and management areas and other landscape elements.	Refer to Habitat Assessment (Attachment 21)		

4.0 REQUIRED STUDIES, REPORTS AND PLANS

This section summarizes studies and reports prepared for this Application by qualified professionals⁷ in their respective fields. Technical reports prepared in accordance with Section 4 of the Submission Requirements and attached to this Application are:

- Spill Prevention, Emergency Response, and Hazardous Materials Handling Plan (**Attachment 6**)
- Geotechnical Report (**Attachment 7**)
- Stormwater Pollution Prevention Plan (**Attachment 8**)
- Traffic Impact Study (**Attachment 9**)
- Rail Operations Plan (**Attachment 10**)
- Marine Structures Study (**Attachment 11**)
- Marine Traffic Information Requirements
- BATNEC Report (**Attachment 12**)
- Noise Study (**Attachment 13**)
- Air Assessment (**Attachment 14**)
- Energy Efficiency Study (**Attachment 15**)
- Lighting Study (**Attachment 16**)
- View and Shade Impact Analysis (**Attachment 17**)
- Alternative Siting Options (**Attachment 18**)
- Archaeological Potential – Preliminary Assessment (**Attachment 19**)
- Archaeological Overview Assessment (**Attachment 19**)
- Construction Environmental Management Plan (CEMP) (**Attachment 20**)
- Soil and Groundwater Management Plan (**Attachment 20**)
- Habitat Assessment (**Attachment 21**)
- Nesting Bird Survey (**Attachment 21**)
- Species-at-Risk Assessment (**Attachment 21**)
- Preliminary Review of Applicable Codes and Standards, Process Hazard Analysis and Operational Fire Safety Plan (**Attachment 22**)
- Flood Protection (**Attachment 23**)

⁷ Qualified professionals are identified in Sections 4.1 to 4.20.

4.1 SPILL PREVENTION, EMERGENCY RESPONSE, AND HAZARDOUS MATERIALS HANDLING PLAN

CMC Engineering and Hemmera jointly prepared a Spill Prevention, Emergency Response, and Hazardous Materials Handling Plan in accordance with industry best practice and Port guidance.

The Spill Prevention, Emergency Response, and Hazardous Materials Handling Plan in **Attachment 6)** includes:

- Procedures for emergency response to reportable spills;
- An inventory of hazardous materials anticipated to be handled or stored on Site during normal operations.
- Procedures for spill prevention, containment and clean-up plan for hydrocarbon products (including fuel, oil and hydraulic fluid) and any other deleterious substances using standards, practices, methods and procedures to a good commercial standard, conforming to applicable laws.
- Procedures for proposed employee training, emergency response communication plan, emergency procedures, spill tracking and reporting, records of facilities inspections.
- Reference to appropriate spill containment and clean-up supplies available on Site at all times and commitment that all personnel working on the Project will be familiar with the spill prevention, containment and clean-up plan.
- Guidance for plan updates.

Hemmera has prepared a draft summary of hazardous materials storage and handling methods and a table of applicable regulations which is included in **Attachment 6**.

4.2 GEOTECHNICAL REPORT

Geotechnical investigations at the Site were completed by exp and summarized in their assessment report (**Attachment 7**). Geotechnical assessment was used to inform design for the Project's storage silos, conveyor and ship loader system, unloading building and transfer towers. The report details recommended foundation types, design parameters, calculated settlements and other geotechnical considerations and discusses temporary construction works, including shoring and dewatering, and consideration of methods to significantly reduce excavation dewatering due to environmental concerns.

See Marine Structures **Section 4.7** for discussion of seismic assessment of the berth.

4.3 STORMWATER POLLUTION PREVENTION PLAN

Hemmera has prepared a Stormwater Pollution Prevention Plan that describes stormwater management for daily terminal operations, considering the local climate and water capture and treatment systems (see **Attachment 8**).

4.4 TRAFFIC IMPACT STUDY

Stantec completed a transportation impact assessment for the Project (**Attachment 9**). Project operations will consist of cross-dock movements between the Project and the JV Facility, shipment by truck from the Project to/from commercial/industrial operator and to/from other ports (e.g., Deltaport, Centerm, and Vanterm) around the Metro Vancouver region. Product will arrive by rail and will be transferred from rail cars to the storage facility, and then from the storage facility via conveyor onto ships bound for Asia and elsewhere, or in the case of the JV Facility, directly from rail cars via conveyor to awaiting ships.

Greater road network access to the Site will be via the Tannery Road interchange on Highway 17. From the interchange, vehicular, pedestrian, and cyclist modes would access the Site via Timberland Road, across FSD Lands, and Robson Road. Access to the Site from the Fraser Surrey Port Lands (FSPL) network is proposed via an access road located south of Western Cleanwood Preservers Ltd. All Project employees, along with Project's truck traffic are proposed to use this entrance. FSD staff associated with Project operations, will access the Site using Plywood Road, and a level-grade pedestrian crossing currently in operation.

All greater rail network access is anticipated to come via Canadian National (CN) Mainline. All arriving trains upon entering the Port of Vancouver Rail Yards, will be split and queued up on Tracks 92 to 99 of the south PARY. Installation of a semi-loop track will service loading of queued cars from rail to storage operations. A spur from the coal unloading loop track, will service the direct rail to sea unloading operations.

Existing traffic volumes combined with Project traffic volumes were used to evaluate the current roadway network, including the network changes associated with new Site access. No capacity issues occur when the rail crossings are not blocked, and some delay is anticipated when crossings are blocked.

Stantec concluded that the overall impact of Project traffic on that of the Fraser Surrey Port Lands is minimal.

4.5 RAIL OPERATIONS PLAN

CMC Engineering completed a rail operations study that assesses and describes the rail operations required for the Project (**Attachment 10**). The rail service connection serving the unloading facility at the proposed Project consists of a u-shaped (semi-loop) track with both ends connected to the PARY. The Project semi-loop will be installed inside the existing semi-loop that services the existing JV Facility. A new turnout approximately 250 m into the JV Facility will split the traffic with the Project traffic to the left (southwest) and JV Facility traffic to the right (west). The outputs from the two facilities will occur on two separate tracks heading into PARY; the JV Facility track (on the outside) uses an extended track 90 and the Project track (on the inside) uses track 91. A new pair of turnouts between tracks 90 and 91 will provide the option to direct track 90 towards the upper rungs of PARY.

On the incoming lead to JV Facility /Project, a second turnout approximately 145 m prior to the main split will branch off to a short spur into Project’s loading facility. This spur line will handle 9 to 10 car strings per day.

The u-shaped track has been designed to eventually to be part of a complete rail loop. However, initially, the PARY tracks will be used to stage incoming Unit Trains of grain and agri-products and Manifest Cars of agri-products. Unit Trains will be unloaded at the Project and the JV Facility, while agri-products Manifest Cars will be unloaded only at the existing JV Facility. Unit Trains will be composed of up to 112 railcars, Manifest Cars will arrive in strings of 50 railcars.

CN provided the Proponent with the Rail Agreement Letter for VFPA on May 19, 2017, approving the design (**Attachment 27**).

As agreed with VFPA, a high-level overview of how the Project affects proposed future operation (10-year horizon) will be completed during Application review in consultation with VFPA personnel.

4.6 MARINE TRAFFIC INFORMATION REQUIREMENTS

Hemmera prepared the following summary based on information provided by the Proponent. The summary discusses: vessel design range, anticipated vessel traffic, vessel operations, bunkering, and moorage.

4.6.1 Vessel Design Range

The Project at FSD Berth 3 -4 is designed to accommodate restricted Panamax vessels (**Attachment 11**). The historical activity of ocean going vessels (OGV) calling on, and corresponding grain throughput, for FSD Berths 3-4 are shown in **Table 2-5**. The current range and characteristics of OGVs calling on FSD Berth 3-4 is presented in **Table 4-1**.

Table 4-1 Current Range of Ocean Going Vessels calling on FSD Berth 3-4

Vessel	DWT Metric Tonnes (MT)	LOA (m)	Beam (m)
Handysize	28,000	150 – 200	27
Handymax/Supramax	55,000 to 60,000	150-200	32.26
Panamax	74,000 to 76,000	Approximately 230	32.26

Design of bulk carrier vessels has evolved to meet user demands and multiple cargo types. Bulk carriers contain large, unobstructed holds that accept a wide range of bulk cargoes, and have strengthened holds and hulls to permit loading of low-density cargoes, as well as alternative hold loading. Modern bulk carriers normally handle heavy grains as deadweight cargo. Self-trimming characteristics and wider beam lead to higher stability, less trimming and securing. Bulk vessel types and profile predicted for the Project are likely to be similar to the existing OGV classes currently calling on FSD Berth 3-4.

The Project berth will accommodate vessels to a maximum 294 m (LOA) x 32.26 m (Beam) and 11.5 m draft. Due to the current Fraser River draft restrictions of 11.5 m, the Project facility cannot completely load Supramax or Panamax-sized vessels to maximum capacity. The loading of vessels is also dependent on the tides, Fraser River water levels (freshet vs low flow) and the vessel configuration. Currently, the Site is averaging about 514,000 metric tonnes (MT) loaded on Supramax or larger class vessels. This limitation will not change with the installation of the new shiploader. Larger size vessels will be loaded to about 80 to 90 % capacity and repositioned to Alliance Grain Terminals in Vancouver Harbour to “top up” the vessel. The new shiploader is designed to accommodate a range of vessel sizes up to Panamax. Loading height is currently a restriction with the larger class of vessels (Supramax and Panamax) however the proposed new shiploader will accommodate the loading of all vessel classes.

4.6.2 Anticipated Vessel Traffic Levels

The average grain cargo size in the Port of Vancouver has been increasing from an average of about 28,000 tonnes in 2001 to about 45,000 tonnes in 2015⁸. The anticipated average cargo size per vessel to be loaded at the Site will be about 40,000 tonnes, considering the mix of vessel sizes and allowing for partial loadings. Considering the estimated Project throughput (3.5 Mt/a) and the anticipated vessel profile, the Project will receive an estimated range of 63 to 80 vessel calls per annum. Profile calculations for 63 vessels are shown in **Table 4-2**. Vessel traffic is expected to be generally spread evenly throughout the year although there may be a seasonal slow-down during summer months.

Table 4-2 Anticipated Vessel Traffic Levels at 3.5 Mt/a

Vessel Type	Portion of Vessels	Number of Vessels / Annum	Average Number of Vessels/ Month	Throughput Tonnes / Annum*
Panamax	25 %	16	1.33	851,141
Handymax/Supramax	50 %	31	2.6	1,392,776
Handysize	25 %	16	1.33	386,882
Total		63	5.26	2,630,800

*The remaining volume goes out by containers, railcars and bulk trucks.

4.6.3 Vessel Operations

For vessel transit to the Project, the current operational controls are in place:

- All OGVs carry pilots throughout the transit of the Fraser River to the Project and FSD.
- Tugs generally carry experienced operators familiar with the Fraser River and operations.
- There is no speed restrictions applied in Fraser River and the river is open for 2-way traffic at all times.

⁸ Annual Report of the Monitor – Canadian Grain Handling and Transportation System, 2014-2015 Crop Year Quorum Corporation 2015

- Tug and barge traffic transits at average 6.3 knots speed over ground.
- A surveillance-based Vessel Traffic Service (VTS), using automatic identification system (AIS) or primary radar applies throughout the Fraser River.
- In general, there is excellent communication between vessel traffic in the river, tug masters, VTS and facilities, in addition, all tugs in the river are AIS equipped.

Based on a review of vessels calling on FSD, vessels calling on the Project will require tug boat assist for 25 minutes inbound and 40 minutes outbound, for a total of 65 minutes, based on a maximum of one inbound and one outbound vessel per day. Arrival and departure is restricted to transit windows as per the Fraser River Tidal Window. Vessel passing requirements are coordinated by Fraser River Pilots/Ship's Master and monitored by Canadian Coast Guard Vessel Traffic Service and VFPA Marine Operations. For berthing and unberthing in all cases, the Fraser River Pilot's discretion will apply, taking into consideration the weather, sea conditions, predicted current, freshet, draft, maneuvering characteristics, fender capacity of the berth, space available and mechanical history of the vessel. Safe speed as defined by International Regulations for Preventing Collisions at Sea (COLREGS) - Rule #6 and controlled by the Fraser River Pilot on board vessel.

4.6.4 Bunkering

All vessel bunkering, if required, will adhere to the Bunkering Practices and Procedures as stipulated in the Port of Vancouver's Harbour Operations Manual. Vessel bunkering will take place primarily in Vancouver Harbour, either at designated anchorages or at berth. If vessel bunkering is required at the Project in the Fraser River, bunkering will only occur alongside at berth. A stand-by tug will be in attendance of bunker barges moored alongside or otherwise at FSD. If a towing company is used, it is the responsibility of the bunkering agent to ensure the towing company is aware of the bunkering and berthing schedule at FSD. When bunkering operations are under way, tug masters are required to maintain communication with Victoria Traffic on VHF Channel 74 to monitor for deep-sea traffic that may affect bunkering operations and advise when bunkering operations begin and complete. In the event a ship must transit past a berth within the same breakwater where a bunkering operation is underway, the barge must be removed to allow for the safe and timely transit of arriving, shifting or departing vessels. All bunkering operations will be carried out in accordance with the latest edition of International Safety Guide for Oil Tankers and Terminals (ISGOTT) and the additional information provided in these practices and procedures.

4.6.5 Moorage

The existing wharf at FSD Berth 3-4 is currently utilized by the existing JV Facility to load vessels with outbound grain. The existing system can be oriented to sweep across a portion of each hatch but it can reach only the land side half of the vessel. To completely fill the vessel, the loading operation is to turn the vessel about and filled from hatch to hatch. Furthermore, because of its limited shiploader capacity (averaging 500 t/h), and limited throw characteristics, a front-end loader must be lowered into each hatch

to level the load and reach under the coamings. The mooring arrangement of vessels are shown in **Attachment 11**.

The new shiploading system, with a peak rate of 2 000 t/h, will average approximately 1,625 t/h and will not require any vessel movement or trimming time. The new shiploader will also be utilized by the existing facility at reduced capacity, dictated by the existing reclaim rate from the storage shed. However, the overall average performance of the existing facility will increase somewhat with the elimination of vessel movement and of front-end loader trimming requirements. Berths 1 and 2 and a portion of Berth 3, located just downstream of Berth 4, will be utilized by FSD in the future to load coal onto vessels. An analysis of the operation of the three berths revealed that it will not be possible to warp the grain vessel towards Berth 3 while coal ships are present at Berths 1 and 2 and a portion of Berth 3. The Project's new travelling shiploader at Berth 4 eliminates turning or warping the vessel.

All vessels alongside a berth will maintain a continuous deck watch at all times. The officer in charge of the watch will follow the requirements contained in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Code, as amended, as well as be guided accordingly by these practices and procedures. In maintaining such a watch, the officer in charge will ensure that:

- The latest tidal and weather conditions are available.
- A listening watch on VHF 16/12, 16/11 or 16/74 is maintained for the duration of the vessel's call.
- The vessel's mooring lines are checked on a regular basis and adjusted accordingly.
- MCTS must be notified for any shifting of the vessel, engine immobilizations, lowering of any boats into the water, or any other work that may affect other vessels in the area.
- The officer is aware of all loading or discharging operations being carried out, as well as any vessel discharges.
- Vessel traffic in the area is monitored.

4.6.6 Anticipated Anchorage Requirements and Utilization Periods

OGVs calling on the Project terminal will require anchorage at some point during the vessel transit. Approximately 75% of the vessels will require anchorage in the Port of Vancouver either upon arrival to the Project or transit to harbour loading operations. The average anchorage utilization periods per vessel is anticipated to be 48 hours, although anchorage requirements could range from as little as four hours to several days.

The main anchorages serving ships calling the Port of Vancouver are in Burrard Inlet referred to as: English Bay anchorages (North and South), Inner Harbour anchorages and Indian Arm anchorages. Other anchorages include short term anchorages operating more as holding areas for vessels calling Fraser River terminals and Roberts Bank terminals as well as several emergency anchorages strategically located in the

main anchoring areas. Anchorages in English Bay and Indian Arm are assigned for a period of up to seven days. The period might be extended on request if there are no other ships requiring anchorages in English Bay or Indian Arm. However, bulk vessels could be asked to vacate the Burrard Inlet anchorages and transit to Vancouver Island if they exceed 7 days.

FGT is well aware that anchorages are heavily utilized and in short supply. There are seven inner harbor anchorages (plus one more as emergency use only), and 18 English bay anchorages. There are no permanent designated anchorages within the Fraser River. Anchoring is only at the discretion and authorization of the VFPA. Anchoring within Steveston Harbour is strictly prohibited. Managing the grain supply chain to minimize vessel wait times is a complex issue that must consider multiple variables such as railway performance, rail car supply and weather. Considering the direct railway access and faster turnaround times to the Project when compared to other more congested rail corridors in the Port, the Project will be able to deliver faster ship turns, resulting in lower than average days in Port for grain vessels.

4.7 MARINE STRUCTURES STUDY

Advisian completed a Marine Structures Study for the Project (Attachment 11) and the associated drawings (Attachment 4B). Marine structures for the Project include:

- Structural modifications to the existing FSD Berth 3/4 structures,
- Re-use of unmodified portions of the existing FSD Berth 3/4 structures where applicable,
- New piled foundation structures to support the waterside and landside rails for the new shiploader, and
- New piled foundation structures to support the shuttle conveyor and the shiploader tower immediately landward of the landside rail for the new shiploader.

The existing FSD fenders and bollards are considered satisfactory for the berthing and mooring of the largest design vessel – a restricted Panamax which is the same as the largest vessel currently calling at FSD Berth 3/4. Structural modifications are required to support the new remote-controlled rail-mounted shiploader and its shuttle conveyor.

The Marine Structures Study statistically evaluated risk of the marine facilities and shiploading equipment under seismic conditions. The proposed Project shiploading system will significantly reduce in the number of hours per year when the wharf structure will be occupied by personnel compared to the existing operation. Key findings of the risk assessment are as follows:

- Estimated time that the wharf will be occupied will decrease from 60.3% to 12.4% despite a fourfold increase in throughput.
- The average number of personnel on the wharf when the structure is occupied will also decrease significantly.

- No personnel will occupy the dock area or the equipment while shiploading is taking place.
- These factors contribute to significantly reduced risk to life safety of Project operation.

As agreed with VFPA, berth depths at Berth 3/4, sheet pile wall, and future dredge depth will be resolved during the Application Review Phase.

4.8 BATNEC REPORT

For Project design, the Proponent has strived to consistently choose the Best Available Technology Not Entailing Excessive Cost (BATNEC). The BATNEC report (**Attachment 12**) presents a summary of the different techniques that were chosen and describes why they were selected as the “best” considering safety, environmental effects, energy utilisation, product quality maintenance, and overall efficiency.

4.9 NOISE MANAGEMENT

The Project has reviewed construction and operations phase noise separately in accordance with VFPA guidance. Construction noise mitigation is addressed in the CEMP (**Attachment 20**) and documentation of baseline noise and noise modeling of future noise levels during operations is addressed in the environmental noise assessment (**Attachment 13**).

Hemmera prepared the CEMP to mitigate potential effects due to Project-related construction activities including noise. During the construction phase, key noise generators are expected to be vehicles and equipment, piling and traffic taking materials to and from the Site. Mitigation of construction noise includes reducing vehicle and equipment idling, hours of work restrictions, speed limits and notification to local communities of the nature and likely duration of any noisy operations.

BKL Consultants Ltd. (BKL) conducted an environmental noise assessment for the Project in accordance with VFPA PER guidelines and requirements for operational activities. This assessment was completed in accordance with the Port-accepted terms of reference. The objectives of this environmental noise assessment were to review existing conditions at nearby residential receivers, construct a noise model to predict existing and future noise levels with the Project operating at full capacity, perform a noise impact assessment and provide mitigations options where applicable. In addition, BKL completed a noise screening and score sheet in accordance with VFPA review comments (**Attachment 13**).

The environmental noise assessment concluded that an increase in the Total Noise Rating Level for the future scenario to be less than 1dBA for the majority of the receivers with a maximum increase of 2 dBA at some receivers. Non-Project source will continue to be the dominant noise source at receivers. The change in the percentage of people highly annoyed is predicted to range from 0% to 3% which is less than the Health Canada criterion of 6.5%.

The Project design incorporates the following low noise initiatives:

- All filter unit fans are to be fitted with a silencer.
- Conveyors will utilize low noise polyethylene rollers.
- Conveyors will be operated at low speeds (2.54 m/s).
- Conveyors will be fully enclosed.
- Rail squeal will be addressed by rail track layouts and greasing of tracks.
- Loading operation of the container yard will be limited to daytime/weekday only.

4.10 AIR ASSESSMENT

Construction-related air emissions and associated mitigation are addressed in the CEMP (**Attachment 20**) in accordance with Port guidance. Air emissions are expected from vehicle/equipment exhaust, fugitive dust sources (e.g. soil stockpiles), and emissions associated with construction activities on-site. Mitigation includes reducing vehicle and equipment idling, maintaining construction equipment and vehicles in good working order, monitoring dust-generating activities, using suppression agents if necessary, covering soil stockpiles, covering loads on trucks, regular Site cleaning and wheel washing.

WSP Canada Inc. (WSP) conducted an environmental air assessment for the Project in accordance with VFPA PER guidelines and requirements for operational activities (**Attachment 14**). The objectives of this environmental air assessment were to review existing conditions and complete an emissions inventory and air dispersion modelling assessment to determine impact and mitigation potential by comparing baseline to future with Project, comparing baseline to future without Project and comparing Project case to Best Available Technology.

The environmental air assessment indicates a significant decrease in estimated particulate matter emissions when the 2020 Future with Project scenario is compared to the 2015 Baseline, even with a significant increase in throughput. This is primarily due to the implementation of BATNEC for the Project, in particular, the new shiploader with telescoping cascading spout. With implementation of recommended air emissions mitigation including use of BATNEC and operational best practices, the Project has the potential to improve air quality in the area surrounding the Project.

4.11 ENERGY EFFICIENCY STUDY

CMC Engineering completed the energy efficiency study which describes how the Project (buildings, motorized equipment, and lights) will affect electrical energy consumption levels (**Attachment 15**). The Project is a green-field application where current energy conservation technology and operational methods have been included in the preliminary design process. Based on discussions with VFPA and BC Hydro, the energy efficiency study was completed by comparing current energy usage calculations for the Project with non-optimized design, thus showing the efficiency of the selected technologies and methods.

The study considered the energy loads in the plant (motor loads, lighting, and miscellaneous house loads) and energy conservation measures inherent in current design (type of equipment and operational methods). The study concluded that the energy efficient technologies and methods used for the Project will reduce total energy usage by approximately 5% and 21%, respectively.

4.12 LIGHTING STUDY

Construction will be conducted primarily during daylight hours, therefore, given existing light environment and distance from potentially affected sensitive receptors (at least 250 m), construction-related effects due to Project lighting are unlikely to occur.

DMD & Associates Ltd. (DMD) completed a lighting assessment for the Project operations (see **Attachment 16**). DMD reviewed the potential for impacts of proposed exterior lighting on adjacent residential areas and general areas off-site additional to that already included in the Project lighting design. DMD concluded that, based on review of the Project lighting design, the drawings meet VFPA requirements for content.

Project light sources with the most potential off-site light trespass impacts are the stanchion mounted lights (Type 3A, 3B and 3C) for the Container Storage Area and Shipping Area Upper Levels and the floodlights located on the walkway that illuminate the ships. These lights will be aimed downward and away from residences located 250 m away from the Site. South Fraser Perimeter Road, located between the Project and the residences, is illuminated according to TAC standards for a four-lane expressway and is a dominant light source for residences near the Project. Given the distance of Project lighting from local residences, light trespass due to the Project is likely to be consistent with the LZ3 Lighting Zone definition and therefore not a significant factor.

Urban sky-glow is a factor that can impact views of the night sky and can affect sensitive receptors (including wildlife) and their behaviour. The majority of fixtures shown on the Project lighting drawings have optical systems to limit up-light⁹ and where floodlights are proposed, shields and visors have been added as per the recommendations in IESNA RP-33 Lighting Exterior Environments. Light will be reflected off surfaces, such as pavement and steel structures, and redirected into the sky, however this is common for lighting installations. The Project lighting design is effective in minimizing sky-glow to the greatest extent practical.

DMD concluded the Project lighting design and proposed lighting operation is consistent with industry practice and minimizes potential for adverse lighting effects due to the Project to the greatest extent practical.

⁹ Uplight – The percentage of lumens distributed above the luminaire between 90 and 180 degrees vertical (IESNA RP-33-14)

4.13 VIEW AND SHADE IMPACT ANALYSIS

Enns Gauthier Landscape Architects Inc. (EG) completed a viewscape and shade study to assess effects due to the Project (see **Attachment 17**). As per the VFPA Submission Requirements for view and shade, EG modelled the proposed siting, massing and height and materials of the Project infrastructure. Site visits were conducted in and around the Project area to determine feasible locations in the surrounding community that may be impacted by the development. EG then modelled future views of the Project buildings and structures for each of the viewpoints selected. EG assessed:

- How these structures would affect public and private views of the landscape and skyline in the surrounding community.
- The potential shade impacts on the surrounding areas from the proposed Project by completing 3D shadow modelling.

EG concluded that, in general, the proposed Project will have minimal impact on views from the surrounding communities. Likewise, the shade impact on the Site and surrounding areas would be minimal, given the current industrial land-use zone surrounding the Site, as well as the large distances from the Site to any public place, roadway, pathway, gathering space or residence. Where required, recommended mitigation measures include retaining existing trees and shrubs, planting of new trees and shrubs, using building materials that reduce sun-glare and to explore opportunities to educate the public about the Fraser River's industrial heritage.

4.14 ALTERNATIVE SITING OPTIONS

Hemmera prepared an alternative siting options summary for the Project based on drawings of alternative Site configurations provided by CMC Engineering (see **Attachment 18**). The assessment included review of environmental, community, physical construction, economic and view and shade considerations pertaining to each configuration. The summary concluded that the selected configuration and location are preferred primarily due to physical and technical constraints such as ability of the ground to support Project structures, and allowing sufficient area for effective Project operations. Environmental constraints considered included avoidance of excavation in areas with contaminated soil and minimization of development on areas with existing vegetation.

4.15 ARCHAEOLOGICAL ASSESSMENT

Archer CRM conducted an archaeological overview assessment (see **Attachment 19**) to identify and assess archaeological resource potential or sensitivity within the proposed Project area and provide recommendations concerning the appropriate methodology and scope of work for subsequent inventory and/or archaeological impact assessment studies.

4.15.1 Archaeological Overview Assessment

The Archaeological Overview Assessment reviewed the Site for archaeological potential and identified areas that could contain cultural or other archaeological remains and where Project excavations could disturb intact archaeological remains. Much of the Site is located on fill. Key assessment recommendations were as follows:

- Conduct a field investigation of the Project excavation areas where archaeological potential is deemed moderate or high; and
- For areas of ground disturbance where archaeological potential is deemed low, no ground-based archaeological investigations are deemed necessary prior to Project commencement, develop or be in possession of a 'chance-find' due-diligence policy to address accidental discoveries of heritage remains
- A chance find procedure

The Project chance find procedure is appended to the Construction Environmental Management Plan (CEMP) (**Attachment 20**).

4.15.2 Archaeological Potential and Monitoring Considerations

Archer CRM reviewed the footprint and depth of Project ground alteration works in view of geotechnical borehole logs and determined that planned excavations would be deeper into native soils below typical depths of fill in areas where there was potential for intact archaeological resources along original shoreline areas.

The unloading building, leg pit and shallow conveyer trench all require excavation in an area identified in the AOA by Archer CRM (2015) as having moderate archaeological potential (based on approximate shoreline boundaries post 1876). These excavations and others are shown in **Attachment 19** relative to areas of archaeological potential. Archer CRM recommended that excavations that exceed the minimum 3.0 m depth below ground surface (bgs) present archaeological risk and should be monitored (field investigation) by a professional archaeologist.

Hemmera reviewed geotechnical soil log information, proposed excavation depths, and areas of moderate and high archaeology potential, as identified by Archer (2015) and prepared a figure that shows the depths and locations of anticipated excavations, including utilities and those for foundations, pits and stormwater infrastructure. Project components requiring excavation depths greater than 3 m bgs are shown in **Figure 6** of the CEMP (**Attachment 20**), and are provided below:

- Bucket Elevator: 9.50 m
- Receiving Pit: 8.85 m
- Receiving Pit: 19.20 m
- Container Loading Pit: 3.10 m
- Oil Water Separator 3.04 m

The excavation depth of utility trenching for water and sewer connections will be no greater than 2.0 m bgs and given the 3.0 m bgs threshold, are not recommended for archaeological monitoring. However, electrical utility manholes tend to be constructed deeper than the linear infrastructure, and if so, should be monitored if they exceed the 3.0 m threshold.

In summary, should excavations more than 3.0 m deep be required in areas of moderate or high archaeological potential (as identified in the AOA), these excavations will be monitored by a professional archaeologist.

4.16 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Environmental management during construction is described in the Construction Environmental Management Plan (CEMP) (**Attachment 20**). The CEMP addresses management for potential effects to the biophysical environment, heritage resources, and to sensitive human receptors by providing management and mitigation measures for the following:

- Site access, mobilization and laydown
- Air quality
- Noise and vibration
- Machinery and equipment
- Erosion and sediment control
- Contaminated Soil and Groundwater Management
- Vegetation and wildlife management
- Concrete and grouting
- Marine works
- Archaeological resources
- Sensitive habitat features and species

4.17 SOIL AND GROUNDWATER MANAGEMENT PLAN

Based on previous investigations, soil and groundwater contamination was identified on the Site. The Soil and Groundwater Management Plan provides guidance to the Proponent about the existing Site contamination (specifically workers that will be conducting intrusive work on the Site), soil management practices and health and safety measures. The Soil and Groundwater Management Plan is appended to the CEMP (**Attachment 20, Appendix C**).

4.18 HABITAT ASSESSMENT

Hemmera conducted the Habitat Assessment Report (**Attachment 21**) in accordance with the Submission Requirements for the terrestrial and aquatic habitat assessment, nesting bird survey and species at risk assessment for the proposed Project. Temporary disturbances to vegetation and wildlife (including birds and aquatic species) as well as temporary changes to riparian habitat and water quality are expected during construction. Approximately 700 m² of riprap located in the intertidal zone will need to be temporarily disturbed for installation of up to 69 new piles. In addition to these temporary effects, the Project is anticipated to result in the permanent loss of 0.93 ha of vegetated area, 20 m² of low-productivity shoreline habitat (FREMP 2015), and 70 m² of non-fish bearing (Class C) aquatic habitat. With appropriate mitigation in place and adherence to best management practices, construction of the Project is unlikely to cause significant adverse effects to fish, wildlife, or terrestrial and aquatic habitat.

Mitigation for effects of vegetation clearing on birds is identified in the assessment and is carried forward to the CEMP (**Attachment 20**). Vegetation removal will be scheduled to occur within the least risk work window for breeding birds (September 1 to February 28). Where this is not possible, a pre-clearing survey using a qualified environmental professional (QEP) will be conducted in advance of any works.

The proposed semi-loop railway track overlaps with critical habitat for the federally listed plant streambank lupine adjacent to Elevator Road. This critical habitat is designated under the *Species at Risk Act* (SARA). Streambank lupine requires open, gravelly well-drained sites such as those typical of railway ballast. The Site is currently overgrown with shrub and young trees and is currently not suitable for colonization by streambank lupine. Given streambank lupine habitat requirements, construction and operation of the railway loop may improve habitat suitability for this species. Mitigation measures are proposed, consistent with the Recovery Plan for Streambank Lupine in BC (Environment Canada 2016). Post-construction monitoring will be taken annually in late spring on a multi-year basis for the streambank lupine critical habitat affected by the Project to document streambank lupine distribution, relative age, and vigour.

The Proponent and other FSD business stakeholders will work with FSD and an environmental consultant to prepare a SARA permit application to Environment and Climate Change Canada regarding use of critical habitat for streambank lupine for the Project area adjacent to Elevator Road. This application is intended to address the effects of railway development from proposed projects currently in the VFPA PER process on FSD lands. As agreed with VFPA, additional information on streambank lupine will be provided separately in the SARA application.

4.19 FIRE PREVENTION AND LIFE SAFETY

CMC completed a fire prevention and life safety study for the Project (**Attachment 22**). The study:

- Reviews applicable codes as mandated by the National Building Code, standards, and legislation
- Identifies hazards present during Project operations (i.e., fire and dust explosion)
- Specifies design requirements and operational plans to mitigate these hazards, and
- Provides a summary of recommendations.

Fire prevention and life safety recommendations are outlined for the unloading building and pit area; enclosed conveyors; bucket elevators and their support structures; storage silos, scales and bins; wharf and loading dock as well as emergency access to the facility.

4.20 FLOOD PROTECTION

NHC conducted a flood inundation assessment for the Project (**Attachment 23**). The study involved a review of existing information, producing an inundation map for the Site, and providing comment and recommendations for improving flood protection for the Site.

The standard design event for flood hazard on the Fraser River is the 1 in 500 Annual Exceedance Probability (AEP) event with moderate climate change allowance and 1.0 m Sea Level Rise (SLR). The PER Application Submission Requirements from VFPA specifies that the flood protection assessment be conducted using the 1 in 200 year AEP event, with moderate climate change allowance and 0.5 metre SLR as presented in “Simulating the Effects of Sea Level Rise and Climate Change Scenarios on Fraser River Flood Scenarios” (FLNRO, 2014). Flood levels for this scenario range from El. 3.98 m in the downstream end of the property near Berth 2 to El. 4.10 m in the upstream end of the property near Berth 6.

An inundation map was produced to assist with the assessment. While industry best practices were followed to produce the map, actual depths and extents of inundation may vary from those shown. Such variations can result from the inherent uncertainty and assumptions in all stages of the process including discharge measurement, stage-discharge rating, estimates of historical flood frequency distribution, estimates of projected sea level rise and climate change effects, numerical modelling of river flows, and topographic data collection.

Attachment 23, Figure 2 shows the predicted depths and extents of flooding in a 1 in 200 year AEP event. Direct ingress from the Fraser River is limited to the area fronting Berths 2 through 6. Most of the area between the berths and rail lines would experience ponding of water up to 1.0 m deep. The footprint of the proposed administration building, parking, shuttle conveyors and storage silos remains mostly dry, but its western side is in contact with flooded ground.

5.0 COMMUNITY AND STAKEHOLDER CONSULTATION

The following section describes public and stakeholder consultation that has been undertaken during the Preliminary Review Phase period and consultation planning for the Application Review Phase.

5.1 PRELIMINARY REVIEW PHASE

The Project's approach for the Preliminary Public Comment Period was developed using the requirements outlined by the port authority for public and stakeholder consultation. The Preliminary Public Comment Period was held from November 3 to December 1, 2016 and included the following activities:

- Developed a Project website to make information available to the community and stakeholders (frasergrainterminal.ca)
- Created an information brochure with a Project description and details about how to participate (made available at public meetings and for download on the Project website)
- Developed an online feedback form to collect community and stakeholder input (paper copies were available at public meetings)
- Developed notification letters for stakeholders and residents, including a Project description and details about how to participate
- Delivered notification letters by hand, regular mail and email to local residents and businesses and three community associations between November 2 to 14, 2016
- Placed newspaper advertisements in three local papers (November 3 and 4, 2016)
- Hosted two information meetings in the community (November 16 and 26, 2016)

Participation results are as follows:

- 62 people attended the two public information meetings
- 29 participants completed the online feedback form
- 90 people requested to be added to the Project update database
- 4 written submissions were received by email

Further details about the Preliminary Public Comment Period are provided in the Preliminary Public Comment Period Consultation Summary Report (**Attachment 24**), available at frasergrainterminal.ca and on the [port authority's website](#). Comments and questions received during the Preliminary Public Comment Period, and the related responses and actions from the Project Team, are summarized in the Input Consideration Report (**Attachment 25**).

5.1.1 Stakeholder Consultation

The Proponent understands that the stakeholder notification and consultation is being led by VFPA during Application Review Phase with the involvement of the Proponent at the request of VFPA. As per VFPA requirements, the Proponent has identified neighbouring businesses and engaged them as part of the

Preliminary Public Comment period. The Proponent will work with VFPA to identify the stakeholders and level of notification required as part of the Consultation and Engagement Plan. The Proponent acknowledges that VFPA may revise the list of stakeholders upon acceptance and review of the complete Project Application.

5.1.2 Community Consultation

Community consultation is being led on behalf of the Proponent by Lucent Quay Consulting Inc. As per VFPA requirements, the Proponent has engaged the public prior to the submission of the Application through the Project website, the online feedback form, through community newspaper ads in Surrey, Delta and New Westminster and through Coffee Shop Drop-in sessions conducted on November 16 and November 23 in Surrey and New Westminster. Engagement with the community will continue as part of the Application Review Phase.

5.2 PLANNED CONSULTATION DURING APPLICATION REVIEW

The Proponent is committed to providing relevant and timely information about Project-related activities so that interested parties can be informed about how to participate and provide feedback. The first step in furthering discussions includes sharing Project technical information, as committed during the Preliminary Review Phase in 2016.

To support public and stakeholder consultation for the Application Review Phase, at minimum, VFPA is expected to require the following:

- An updated Consultation and Engagement Plan
- Notification (letters to nearby residents, stakeholders and businesses a minimum of 10 business days prior to open houses, local newspaper advertising, etc.)
- A 20-business day public comment period
- Meetings with stakeholders, as required
- Meetings with specific interested groups, if identified
- Online outreach including an opportunity for online feedback
- Community open houses
- Consultation Summary Report
- Input Consideration Report showing how feedback has been considered

Stakeholder meetings will be formally documented and Project enquires will be tracked and responded to in a timely manner (as appropriate).

During the Application Review Phase of public consultation, Fraser Grain Terminal will provide the public and stakeholders with details of the project, results of the technical studies and any proposed mitigations.

5.2.1 Materials for Public and Stakeholder Consultation during Application Review Public Comment Period

The following consultation materials will be developed for the Application Review Phase:

- Public and Stakeholder Communications and Engagement Plan, including map or description of mail drop area (revised from Preliminary Review Phase plan);
- Updated Project website text;
- Newspaper advertisements;
- Notification letter/email;
- Discussion guide;
- Online feedback form; and
- Display boards.

All materials in final form will be submitted to VFPA for review and approval prior to distribution to the public and stakeholders and the commencement of the public comment period. The list of stakeholders will also be confirmed with VFPA prior to notification and commencement of the Public Comment period.

5.2.2 Reporting for the Application Review Public Comment Period

Following the completion of the public comment period for the Application Review Phase, the following reports will be prepared and submitted to VFPA for review and approval:

- Application Review Phase Public Comment Period - Consultation Summary Report
- Application Review Phase Public Comment Period - Input Consideration Report

Following approval, these reports will be posted to the Project website and a notification will be sent to the Project database.

5.3 PLANNED COMMUNICATIONS DURING CONSTRUCTION

A Construction Communications Plan will be developed prior to construction and will include:

- A brief description of the Project and background;
- Construction timelines;
- Considerations and challenges;
- Engagement objectives;
- Key audiences and stakeholders;
- Key messages; and
- Public and stakeholder notification activities prior to construction.

6.0 ABORIGINAL ENGAGEMENT

6.1 PRELIMINARY REVIEW PHASE

As guided by VFPA, the Proponent commenced early-engagement activities with 14 First Nations in February 2016. To date, First Nations that have expressed interest in the Project are Cowichan Tribes, Katzie First Nation, Kwantlen First Nation, Musqueam Indian Band, Penelakut Tribe, Qayqayt First Nation, Semiahmoo First Nation, Tsawwassen First Nation, and Tsleil-Waututh Nation.

Those First Nations yet to express an interest in the Project are Halalt First Nation, Hwlitsum First Nation, Lake Cowichan First Nation, and Lyackson First Nation. Stó:lō Nation deferred their interest in the Project after receiving the introductory letter. Following receipt of a Project location map and GPS coordinates, Penelakut Tribe has not requested further Project information.

Since February 2016, the Proponent has met with Cowichan Tribes, Katzie First Nation, Kwantlen First Nation, Musqueam Indian Band, Qayqayt First Nation, Semiahmoo First Nation, and Tsleil-Waututh Nation. Through these meetings, the Proponent has heard multiple issues and concerns from First Nations including those related to vessel traffic, effects to archaeology, fisheries, wildlife, and vegetation, grain spills, procurement, cumulative effects, storm water runoff, safety and others. To the extent that the Proponent can address issues that fall within their Project scope, the Proponent is committed to discussing and resolving issues during the PER Application Review and beyond. The first step in furthering discussions includes sharing Project technical information, as committed during introductory meetings.

The Proponent will continue providing regular Project information updates to Tsawwassen First Nation, per their request. Tsawwassen First Nation has confirmed they will request a meeting with the Proponent if/when required.

A Project update was emailed to participating First Nations on November 3, 2016 and highlighted the following:

- The Proponent's name change from P&H to Fraser Grain Terminal Ltd.;
- The intended submission of two Applications (Demolition Application and Construction Application)
- The new VFPA Aboriginal Affairs Project contact;
- The Project's website launch; and
- Sharing technical Project information.

The Proponent is committed to meaningful ongoing engagement activities with First Nations that have indicated their interest in the Project. Future engagement with First Nations through the Construction Application Review stage and beyond is anticipated to include meetings, emails, information sessions, workshops, sharing Project documents, and negotiating capacity funding documents to support First

Nations review of Project information. The Proponent looks forward to continuing to work collaboratively with VFPA and First Nations as the Project progresses.

Engagement activities undertaken prior to Application submission are summarized in the First Nation Engagement Summary Report (**Attachment 26**). The summary includes records of information-sharing activities (including the email update noted above) and other interactions with respect to the proposed Project and information on any known First Nations interests in the Project area.

6.2 PLANNED ENGAGEMENT DURING APPLICATION REVIEW

The Proponent is committed to meaningful ongoing engagement activities with First Nations that have indicated their interest in the Project. Future engagement with First Nations through the Application Review Phase and beyond is anticipated to include meetings, emails, information sessions, workshops, the sharing of Project documents, and the signing of capacity funding documents to support First Nations review of Project information.

Future engagement activities will support VFPA's Application Review Consultation Requirements including:

- Determine whether any part of the proposed work has the potential to impact Aboriginal rights;
- Continuing Aboriginal engagement upon VFPA's review and acceptance of the completed Project Application;
- Where non-confidential, providing records of information sharing activities, agreements, or other interactions with Aboriginal groups with respect to the proposed Project; and
- Providing information on any confirmed Aboriginal interest overlapping with the Project area.

The Proponent looks forward to continuing to work collaboratively with VFPA and First Nations through all stages of the VFPA PER process.

6.3 PLANNED COMMUNICATIONS DURING CONSTRUCTION

Communications to occur during the potential construction period will be discussed and agreed to during the Application Review phase. Following Project approval, the Proponent will implement mitigation measures, monitor and follow-up on commitments made during consultation process.

7.0 REFERENCES

City of Surrey. 2014. Plan Surrey 2013: Official Community Plan. Accessed September 2015.
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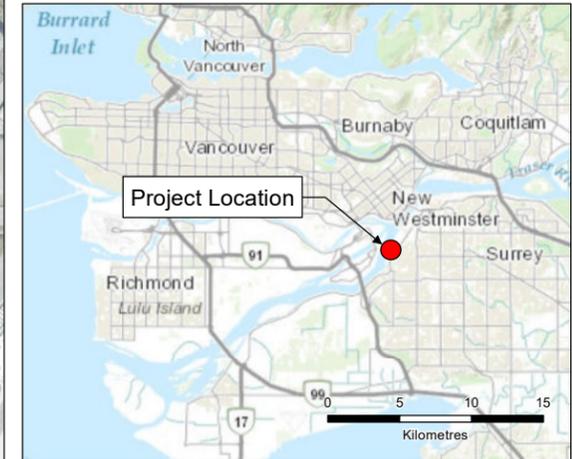
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Port Metro Vancouver (PMV). 2014. PMV Land Use Plan Designation Maps – Planning Area 5. Accessed December 2015. <http://www.portmetrovancover.com/wp-content/uploads/2015/04/Planning-Area-5-Fraser-River-Central.pdf>.

FIGURES

Project Location and Construction Boundary



Legend

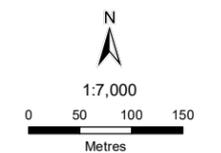
Site Boundary for Construction Works

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Aerial Image: City of Surrey, 2014



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Project Location and Construction Boundary



Legend

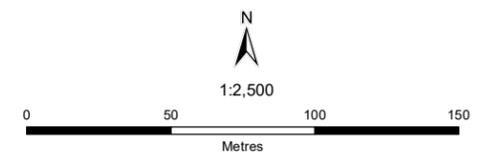
Site Boundary for Construction Works

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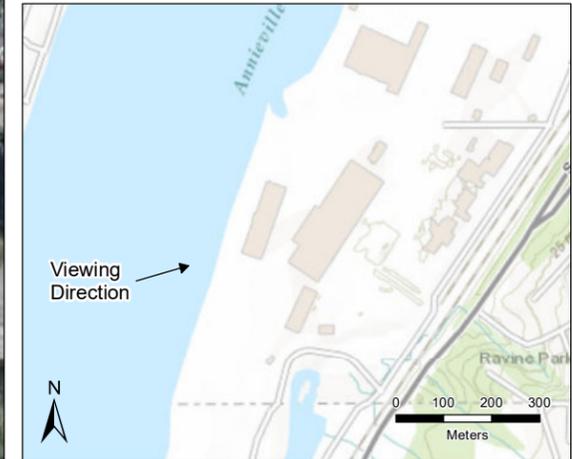
Sources

- Aerial Image: City of Surrey, 2014



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Project Components Viewed from the West



Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

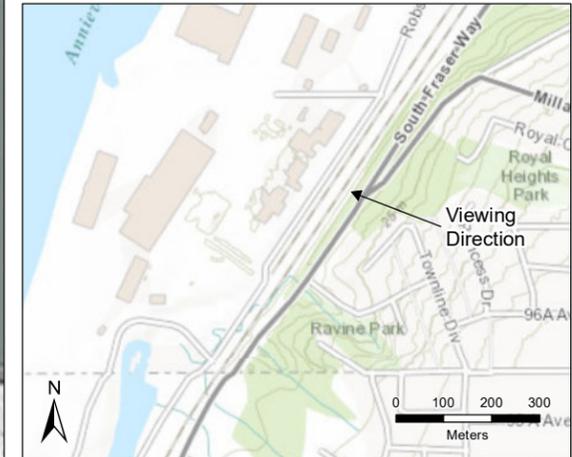
Sources

- 3D View: CMC Engineering
- Inset Basemap: Esri World Topographic Map



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Project Components Viewed from the East



Notes

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Sources

- 3D View: CMC Engineering
- Inset Basemap: Esri World Topographic Map



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