PROJECT AND ENVIRONMENTAL REVIEW APPLICATION REPORT FOR NEW CARGO EXPORT PROJECT

Westshore Terminals

Prepared for:

Westshore Terminals Ltd. Partnership

Delta, British Columbia

October 2021

Hatfield Consultants LLP

#200 - 850 Harbourside Drive
North Vancouver, British Columbia, Canada V7P 0A3
Tel: 1.604.926.3261 • Fax: 1.604.926.5389
www.hatfieldgroup.com

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Westshore Terminals Limited Partnership

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Prepared for:

WESTSHORE TERMINALS LTD PARTNERSHIP
1 ROBERTS BANK
DELTA, BC
CANADA V4M 4G5

Prepared by:

Hatfield

HATFIELD CONSULTANTS LLP
#200 - 850 HARBOURSIDE DRIVE
NORTH VANCOUVER, BC
CANADA V7P 0A3
TEL: 1.604.926.3261 • WWW.HATFIELDGROUP.COM

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LIST OF ACRONYMS AND ABBREVIATIONS

BAT	Best Available Technology
BC	British Columbia
BCR	BC Rail
BHP	BHP Billiton Canada Inc.
BMP	Best Management Practice
Burlington	Burlington Northern Santa Fe Railway Company
CEMP	Construction Environmental Management Plan
CN	Canadian National Railway
CP	Canadian Pacific Rail
DFO	Department of Fisheries and Oceans Canada
DP3	Deltaport Third Berth
DWT	Deadweight tonnage
EAO	BC Environmental Assessment Office
ECM	Energy Conservation Measures
ENV	British Columbia Ministry of Environment and Climate Change Strategy
GCT	Global Container Terminals Canada
HADD	Harmful Alteration, Disruption or Destruction
km	Kilometer
kV	Kilovolt
LED	Light emitting diode
m	Meters
MAMU	mobile air quality monitoring unit
Mtpa	Million tonnes per annum
MV	Metro Vancouver
NAGL	Naesgaard Amini Geotechnical Ltd
PER	Project Environmental Review
The Project	The proposed New Cargo Export Project
RFR	Request for Review
SARA	*Species at Risk Act*
SFPR	South Fraser Perimeter Road
SPPP	Stormwater and Pollution Prevention Plan
S/R	Stacker Reclaimer
SRKW	Southern Resident Killer Whales
TBD	To Be Determined
VFDs	Variable frequency drives
VFPA	Vancouver Fraser Port Authority
WMA	Wildlife Management Area
Westshore	Westshore Terminals Limited Partnership

1.0 INTRODUCTION

Westshore Terminals Limited Partnership (Westshore) has been in operation since 1970 and is Canada's largest throughput coal export terminal, handling around 31 million tonnes per annum (Mtpa) with a capacity of 36 Mtpa. Westshore, has a long history of safe and responsible operations and protection of the environment, through over 50 years of operation. They have been a member of Green Marine since 2014, an initiative to promote continuous improvement of environmental aspects of marine-related activities. Through the proposed New Cargo Export Project (the Project), Westshore is planning to diversify the products shipped to market through the existing terminal. The Project involves modifications to the existing facility to use a portion of the site for potash export. The Project will result in the shipping of up to 4.5 Mtpa of potash, displacing approximately an equivalent amount of coal export capacity. The overall terminal capacity will remain at 36 Mtpa. A detailed Project description is provided in Section 3.0.

The site is located at 1 Roberts Bank, Delta, BC. It is entirely on Vancouver Fraser Port Authority (VFPA) property, for which Westshore has an existing lease agreement for current coal export operations (Figure 1) through 2066 (with renewals).

This application has been prepared to meet VFPA's application requirements for a review under their Project and Environmental Review (PER) process. The Project was designated a Category C by VFPA, and application requirements were identified in the Project checklist provided by VFPA on January 18, 2021. Section 2.0 provides a table of concordance that describes how this application meets the checklist submission requirements.

1.1 PROJECT CONTACTS

Table 1 identifies the key Project team members.

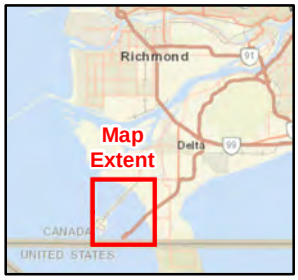
Table 1 Key Project team members.

Name	Title	Address	Phone	Email
Westshore				
Greg Andrew	Project Manager	1 Roberts Bank, Delta, BC	604-946-4491	GAndrew@Westshore.com
Matt Tindall	Project Engineer	1 Roberts Bank, Delta, BC	604-946-4491	MTindall@Westshore.com
Jodi Waring	Permitting Lead	1 Roberts Bank, Delta, BC	604-946-4491	JWaring@Westshore.com
Key Consultants				
Karen McMillan – Hatfield Consultants LLP	Permitting Consultant	200-850 Harbourside Drive, North Vancouver, BC	604-926-3261	kmcmillan@hatfieldgroup.com

Figure 1 Project location overview.

Data Source:
Orthophoto 0.75 cm, City of Delta,
26 April 2018, Esri Online Service.

Note: The VFPA checklist identified a scale of 1:5000 for the location figure. The scale was adjusted to show the Project's relationship to the surrounding area.



0 250 500 1000 m

N

Scale: 1:35,000

Projection: NAD 1983 UTM Zone 10N

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New Cargo Export Project

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The Project and PER application were developed with support from the following additional team members:

- CWA Engineers Inc. (lead engineering consultant);
- R.F. Binnie & Associates Ltd. (civil engineering consultant);
- Braun Geotechnical Ltd. and Naesgaard-Amini Geotechnical Ltd. (geotechnical engineering consultant);
- enCompass Solutions Group (electrical and controls engineering consultant);
- EnviroChem Services Inc. (air assessment consultant);
- Stantec Consulting Ltd. (noise and light assessment consultant);
- LOCI Landscape Architecture and Urban Design (visual renderings consultant); and
- Lofty Media Inc. (site aerial photography).

2.0 APPLICATION CONCORDANCE

Table 2 provides the VFPA submission requirements, as defined in the PER checklist for the New Cargo Export Project, and the location of the information within the application.

A Construction Environmental Management Plan (CEMP) has been prepared for the Project as required under the PER checklist (Appendix A1). The CEMP is the primary document to guide overall environmental management and protection practices throughout Project construction and fulfills the applicable PER requirements. The CEMP follows the VFPA PER CEMP Guidelines (VFPA 2018) and will be provided to construction contractors as the basis for developing work plans and environmental mitigation planning.

The VFPA's checklist drawing requirements are provided as a drawing package with this application titled New Cargo Export Project – Drawing Package #1 (Appendix A11) and #2 (Appendix A12). The packages include a concordance table for the drawing requirements identified in VFPA's Project checklist.

Table 2 PER requirements.

Study/Report	Requirement	Concordance
General Scope	Brief background of the applicant's company and business operations in the region.	Section 1.0
	Description of the Project, including the purpose, use, and Project rationale.	Section 3.0
	Description of the Project setting, including proximity to sensitive receptors such as schools or parks.	Section 4.0
	Description of potential impacts to land, water, air, land and adjacent community and businesses, as a result of the Project.	Section 5.0
	List all studies that have been completed in support of the Project.	Section 2.1
Operations	Description of existing and proposed capacities and throughput including vehicular, truck, train and marine vessel traffic, hours of operations, peak hours, parking requirements. Description of the hours or operation of the terminal, both current and proposed, and any changes to employment expected. Description of the proposed increase in storage capacity of the terminal, and product throughput in tonnes per week, month, or year. Include description of how the handling of potash will affect volumes of coal handled by the terminal, including impacts to rail and vessel traffic.	Section 3.3
	Description of any potential environmental and community impacts that may result from the construction or operation of the project, and proposed mitigation strategies.	Section 5.0
Construction and/or Demolition	Proposed construction period (start and finish), hours, and method of construction and/ demolition. If you anticipate the need to construct outside of the standard port authority construction hours, this can be requested in the application. Description of construction staging activities – how staging and laydown will be accommodated on-site.	Section 3.2 and Section 3.4

Table 2 (Cont'd.)

Study/Report	Requirement	Concordance
Hazardous Materials Report for Demolitions	Inventory of any hazardous materials including asbestos, drywall, the contents in aboveground or underground storage tanks, PCBs, abandoned chemicals and others, material safety data sheets (MSDS). Description of hazardous materials storage and handling methods. Table of applicable regulations. Hazardous materials reuse, removal, recycling and disposal plan, prior to demolition of structures in accordance with all relevant regulations.	Section 3.2.2 and CEMP – Appendix A1.
Geotechnical Report	Description of site seismic and geologic hazards. Description of construction measures, precautions and corrective actions recommended for preventing structural damage and reducing the risk of terrestrial, marine and riparian geotechnical hazards to acceptable levels.	Section 3.2.1 and 5.1 and Geotechnical Technical Memo(s) for seismic, land and marine – Appendix A2.
Stormwater Pollution Prevention Plan (SPPP)	Description of daily terminal operations as they relate to storm water management, given the local climate and water capture and treatment systems.	Stormwater Pollution Prevention Plan – Appendix A8.
Traffic Impact Memorandum	A memorandum that discusses and identifies potential traffic impacts during construction of the proposed works, based on the expected construction methodologies. Impacts to any roadways as a result of staging or other construction needs will also need to be addressed.	Construction Traffic Impact Memorandum – Appendix A3.
Rail Operations Plan	An assessment of the rail operations expected, including length and number of cars, average number and peak number of trains per day anticipated at the site, how rail cars are delivered to the site and managed while on the site, and total site capacity – length of tracks and total number of trains that can be accommodated on-site. Overview of how shunting or car switching is conducted or managed, and design speed for arriving and departing trains. Provide a letter from the participating rail carrier indicating support for the proposed rail operations plan. Description of the design capacity and specifications for the rail components that are specified for all on-site rail. Account for operations traffic up to the 10 year horizon.	Section 3.3. Rail Operations Plan provided in a separate memo to VFPA.
Marine Traffic Analysis	Confirmation of the design vessel range (maximum and minimum size of vessels that can be berthed and loaded) and anticipated traffic levels, anticipated anchorage patterns and utilization periods, bunkering program (whether this is permitted at the terminal), and any other operational criteria. Mooring plan for design vessels at maximum and minimum size. Analysis of tug requirements to be undertaken, report any special requirements due to the severity of weather/currents.	Section 3.3

Table 2 (Cont'd.)

Study/Report	Requirement	Concordance
Dredging	Letter of Riparian Consent from the upland owner for proposals within a water lot or located adjacent to the shoreline. Diagram of the proposed dredge area and Sediment Analysis. Description of the proposed dredge volume, method, and anticipated disposal method. Timing of proposed dredging in relation to the fisheries sensitive periods. Anticipated timeframe for the duration of works and hours of operation expected for the equipment. Mitigation measures proposed to reduce induced turbidity.	No Dredging Required – confirmation provided in Section 3.2.4.
Noise Study	An assessment of how the proposed development will affect the noise levels experienced by the adjacent community.	Section 5.4 and Qualitative Noise Assessment – Appendix A5.
Air Assessment	Conduct an assessment of contributions to air quality and climate change associated with the facility and related off-site operations. As agreed with VFPA on March 18, 2021, the application will include the emissions inventory and dispersion modelling will be undertaken in coordination with Metro Vancouver air permitting and provided to VFPA when complete.	Section 5.3 and Air Emissions Inventory – Appendix A4.
Energy Efficiency Study	An assessment of how the proposed development (buildings, motorized equipment, and lights) will affect electrical energy consumption levels. Include energy modelling, demonstrate selection of BATNEC (Best Availability Technology Not Entailing Excessive Cost) energy efficient equipment.	Section 5.5 and Energy Efficiency Study – Appendix A6.
View and Shade Impact Analysis	An assessment and renderings of potential view impacts of the proposed development.	Section 5.6
Archaeological Potential – Preliminary Assessment	Footprint and depth of ground alteration works, if proposed. Identify if the proposed project is situated on fill or native soil, and what the anticipated impacts to native soil may be. Identify if the proposed project is within 100m of potable water (historically present or currently present). Location of proposed project in relation to the original shoreline or river/stream bank. Determine if the proposed project is situated on relatively level ground.	Section 4.2
Construction Environmental Management Plan (CEMP)	Description of how the site will be managed during construction such that the work does not result in adverse impacts to the environment, heritage resources, public (municipal, stakeholders, community), Indigenous groups, and including potential effects from noise, vibration, light, dust emissions, or other deleterious discharges.	CEMP – Appendix A1.
Soil and Groundwater Management Plan	Outline how the proponent will test for, appropriately handle, limit migration/runoff and dispose of contaminated soils. Describe how excavation and runoff water will be contained, tested, treated, and discharged. Discharge criteria should be included. Required when dealing with properties with known or suspected contamination in soil or groundwater.	CEMP – Appendix A1.

Table 2 (Cont'd.)

Study/Report	Requirement	Concordance
Request for Review/Habitat Assessment and Mitigations	Provide the information package submitted to Fisheries and Oceans Canada (DFO), any supplemental reports requested by DFO, and correspondence from DFO about the Project. DFO Request for Review will be provided to VFPA when submitted to DFO as agreed on March 18, 2021.	Section 5.7 and Habitat Assessment Report – Appendix A7.
Spill Prevention and Emergency Response Plan (on land and water)	Emergency Response Plan as it relates to reportable spills. Inventory and description of hazardous materials anticipated to be handled or stored on-site during normal operations, including handling methods and a table of applicable regulations. A description of 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. Description of 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 that all personnel working on the Project are familiar with the spill prevention, containment and clean-up plan.	Spill Prevention and Emergency Response Plan – provided with Appendix A8 – Stormwater Pollution Prevention Plan.
Fire Safety Plan	The plan will be consistent with current industry best practices for a facility of this size/nature. Discrete site plan showing existing/proposed fire hydrants and emergency vehicle access routes. Detail employee safety education and compliance with relevant safety regulations. Identify potential hazards. Detail procedures to be put in place in the event of an emergency at the site. A Construction Fire Safety Plan may also be useful for the purposes of consultation with the adjacent municipal Fire Department, and may be required to be produced for the benefit of review of site layout or buildings for compliance with the National Building Code.	Emergency Contingency Program – Appendix A9.
Flood Protection	Flood Risk Assessment to be prepared by a qualified consultant, and take into account the proposed final site elevations (including road/rail lines, parking lots and storm drainage system, finished floor elevations, electrical substation pads, etc.).	Flood Risk Assessment Memo – Appendix A10.
Indigenous Groups	The proposed Project will be assessed to determine whether any part of the proposed work has the potential to impact Indigenous rights. Confirmation of the requirement for Indigenous consultation will be provided upon acceptance and review of your completed Project Application. Provide all records of previous information sharing activities, agreements, or other interactions with Indigenous groups with respect to the proposed Project. Provide information on any known Indigenous interests in the Project area, if known.	Section 6.0

Table 2 (Cont'd.)

Study/Report	Requirement	Concordance
Stakeholders	The proposed Project may have an impact on stakeholder interests. The following stakeholder notification and/ consultation will be led by the Port Authority during application review phase with the involvement of the Applicant at the request of the Port Authority (responding to stakeholders, attending meetings etc.). ▪ Adjacent tenants; ▪ Adjacent municipalities or governments; ▪ Government and other agencies; and ▪ Marine user groups. The Port Authority may revise the list of stakeholders upon acceptance and review of a complete Project Application.	Section 7.0
Public	The proposed Project may have an impact on adjacent community interests. The type of consultation activities that are required to be led by the Applicant for this project includes: ▪ Public Notification; and ▪ Public Consultation for a 25 business day period and which may include in-person meetings, small group meetings, public notifications, website and online outreach. Depending on the scope, public interest and potential impacts to the surrounding community, additional consultation activities may be required during the application review phase During Covid-19 restrictions, please review the Port Authority's Public Engagement guidelines during Covid-19, available online at: https://www.portvancouver.com/wp-content/uploads/2020/04/2020-04-29-Guidelines-Public-Engagement-during-COVID-19-1-1.pdf	Section 7.0
Public Consultation Materials	The following list of items provides the minimum public consultation requirements in the PER process. All materials must be reviewed, approved and received by the Port Authority in final form prior to distribution to the public and the commencement of any comment or consultation period. The Applicant is required to submit drafts of the following upon submission of a complete application: ▪ Public Consultation Plan; ▪ Project website text and any online information; ▪ Draft text of emails to existing list; ▪ Newspaper advertisement copy; ▪ Map or description of mail drop area; ▪ Public notification letters; ▪ Discussion Guide; ▪ Feedback Form; ▪ Display Boards and Presentations; ▪ Coloured renderings, schematics or other visual representations of the Project; and ▪ Other materials to be used (i.e. videos, brochures).	Section 7.0 for the Public Consultation Plan. Engagement Plan and drafts of applicable supporting material provided in a separate memo to VFPA.

Table 2 (Cont'd.)

Study/Report	Requirement	Concordance
Port Community Liaison Committees	The proposed Project will require a presentation to the following Port Community Liaison Committees: ▪ Port Community Liaison Committee – Delta Submit draft presentation materials (i.e., presentation, brochures).	Acknowledged - Timing for this presentation TBD on when the PER application is deemed complete. The draft materials will be submitted to VFPA at that time.
Draft Construction Communications Plan	The proposed Project may have an impact on the adjacent community during the construction period, and therefore the applicant is required to notify area residents and the municipality prior to construction and/or demolition. The draft Plan should include a brief description of the proposed Project, background, construction timelines, considerations and challenges, engagement objectives, key audiences and stakeholders, key messages, contact information and public and stakeholder notification activities prior to construction and/or demolition. Also include a map of the notification area and mechanism to receive feedback and respond to/resolve issues during construction. Submission of a final plan will be required at a later date determined by staff.	Notification is acknowledged. Draft Construction Communication Plan to be provided to VFPA separately.

2.1 PROJECT STUDIES

The studies in Table 3 have been completed previously or in support of this application.

Table 3 Studies that support this application.

Author	Year	Title
Overall Site		
SNC-Lavalin Environment & Water	2013	Environmental Impact Assessment for the Terminal Infrastructure Reinvestment Project
Geotechnical		
Thurber Engineering Ltd.	2020	Berth 2 – Berthing Dolphin Replacement Project Westshore Terminals, Roberts Bank, Delta, B.C. – Geotechnical Assessment
Braun Geotechnical Ltd. and Naesgaard-Amini Geotechnical Ltd.	2021	Geotechnical Engineering Assessment Report – New Cargo Project
Braun Geotechnical Ltd. and Naesgaard-Amini Geotechnical Ltd.	2021	Geotechnical Seismic Assessment of Berth 2 Report
CWA	2021	Berth 2 Foundation Retrofits – Basis of Design
Subsurface Contamination		
WorleyParsons Canada Limited	2013	Limited Phase 1 Environmental Site Assessment (ESA). Terminal Infrastructure Reinvestment project.

Table 3 (Cont'd.)

Author	Year	Title
Air Quality		
SNC-Lavalin Environment & Water	2013	Westshore Terminals Air Quality Study 2012 - 2018
EnviroChem Services Inc	2021	Air Emissions Inventory Report
Noise and Lighting		
Stantec Consulting Ltd.	2017	Westshore Terminals Ltd. Baseline Noise and Lighting Assessment
Stantec Consulting Ltd.	2018	Westshore Terminals Ltd. Post-Construction Noise and Lighting Assessment
Stantec Consulting Ltd.	2021	Qualitative Noise Assessment
enCompass Solutions Group	2021	Energy Efficiency Study
View		
LOCI Landscape Architecture and Urban Design	2021	Site Visit Report
Habitat		
Hatfield Consultants LLP	2021	Habitat Assessment for New Cargo Export Project
Stormwater		
Hatfield Consultants LLP/R.F. Binnie & Associates Ltd.	2021	Stormwater Pollution Prevention Plan New Cargo Export Project
Archaeology		
Millennia Research Limited	2004	Roberts Bank Archaeological Overview Assessment and Archaeological Impact Assessment Permit 2004-100

3.0 PROJECT DESCRIPTION

The Project will consist of upgrades to the existing terminal, including new infrastructure to incorporate potash operations. The Project will receive potash shipments by rail, off-load the potash from enclosed railcars to a new potash storage building (storage building), and transfer potash via an enclosed conveyor system to the shiploaders and onto vessels at the existing Berth 2 for export. Once the Project is operational, Berth 2 for Westshore will facilitate the export of both coal and potash while Berth 1 will remain dedicated to coal. The two existing coal dumpers will remain dedicated to coal. Only two of the three dumpers will operate concurrently at any one time

3.1 PROJECT OVERVIEW AND RATIONALE

All cargo currently comes into Westshore via the existing inbound BC Rail (BCR) line. The existing rail line will also accommodate the inbound potash trains, which will be diverted onto a new section of the on-site track east of the new railcar dumper. The potash will be off-loaded from the covered railcars in the new railcar dumper building before being loaded onto the new enclosed conveyor system and associated transfer towers to the new storage building. The empty railcars will meet back up with the existing rail line after leaving the dumper. During shiploading operations, the product will be reclaimed from the storage building along conveyors to the shiploaders and transferred to the vessel at Berth 2 for export. The reclaim conveyors will consist of both enclosed, dedicated potash conveyors and covered conveyors that will handle both potash and coal. The dual handling conveyors will be cleaned to prevent cross-contamination between products during loading. Berth 1 will continue to be used exclusively to ship coal, while Berth 2 will be redesigned to accommodate both coal and potash, requiring different spouts for each product. Two elevated storage platforms at Berth 2 will be required to allow for the interchange of the two spouts on each shiploader. The infrastructure for the Project will displace a portion of the existing coal stockyard on the northwest corner of the site, as shown in Figure 2 and Figure 3.

The existing operating facility has the required parking, office space, site access, fuel storage, fire protection, domestic wastewater, and stormwater systems to incorporate the Project operations.

Modifications to existing infrastructure and new infrastructure will consist of:

- A new enclosed potash railcar dumper on the south side of the site adjacent to the existing dumpers;
- A new timber A-frame storage building (approximately 400 m long x 70 m wide x 40 m high), including tripper conveyor and portal reclaimer located on the northwest corner of the site;
- Approximately 2,200 m of new enclosed conveyors and transfer towers connecting the new railcar dumper to the storage building and to the existing Berth 2;
- Dust collectors at conveyor transfer points;
- Modifications to or replacement of the existing shiploading conveyors and replacement of the shiploaders to allow both potash and coal handling, and installation of spout changeout towers at Berth 2;
- Retrofits to the existing Berth 2 foundations;
- Modifications to the existing on-site rail system to include a 700 m section of new rail line to connect the new railcar dumper to the existing inner rail loop; and
- Associated on-site road, civil and electrical infrastructure modifications within the existing facility.

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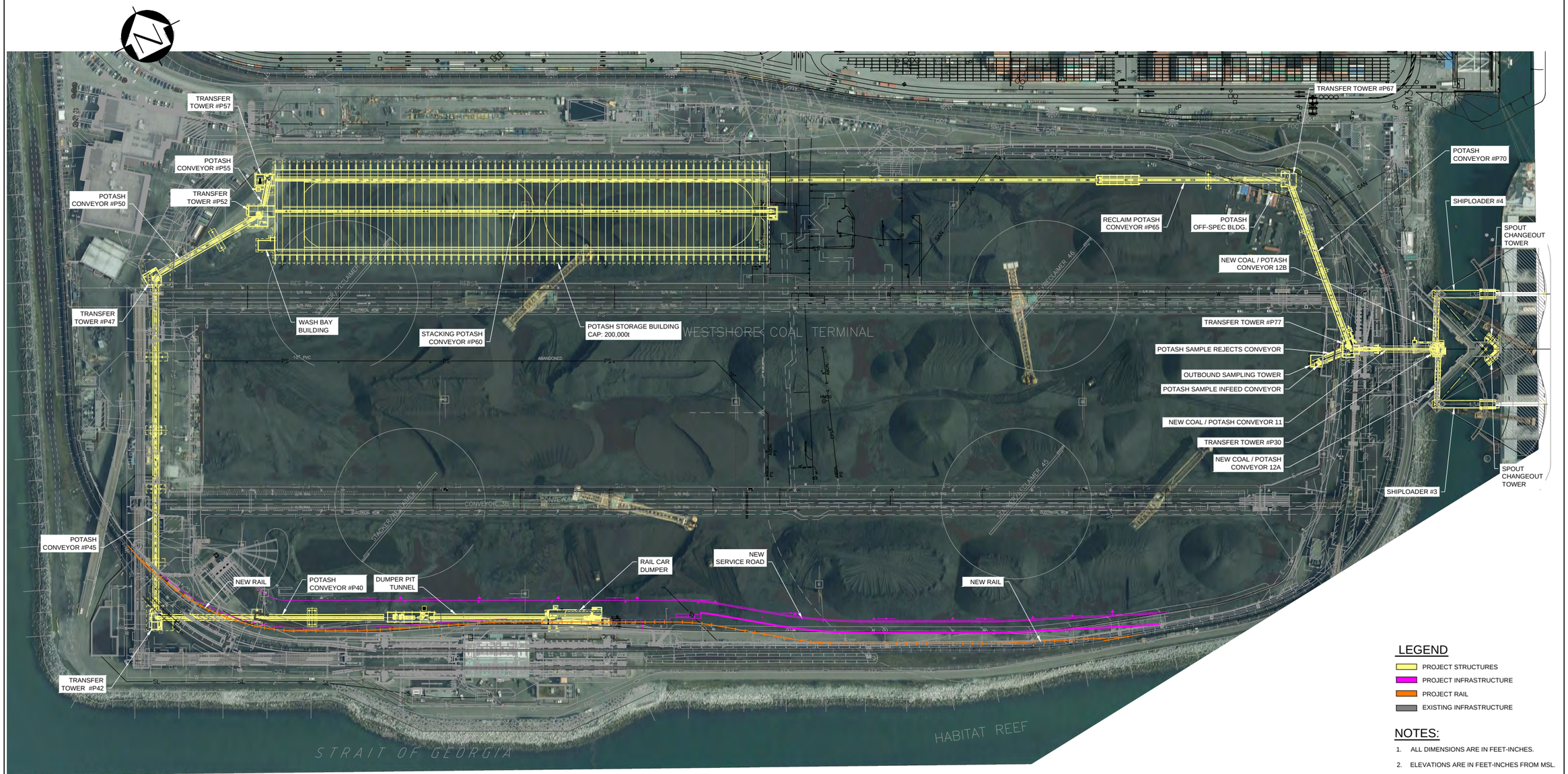
Figure 2 Project Site Plan.



PLAN
1"=125'-0"

LEGEND

- PROJECT STRUCTURES
- PROJECT INFRASTRUCTURE
- PROJECT RAIL
- EXISTING INFRASTRUCTURE

NOTES:

1. ALL DIMENSIONS ARE IN FEET-INCHES.
2. ELEVATIONS ARE IN FEET-INCHES FROM MSL.

PRELIMINARY
NOT FOR CONSTRUCTION

REF.	DWG. NUMBER	DESCRIPTION	No.	YYYY-MM-DD	DESCRIPTION	DRAWN	DWG. CHECK	DESIGN	DESIGN CHECK	DISC. APPROVAL	PROJ. APPROVAL
			P2	2021-09-08	ISSUED FOR USE	ABN		DCC		PMD	AJK
			P1	2021-03-30	ISSUED FOR REVIEW	DCC		DCC		PMD	AJK
REFERENCE DRAWINGS / DESIGN STANDARDS			ISSUES / REVISIONS			✶ HAND INITIALS ON FILE					

DRAWN BY: | SCALE:

CWA

Westshore Terminals

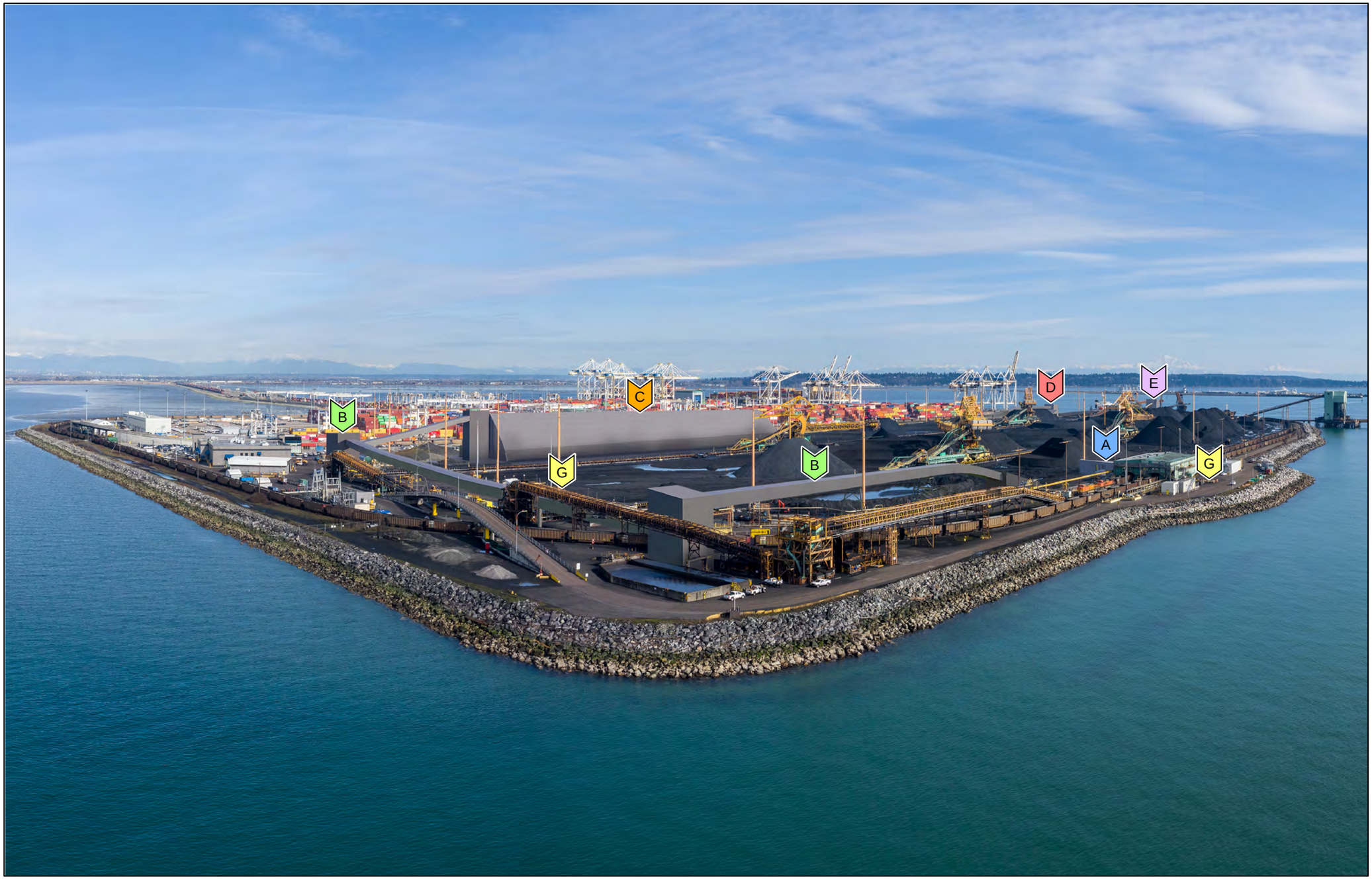
CWA PROJECT NUMBER: 19899

NEW CARGO STUDY
SITE PLAN
ORTHOPHOTO

40101-D0000-0005 | P2

ACAD FILENAME: 40101-D0000-0005 | REV.

Figure 3 New Cargo Export Project rendering.



Legend

- A — New Potash Dumper and Rail Track
- B — New Potash Unloading and Stacking Conveyor System
- C — New Potash Storage Building & Reclaimer
- D — New Potash Reclaim Conveyor System
- E — Modified or Replaced Shiploading Conveyor System and Shiploaders
- G — New Potash Wastewater Collection and Treatment System

Data Sources:
a) Photo, Westshore Terminal 2021.

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New Cargo Export Project

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The advantage of diversifying the existing export terminal to include potash is that it is an active marine terminal with much of the required infrastructure or similar equipment already in place. All necessary modifications for the Project will be undertaken within the existing terminal footprint.

In summary, the rationale for the Project is as follows:

- Diversifying product in order to not be reliant on one market/product.
- Existing operational marine terminal; no new footprint required.
- Existing rail and road access to terminal that will not require any off-site modifications or upgrades.
- Displacement of existing coal stockpile areas and an associated reduction in terminal coal export capacity.

Further details regarding the Project's construction and operation at the existing facility is described in Sections 3.2 and 3.3.

3.1.1 What is Potash

Potash is an important ingredient in fertilizer used to help boost crop yields and the quality of plants. Canada is the world's largest producer and exporter of potash. Potash refers to potassium containing salts and is also known as potassium chloride. It is non-flammable, non-combustible, soluble in water, mildly corrosive to metals, and requires covered storage.

With the world's largest known reserve, Canada exports approximately 30% of the world's supply of potash. Once processed, potash is made up of solid particles approximately 4 millimeters in size that vary in colour from pink to red.

The potash for the Project will be sourced from the BHP Billiton Canada Inc. (BHP) proposed Jansen mine in Saskatchewan.

3.2 CONSTRUCTION

Construction activities will include demolition of some existing site infrastructure and utilities, predominantly underground, and site preparations to facilitate the new potash infrastructure construction. All the construction activities, except for the in-water works described in Section 3.2.4, will be performed by machinery working from land on the existing Westshore property. Equipment and materials may arrive or depart by barge at temporary barge landings on the east and south sides of the site (used during the Terminal Infrastructure Reinvestment Project), by vessel (e.g., new shiploaders via heavy lift), or by trucks using existing access roads.

The temporary barge landings (Temporary Barge Landing #1 and #2, shown on Figure 4) will facilitate off-loading some of the Project's required equipment and materials. No activities will occur below the high water mark. Constructing the landings will involve excavating soil at the locations to a depth of 2.5 m (approximately 160 and 350 cubic meters of soil at Landing #1 and #2, respectively) and placing clean fill (75 mm sieve or greater; approximately 50 and 120 cubic meters of fill at Landing #1 and #2, respectively). Rip-rap removed for the temporary barge landings will be replaced after the barge landings are removed. Mitigation measures for the construction and vessel and barge operation for the temporary barge landings are described in the CEMP (Appendix A1).

Laydown areas will be located within the existing terminal area, mainly along the northern stockpile, and parking will be available either on-site or at a nearby off-site location. Localized laydown areas will also be located south of the southern stockpile in the vicinity of the dumper, as shown in Figure 4.

3.2.1 Seismic Criteria

Westshore met with the VFPA through the design process to align on the seismic approach for existing structures in the Berth 2 area. Attachment 1 of the Berth 2 Foundation Retrofits Report (Appendix A2) includes VFPA's independent analysis of the seismic approach.

3.2.1.1 Upland Structures

All new upland structures including conveyors, transfer towers, the railcar dumper building, and the storage building will be designed to meet the requirements of the current National Building Code of Canada (NBCC 2015), which correlates to a 1:2,475-year seismic event.

3.2.1.2 Near Shore Marine Structures

The new shiploading conveyor steel structures (11, 12A and 12B) and the Conveyor 11 to Conveyors 12A and 12B transfer tower steel structure will be designed for the requirements of the NBCC 2015 which correlates to a 1:2,475-yr seismic event. However, the Project intends to re-use the existing foundations retrofitted to meet the Life Safety performance criteria as outlined in ASCE 41 for the 225-year seismic event, as allowed for under NBCC 2015 Commentary L for existing structures. For further description of ASCE 41 requirements and the proposed foundation retrofits, refer to the Berth 2 Foundation Retrofits Report in Appendix A2.

3.2.1.3 Shiploader Structures

The shiploaders will be designed for the requirements of NBCC 2015 which correlates to a 1:2,475-year seismic event. The project intends to re-use the existing foundations retrofitted to meet the Life Safety performance criteria as outlined in ASCE 41 for the 225-year seismic event, as allowed for under NBCC 2015 Commentary L for existing structures. For further description of ASCE 41 requirements and the proposed foundation retrofits, refer to the Berth 2 Foundation Retrofits Report in Appendix A2.

3.2.2 Demolition and Site Preparation

The demolition activities for the Project are limited in nature and do not include any building demolition. The activities are mainly confined to the relocation of existing utilities, pavement removal, removal of sections of the existing railway to make way for the Project infrastructure improvements. Components of the existing shiploading conveyors and the existing shiploading infrastructure near Berth 2 will be removed to accommodate the dual coal and potash product handling system.

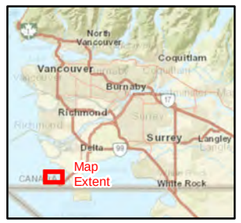
The Project does not anticipate encountering hazardous materials during demolition as hazardous materials and areas with potential contamination were addressed during construction for the Terminal Infrastructure Reinvestment Project in 2012 through 2019. The one exception is the presence of paint containing lead on portions of the existing shiploading infrastructure near Berth 2. The safe handling and disposal requirements for this material is described in the CEMP (Appendix A1).

Figure 4 Project construction staging areas and contractor parking.

Legend

Project Components

- Shiploading Conveyors and Shiploaders
- Conveyor
- Construction Laydown Area (Civil, Conveyors, Building)
- Dumper Construction Laydown Area
- Existing Contractor's Parking
- Existing Railcar Dumper
- Inbound Conveyor Laydown Area
- Potash Storage Building
- Temporary Contractor's Parking Extension
- Westshore Terminals Ltd Administration Building
- New Railcar Dumper
- Temporary Barge



0 50 100 m

Scale: 1:6,000

Projection: NAD 1983 UTM Zone 12N

Data Sources:
a) Project components, Hatfield 2021.
b) Temporary Barge digitized using Westshore temprary barge landing location.pdf, Nickel Bros 2021.
c) Base imagery, 14 March 2020, Retrieved from © Google Earth.

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Hatfield

New Cargo Export Project

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3.2.2.1 Demolition

Existing site infrastructure and materials will need to be demolished for the Project, including the following:

- Existing coal handling conveyors (11, 12A and 12B; as shown on Figure 2), which are connected to the shiploaders at Berth 2, and the coal surge bin will be demolished and replaced with new conveyors capable of handling either product.
- Existing Berth 2 shiploaders.
- Existing asphalt will need to be removed from the area around the new rail, railcar dumper, and a number of the foundations for the new conveyors. Existing asphalt will also be removed in locations for various project infrastructure, including utility relocations and equipment foundations.
- Portions of the existing rail line will need to be removed to facilitate the addition of the inbound and outbound rail lines connecting the new railcar dumper.
- As described in Section 3.2.3.1, some of the existing utilities at the site will need to be removed or relocated.

3.2.2.2 Earthworks and Foundations

The Project will involve earthworks, ground improvement works, and shallow foundation support for the storage building and some of the transfer towers and conveyors. The dumper building will require deeper excavation (approximately 9 m) and foundation works. The earthworks required for this Project will primarily be in the area around the storage building and dumper pit.

The existing coal and mixed coal/sand will be removed from the storage building construction area prior to the preload being brought to the site. Preload is required to meet site seismic requirements and settlement criteria in the area. Approximately 217,800 cubic meters of clean fill preload material will be placed within the area, of which approximately 157,700 cubic meters will be removed off-site following preload. The remaining material will stay on-site and be reused as fill. The current plan is to truck the preload material to and from the site; however, Westshore is considering other options, including bringing in materials via barge or vessel, potentially making use of hydraulic transport for placement at site from the vessel. Westshore will notify and provide VFPA further information should an alternate option from trucking the preload material become feasible.

The existing soil profile in this area comprises coal, pond-coal, and a sand and coal mix prior to encountering hydraulically placed sand from when the site was originally constructed. The type of material encountered will determine if it can be exported and sold, reused, or taken off-site for disposal. The assumptions are as follows:

- Coal and pond coal will be stripped and sold through the existing operations;
- Coal and sand mix will be stripped, stockpiled, and disposed of off-site at a licenced facility;
- Clean sand will be side-cast and used as fill for the Project; and
- Imported granular materials will be used for fill materials.

Once the required settlement is achieved, the material will be moved to another area of the site to be stored and reused for fill or removed from the site. Excavation will then commence in the areas of the storage building and railcar dumper.

Table 4 summarizes the approximate Project cut and fill volumes. Drawings showing the cut and fill volumes for the storage building are provided in Drawing Package #1 Appendix A11 (85400-D0010-0013 and 85400-D0010-0014).

Table 4 Anticipated cut and fill volumes for the Project.

Material Type	Cut/Fill	Action	Storage Building Volume (m^3)	Other Works Volume (m^3)[1]	Total Volume (m^3)
Pond Coal	Cut	Sell	14,700	2,000	16,700
Coal/Sand Mix	Cut	Dispose	14,000	784	14,784
Existing Waste-Soils Stockpile	Cut	Dispose	N/A	N/A	10,500
Sand	Cut	Dispose	0	24,200	24,200
Preload to Site	Fill	Clean/New	217,800	0	217,800
Preload Removed from Site	Fill	Clean	157,700	0	157,700
Fill	Fill	Import	32,300	15,400	47,700

[1] Includes dumper excavation.

Stone column ground improvements are proposed for the new infrastructure installed along the northern edge of the site, including the storage building and a portion of the outbound conveying infrastructure.

The storage building will be supported on continuous cast-in-place concrete strip footings and concrete buttresses along the north and south walls and concrete end walls with strip footings along the east and west walls. Infrastructure and stockpile retaining walls within the storage building will also be supported by concrete strip footings. Shallow (under 2.5 m) foundation concrete slabs are proposed for the new conveyors and transfer towers.

The railcar dumper building and associated conveyor tunnel will include an excavation approximately 12 m below grade. Dewatering will be required, but sheet piles will be installed around the excavation to limit the water from entering the excavation during construction. Given the new railcar's vicinity to the marine environment, the water infiltrating into the excavation may be saline. The construction activities will allow for water treatment for the dumper pit water sufficient to meet or exceed Westshore's existing discharge permit requirements. Water associated with dewatering of the dumper pit and tunnel will be discharged from the site under Westshore's existing discharge permit. All other dewatering activities associated with construction will discharge to Westshore's existing water management systems.

3.2.3 Upland Works and Infrastructure

The upland works and infrastructure required for the Project include the following:

- Installation of new utilities;
- Additional water collection and treatment system(s);

- On-site road and rail modifications;
- New railcar dumper;
- Installation of new potash conveyors and transfer towers;
- New storage building; and
- Modifications to the existing shiploading conveyors and replacement of the shiploaders at Berth 2.

3.2.3.1 Utilities

Given the existing operations and site utilities and overlapping locations for the new infrastructure for the Project, utility relocation, as well as new installations, will be required. The most significant area of utility relocations will occur along the southern side of the site resulting from the construction of the railcar dumper and new rail track. Removals and relocations will include the freshwater main, pile spray (recycled water) main, coal wastewater collection ditches, sumps, above and below ground conveyance piping and associated pipe bridges and supports, existing electrical distribution, dust suppression valve container, cannons, spray towers, and underground distribution piping.

Similarly, the storage building construction will result in the removal of the existing coal dust suppression cannons, big bertha spray towers, and underground distribution piping. A portion of the pile spray main will be relocated around the new storage building since the main currently goes through the new building footprint. Other installations and relocations will be required around the site and are shown on Drawings 88200-D0007-1212 to 1217 (Drawing Package #2, Appendix A12).

3.2.3.2 Water Supply

Water supply will be provided from the existing on-site freshwater main that supplies municipal water from the City of Delta to the new transfer towers, storage building, potash dumper, and new coal and potash wastewater collection sumps. This water will be for process, washdown, and fire suppression systems.

3.2.3.3 Electrical

The site electrical system will continue to utilize the existing BC Hydro feed into the site and the existing substations. In addition, it will include the construction of two new substations to service equipment feeding and included in the storage building and equipment near Berth 2 as shown on Drawings 88200-D0007-1212 to 1217 (Drawing Package #2, Appendix A12). The new power distribution system feeding the new substations will be supplied without requiring upgrades to the existing BC Hydro feed, Westshore's transformers, or primary substation.

3.2.3.4 Lighting

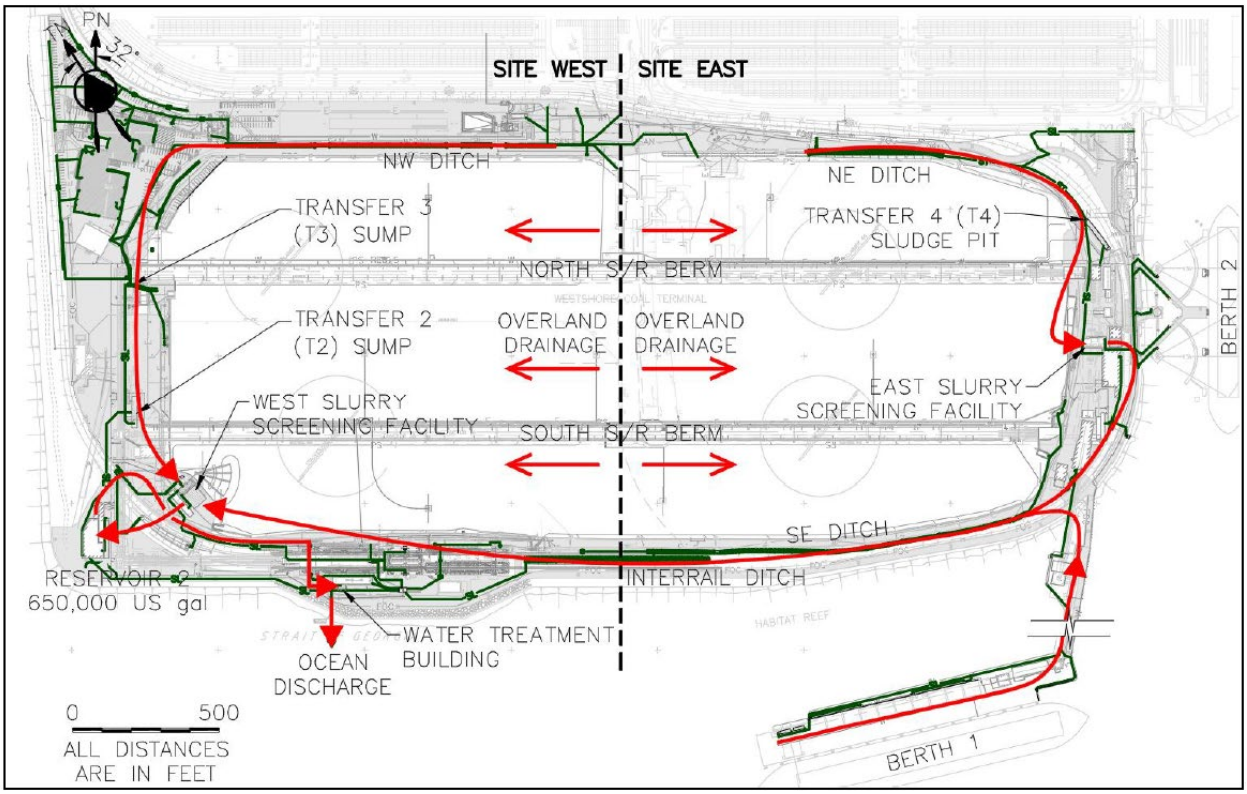
Given the current operations, there is existing site lighting throughout the area for the proposed new infrastructure. Westshore has undertaken an initiative to replace existing outdoor and indoor lighting with LED lights under the BC Hydro Power Smart Program. The Project will include the use of LED lighting for all new lighting systems on the enclosed conveyor galleries, transfer towers, and buildings (e.g., dumper building, storage building, exterior lighting along Conveyors 11, 12A, and 12B and the shiploaders). New exterior lighting will generally be limited to building entrances and exits. The proposed Project lighting was

planned using IESNA standards in conjunction with VFPA's Lighting Guidelines[1], and lighting levels will vary depending on each area's function and use up to a maximum of 150 lux, consistent with the existing operational lighting levels. Additional details on lighting will be provided in the Project building permit application and will be similar to existing operational lighting.

3.2.3.5 Water Collection System

The existing site water collection infrastructure is a fully enclosed system that includes ditches, transfer sumps, settlement ponds, a coal wastewater handling system, reservoirs, and a water treatment system for ocean discharge. The system collects all stormwater and coal wastewater generated from rainfall, washdown, or dust suppression operations and conveys the water by a number of on-site pumps to the two terminal reservoirs. Discharged water is pumped directly to the on-site coal wastewater treatment system and is treated using flocculants and coagulants prior to gravity outfall to the ocean (Figure 5).

Figure 5 Existing site water collection system.



Note: Red lines represent the general direction of water flow. Green lines are the water conveyance system (underground and aboveground pipes, ditches, swales and sumps)

Westshore is permitted to discharge treated coal wastewater to the ocean through the existing ocean discharge outfall at the south end of the site, slightly west of the existing coal dumper, under their Ministry of Environment and Climate Change Strategy (ENV) Permit PE-6819 at a rate of up to 10,000 cubic meters per day.

[1] https://www.portvancouver.com/wp-content/uploads/2017/04/VFPA-PER-Lighting-Guidelines-FINAL-2015-07-07.pdf

According to Westshore's 2018 and 2019 data, the current average daily discharge rate is approximately 2,200 cubic meters per day, or approximately 22% of the allowable daily rate.

The total volume that is discharged through the outfall is expected to increase from the existing volume due to the increase in impervious areas, the storage building rooftop, and more frequent washdown events during operations but remain within permitted limits. Table 5 provides the change to the impervious area at the site for the Project.

Table 5 Change to impervious area at Site.

Description	Square Feet	% Change
Existing Impervious Surfaces	1,402,300	-
New Paved Surfaces	408,950	+29
New Storage Building Roof	307,560	+22
New Impervious Area Total	**716,510**	**+51**

To minimize requirements for upgrades and to buffer flows to the existing system to handle the additional water, stormwater retention features and site grading as near to the runoff sources as possible will be upgraded or installed as part of the Project. This will include extending existing and adding additional ditches as required around the storage building. The stormwater is not anticipated to contact potash as the new conveyors, storage building, and transfer towers are enclosed or covered.

Washdown of the conveyors and shiploaders between coal and potash export at Berth 2 will also be conveyed to the water collection infrastructure planned for the proposed Project. The water collection system is designed to delineate the drainage catchment areas between the coal and the potash operations. The water that comes into contact with potash will be collected and conveyed into a new potash water treatment system. Berth 2's current spill containment system will also be upgraded with full-length conveyor spill containment and washdown, improved spill containment of the boom conveyor for the Berth 2 shiploaders and washdown system upgrades for associated infrastructure. The amount of potash washdown water will be minimized by the use of dry clean methods, such as a vacuum system and manual shovelling. The Project's proposed plan is to combine water from the potash system with the coal wastewater after treatment and discharge through the existing outfall. No changes to the existing outfall are currently anticipated. Westshore is working with ENV on a permit amendment of Permit PE-6819 to include the new stormwater infrastructure, potash water treatment facilities, and discharge to the existing outfall.

Further details on the proposed site water collection and management are provided in Appendix A8.

3.2.3.6 Road and Rail

Road works for the Project will involve minor changes to the existing alignment of on-site service roads within Westshore's facility to accommodate the new railcar dumper and to re-align site roads impacted by the new conveyor systems at the east and west ends of the site, as shown on Figure 2. No modifications to off-site rail or roadways will be required.

There is no need for any new rail loops within the facility as potash trains will use the existing inner coal rail loop. During receiving operations, the potash will enter the facility using the existing BCR storage tracks at the site. A new section of the rail line, approximately 700 m long, will be installed to direct the cars to a new railcar dumper and then re-connect to the existing rail loop. The existing tracks leading up to the existing coal dumpers will be reconfigured to allow for crossover from the outer coal rail loop to the inner coal rail loop.

3.2.3.7 Railcar Dumper

Potash unloading will be undertaken within the new potash railcar dumper system, which will involve the construction of a building to cover the unloading/inspection area with hoppers and conveyors in a concrete dumper pit underneath to receive the material. The potash from the railcars will be discharged into a series of hoppers and vibratory feeders, which will direct the potash onto the conveyor leaving the dumper area. The dumper pit that encompasses the hoppers, vibratory feeders, and conveyor will be approximately 8 m deep and 45 m long. From the dumper area, potash is conveyed by conveyor in an approximately 84 m long inclined tunnel until it reaches grade. The railcar dumper building will be approximately 13.5 m wide and accommodate stairs and walkways for staff access throughout the building.

The railcar dumper building will have a dust collection system located over the roof with collection points at the hopper and conveyor belt transfer areas. Vacuum truck tie-in points will be located outside the building and will service the dumper area and tunnel. A fresh air ventilation system will also be installed within the building to provide sufficient air exchange.

A washdown water system will be a secondary cleaning method for the dumper area and tunnel. All washdown water will be channelled toward a collection sump in the bottom of the dumper and pumped to the site potash water collection system.

3.2.3.8 Conveyors and Transfer Towers

The new unloading and reclaim conveyors will be fully enclosed in galleries to minimize the potential for water ingress or dust egress. The galleries will have walkways on both sides of the conveyor, solid flooring for spill containment, and washdown water connections. Dry vacuum piping will be included at the transfer towers and along the conveyors to allow dry clean-up via vacuum truck at regular pick-up points, which will be cleaned by washdown between product handling.

Conveyor transfer towers will also be fully enclosed with vacuum and washdown facilities and will house dust collection systems. On the ground floor of the transfer towers, there will be trench drains that will channel any washdown water into a collection sump located in the tower footprint. The collected water will then be pumped into the potash water collection system.

The alignment of the conveyors is parallel to the existing coal conveyors on the west side of the Westshore site prior to entering the storage building, as shown on Figure 2. The conveyor and transfer tower system between the railcar unloading area to the storage building will consist of three conveyors and three transfer towers (the third tower forms the east tower of the storage building).

From the storage building, the reclaim conveyor (which handles product from the stockpiles within the storage building) runs east at grade until changing to an elevated conveyor to a new transfer tower and

transfer conveyor leading to the shared shiploading system. The reclaim conveyor will be enclosed once it leaves the building, and the transfer conveyor will be in an enclosed gallery. From this point, a new transfer tower will replace the existing coal surge bin, and three new shiploading conveyors (11, 12A, and 12B) will replace the existing coal conveyors to handle both the coal and potash products for export. These conveyors will be open galleries with covers over the conveyors and collection trays under the conveyors.

A new auto sampling and sample reduction system will be installed in the transfer between Conveyor P70 and the redesigned Conveyor 11 (Figure 2). The sampling system will be fully automated and collect samples from the product stream being loaded to ship to allow for assessment of the cargo.

3.2.3.9 Storage Building

In-bound potash will have the capability to go direct to the storage building to be stockpiled via an overhead conveyor or divert to the reclaim conveyor for direct loading of potash vessels. The storage building is located at the northwest corner of the site, as shown in Figure 2.

The storage building will comprise a glue-laminated timber arch structure with timber decking/roof sheathing. However, an option to use a steel-framed building with a wood roof is also being considered. The dimensions of the building will be approximately 70 m wide x 400 m long x 40 m high and will have a roof membrane of either dark grey or green. The storage building structure will be a conventional design for potash application.

The storage building will have dedicated stockpile areas for each grade of the potash product (standard and granular) along with areas for equipment access and maintenance. Potash will be reclaimed from the storage building stockpiles by an automatic travelling rail-mounted portal scraper reclaimer. Like the inbound system, reclaimed potash will be conveyed via fully enclosed galleries and transfer towers to the Berth 2 area.

A covered, off-spec storage bunker (approximately 14 m wide x 15 m long x 6 m high) will store received or reclaimed material that does not meet product specifications. The off-spec building will have the capacity to store 800 tonnes of material and will be located at the northeast end of the site, as shown on Figure 2.

Off-spec potash material and dust collected from the dust collection systems will be moved to the west end of the new storage building where a system will be installed to allow for the re-introduction of this material into the product stream being shipped. This process will minimise the amount of material that will be required to be disposed of off-site.

3.2.3.10 Shiploaders

The existing shiploading arrangement at Berth 2 consists of two quadrant-style shiploaders. These shiploaders will be replaced with new shiploaders that allow dual-purpose operation for the export of coal and potash. The shiploader replacement will consist of the shiploader components above the marine structures (i.e., the boom, mast, carriage, and rail). The shiploader conveyor belts will be covered to protect the potash from contamination and to minimize any dust generation. The shiploaders will also be equipped with spill trays to collect any product falling off the conveyor.

The shiploader replacement work would most likely be carried out by heavy lift vessels that will bring the shiploaders to site fully erected and lift them into place. The existing marine structures that support the shiploading systems will be retrofited to meet seismic design requirements (Section 3.2.1) and the new spout platforms described below.

3.2.4 In-water works

Coal and potash each require a different style of vessel loading spout to be installed at the end of the shiploaders. To facilitate changing of the loading spouts between products, a spout changeout system will be installed, including a new spout storage platform for each shiploader. The spout storage platforms will be placed as close as possible to the existing wharfhead.

Through design, Westshore attempted to store the shiploaders' coal and potash loading spouts, when not in use, on existing structures to avoid additional in-water works for the Project. It was determined that the existing structure was insufficient in size and location. Planned structures being built under a different project (the Berth 2 Mooring Upgrades project) are also not suitable to accommodate the loading spouts. Therefore, two new storage towers supported on new marine structures will be required for the Project. Initial design includes for three (3) to four (4) piles per tower with an approximate pile diameter of 1 to 1.5 m with a concrete pile cap and a platform for each tower. The storage platforms will require an expansion to the existing wharfhead concrete decking by approximately 1.2-by-2.6 m on each side. In order to support the additional loads from the storage platforms to the existing structure, two steel beams will be installed underneath the existing structure at two locations. These beams will be supported by the newly installed piles.

No existing marine structures will be removed or relocated as part of the Project. However, retrofits will be required to the existing Berth 2 marine foundations including the installation of 36 new concrete-filled steel piles with an approximate diameter of 1 to 1.5 m, reinforcement of existing concrete pile caps and pile to pile cap connections, and infill of existing piles with concrete. The purpose of these retrofits is to resist movement due to anticipated ground displacements as required to meet seismic codes.

In total, approximately 42 piles will be installed (6 for the storage towers and 36 for the retrofitting work). Piles will be installed using a vibratory hammer from a barge, an impact hammer will only be used if necessary. This method is similar to the already permitted dolphin work that will take place at Westshore as part of the Berth 2 Mooring Upgrades project (PER No. 19-187; https://www.portvancouver.com/permitting-and-reviews/per/project-and-environment-review-applicant/status-of-permit-applications/westshore-berth-2-mooring-dolphin-upgrades/).

The Project does not require any dredging in order to proceed.

3.3 OPERATIONS

Westshore currently handles around 31 Mtpa of coal with a capacity of 36 Mtpa. The Project will result in the shipping of up to 4.5 Mtpa of potash, displacing approximately an equivalent amount of coal export capacity. The overall terminal capacity will remain at 36 Mtpa and will not change due to the Project.

The current site operations are 24 hours a day, 364 days a year with a rotation of three shifts per day, and are expected to remain the same with the implementation of the Project.

As noted in Section 3.1, given Westshore's current operations, there are existing site facilities for parking, office space, site access, fuel storage, fire protection, and managing stormwater and domestic wastewater. In addition to the existing facilities, Westshore maintains site policies and procedures for safe operations, health and safety, protection of the environment, and emergency response.

3.3.1 Existing Operations

Westshore currently receives coal via 126 railcar unit trains from Burlington Northern Santa Fe Railway Company (Burlington) and 152 railcar unit trains from Canadian National Railway (CN) and Canadian Pacific Rail (CP). Each coal car has an average capacity of 106 tonnes. The terminal capacity is approximately 2500 trains per year. Coal trains arrive at the BCR yard located along the causeway to the terminal and stored in one of four dedicated coal storage tracks. From the storage tracks, the trains are brought into the coal railcar dumpers via the on-site rail loops using main line power. Once positioned in one of the two dumpers the trains are indexed through the dumper using electrically powered indexers. The trains are returned to the storage tracks using main line power once dumping is complete and depart the causeway from the BCR yard. For normal operation, there is no shunting or switching during operations. The conveying system transports coal from the dumpers either directly to the vessels or to the stockpiles. Four stacker/reclaimers (S/Rs) stack the coal in the stockpiles for storage and reclaim the coal from the stockpiles for vessel loading. The four stockpiles, associated conveyors, and S/Rs are located on the inside of the rail loops. Coal shiploading occurs via a travelling shiploader at Berth 1 and two-quadrant shiploaders at Berth 2.

The average vessel fill over the last three years is 88,400 tonnes. Based on this average cargo tonnage, if the terminal were to operate at the 36 Mtpa terminal capacity, there would be approximately 410 coal vessels annually. This number will vary depending on cargo shipments and the average vessel size for any specific year. Berth 2 can accommodate a vessel range up to 185,000 Deadweight tonnage (DWT), which will easily accommodate the potash vessels, ranging from 20,000 to 120,000 DWT.

Vessels that call at the terminal follow the Westshore *Notice to Ships* for berthing, mooring, and loading requirements (https://www.westshore.com/pdf/misc/notice.pdf). The *Notice to Ships* document also contains tug information, the maximum design vessel size, and berth water depths. Anchorages are controlled by VFPA or the Port of Nanaimo. There is no bunkering at the terminal.

3.3.2 Project Operations

Coal operations will continue at Westshore during and after the construction of the potash facilities. It is anticipated that the available coal storage will be reduced by the area displaced by the potash storage. Berth 1 will continue to be used to exclusively ship coal, while Berth 2 will be designed to accommodate both commodities. However, since potash ships will displace coal ships at Berth 2, an annual capacity reduction in coal shipped through Berth 2 is expected relative to the amount of potash throughput.

Staffing and labour levels are not anticipated to change. Transportation impacts are anticipated to be limited and without notable increase from existing conditions. Operationally, road traffic conditions are anticipated to remain unchanged.

3.3.3 Project Rail Operations Plan

Typical existing and planned terminal operations see four trains in the yard and one train on each dumper loop for a total of six trains. There are four tracks/sidings in the BCR yard on the causeway and an entrance, and an exit track for each of the existing dumpers.

The Project will receive trains from BHP's proposed Jansen project in Saskatchewan, consisting of 177 car unit trains of potash hopper cars (103 tonnes/car). Each train has a design capacity of 18,200 tonnes of potash, resulting in approximately 240 to 250 trains per year or an average of up to 4.8 trains per week. The design speed of arriving and departing trains on-site is 24 km/hour (15 mph), the same as the existing operations. The trains will arrive at the BCR yard and follow the same operations as noted above for the coal trains, with the exception that potash trains will be restricted to the inner loop leading to the potash dumper. Indexing will be the same, and under normal operation there will be no switching or shunting. Trains will depart from the existing BCR yard. The inner loop can hold one train, so only one process, either coal unloading or potash unloading, can occur at a time. The outer loop remains dedicated to coal unloading. As a result, there will continue to be a maximum of two unloading operations that can occur at any one time: either two coal trains, or one coal train, and one potash train. Sharing the inner track between coal and potash will reduce the track's availability for coal unloading and therefore impact the current coal capacity.

At maximum coal capacity of 36 Mtpa the number of trains per year would be approximately 2,500 (approximately 48 trains per week). With the introduction of potash the number of trains at maximum capacity, 31.5 Mtpa coal and 4.5 Mtpa potash, would be slightly lower at approximately 2,400 (approximately 46 trains per week), due to the increased tonnage carried on potash trains. This will result in an overall reduction of approximately two trains per week arriving and departing Westshore at potash maximum capacity.

Westshore will provide a letter of support for the proposed rail operations plan for the participating rail carrier separately to VFPA, as requested by the VFPA Checklist. It is anticipated that the rail carriers currently servicing Westshore will be used for the potash operations and, as stated above, the total number of trains is anticipated to be similar or slightly reduced from rail operations at maximum capacity.

3.3.4 Project Marine Operations

As identified in Section 3.0, the existing Berth 2 will be used to load both coal and potash vessels for the Project. Only one vessel will be loaded at any one time. The berth itself does not require any modifications to accommodate the potash vessels as they are generally smaller in size than the existing coal vessels that use Berth 2. The berth is designed to accommodate vessels up to 185,000 DWT. The reference moored positions of vessels at Berth 2 are provided on the marine structures drawings (85690-D0300-0000; Drawing Package #2, Appendix A12).

Using the 88,400-tonne vessel average fill described in Section 3.3.1, at the maximum coal capacity of 36 Mtpa, the number of ships would be approximately 410 per year. Specifically for Berth 2, the average cargo size from 2015 through 2020 ranged from 76,714 tonnes (2020) to 94,539 tonnes (2017) with an average over the five years of 82,033 tonnes. The estimated 4.5 Mtpa reduction in coal would equate to 54.86 average coal vessels at Berth 2. The potash vessels proposed have a smaller average weight that a ship

can carry of around 60,000 tonnes. On this basis, approximately 75 potash vessels will be loaded at Berth 2 per year. This would result in a maximum total number of coal and potash and vessels of approximately 430 vessels per year, based on 31.5 Mtpa coal and 4.5 Mtpa potash, which is an increase of approximately 20 vessels per year over coal alone. The vessel numbers will vary depending on the ratio of coal and potash, as well as the average vessel and cargo sizes for any given year.

Vessels will follow the same *Notice to Ships* for operations; anchoring will continue to be managed by VFPA and the Port of Nanaimo. As noted in Section 3.3.1, as an existing operational terminal Westshore's *Notice to Ships* provides regulations and requirements for vessels using the terminal regarding berthing, mooring, and loading requirements. The *Notice to Ships* document also contains tug information and requirements, the maximum design vessel size, and berth water depths. Westshore updates the *Notice to Ships* as required to align with any updates to terminal regulations. No updates are required to accommodate the proposed potash vessels for the Project.

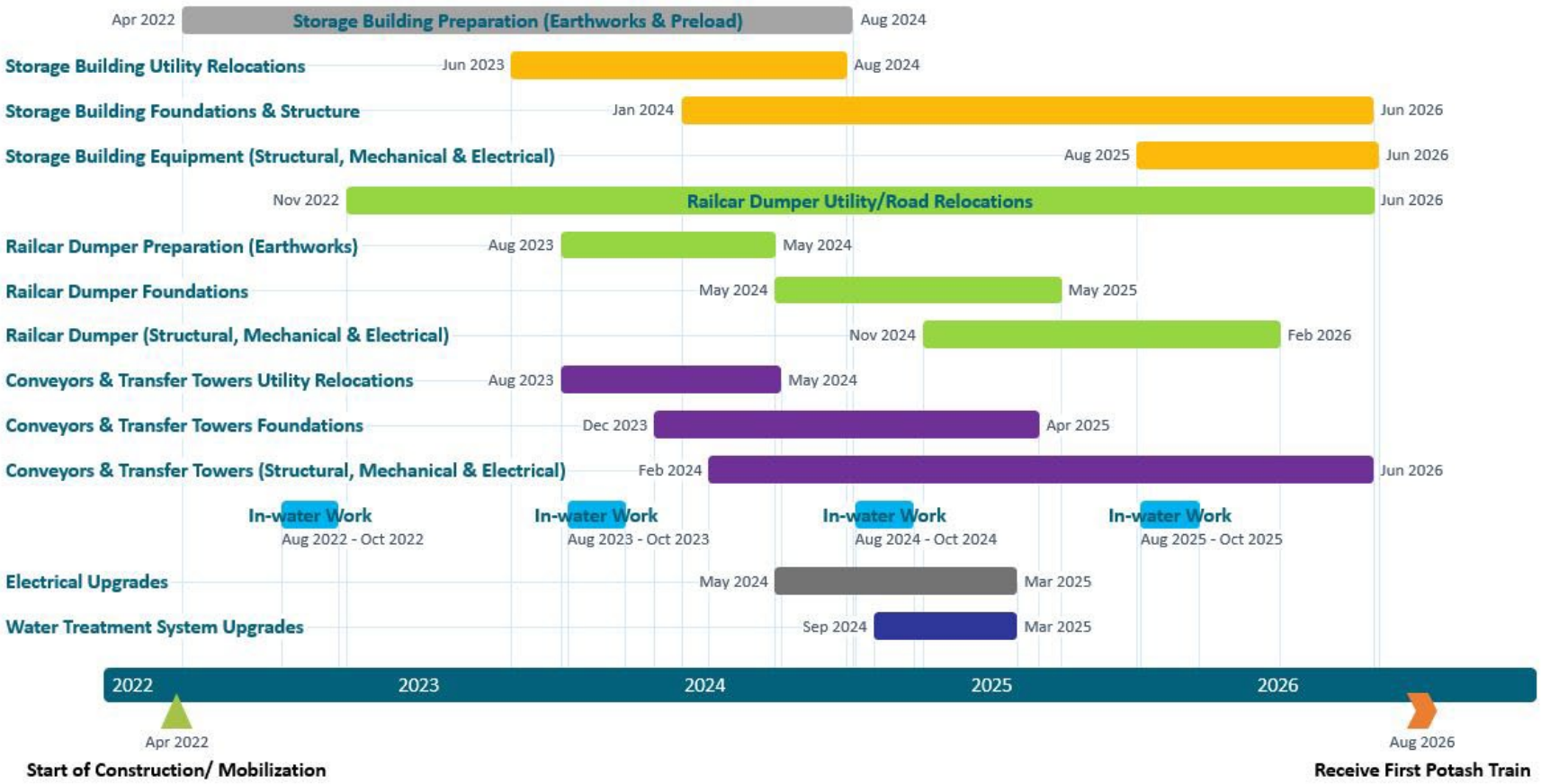
3.4 SCHEDULE

Project construction is anticipated to take approximately 4 to 5 years to complete and is currently scheduled to start in Q2 of 2022, subject to permits being in place. Figure 6 shows the estimated construction timeline for the Project.

Typical construction activities will take place within VFPA's regular construction hours, between Monday and Saturday from 7:00 a.m. to 8:00 p.m. However, trucking of fill material, major concrete pours, and work requiring a shutdown of terminal operations (e.g., tie-ins or equipment installations and commissioning activities) will occur on a 24-hour schedule.

Given existing 24-hour operations at Westshore and the type of Project construction activities likely to occur during extended hours, it is not anticipated that these activities will result in an increase in noise levels at the terminal or surrounding communities. Pile driving and other large noise-emitting activities will not be completed during extended hours. As noted in Section 5.2, if the trucking of the fill material were to be conducted in 24-hour per day operations, it would reduce the number of days required for trucking and reduce the amount of trucking during high traffic times.

Figure 6 Estimated schedule for the New Cargo Export Project.



4.0 PROJECT SETTING

4.1 SOCIO-ECONOMIC SETTING

The Project is located entirely within the existing Westshore Terminal in Delta, BC, approximately 30 km south of Vancouver, BC. Westshore, together with the GCT operated Deltaport, makes up the port facility that is situated at the end of a 4.1 km causeway (Roberts Bank Way). The port was constructed from fill material on the shallow bank and is within the federal lands managed by VFPA. Westshore has held a lease for coal exports on the property since it first became operational in 1970. Two (2) km southeast of the port, a second key transportation facility transports people instead of goods; the Tsawwassen Ferry Terminal. Westshore's existing facilities are connected to road and rail infrastructure, which facilitate the movement of goods and people across the region. Socially and economically, the Roberts Bank area maintains agriculture and fishing, is home to Indigenous peoples, and has provided direct and indirect employment to local and regional residents since the late 1950s.

Westshore is situated within the traditional territory of the Tsawwassen First Nation (TFN). Tsawwassen First Nation has approximately 491 members living on Tsawwassen land, a 273-hectare parcel of land situated between the Tsawwassen Ferry Terminal and the port facility, approximately 5 km from Westshore. With approximately 102,238 people (census year 2016). The City of Delta includes three urban communities that are also near the Project: Ladner, Tsawwassen, and North Delta (with centers approximately 9 km, 5 km, and 25 km from the Project, respectively).

The closest schools are located in Tsawwassen, all approximately 5 km east of the Project area: Smuyuq'wa' Lelum Early Childhood Development Centre, Cliff Drive Elementary, English Bluff Elementary, South Delta Secondary School, and South Park Elementary. The closest parks include Tsawwassen First Nation Sports Field Complex (5 km northeast), Boundary Bay Regional Park (8 km east), and Deas Island Regional Park (13 km northeast).

4.2 ARCHAEOLOGICAL SETTING

Numerous archaeological investigations have taken place in the Project's vicinity in response to infrastructure development during the past 50 years. These investigations suggest that the potential for effects of the Project on archaeological resources is low. An archaeological impact assessment conducted as part of Global Container Terminal's Deltaport Berth Three project environmental assessment concluded that there were no archaeological sites in the area (VFPA 2005). The Project is located on relatively level fill above native soils. As shown on Figure 1, the original shoreline in the area of the Project is approximately 4.5 km to the northeast. As described in Section 3.2, construction of the railcar dumper building and associated conveyor tunnel will include an excavation approximately 12 m below grade. Anticipated impacts to the native soil are expected to be minimal and limited to in-water pile installation on the east side of the Project to construct the spout changeout towers.

There are previously recorded archaeological sites within 5-6 km of the Project. DgRs-2 site consists of a large shell midden and is located on the Tsawwassen Indian Reserve, approximately 3.5 km southeast of Deltaport Way at 41B Street. DgRs-9 site is located 4.3 km to the south of Deltaport Way and consists of shell midden deposits. Several artifacts and various human remains were encountered at DgRs-9 site

suggesting it was a burial ground ca. 900 before the present. DgRs-11 site is located approximately 50 m northeast from DgRs-9 and consists of disturbed shell midden deposits (Millennia Research Limited 2004, VFPA 2015). None of these previously recorded sites will be impacted by Project works.

Potable water is supplied to the Project area from the City of Delta's water system.

4.3 ENVIRONMENTAL SETTING

As shown on Figure 2, given current activities and infrastructure (buildings, coal stockpiles, conveyors, paved surfaces, and rip rap shoreline), the area is highly disturbed and lacks any natural features.

The surrounding Roberts Bank area is located in the southern portion of the Fraser River Delta system where seawater from the Strait of Georgia and freshwater and sediment from the Fraser River combine, leading to a complex, dynamic and productive estuarine ecosystem. The bank supports saltmarsh, mudflats, and eelgrass beds that provide habitat to many species of invertebrates, fish, and birds. Western sandpipers stop over on Roberts Bank on their annual migration north and feed on the nutrient-rich biofilm on the mudflats. The intertidal eelgrass beds provide a nursery habitat for fish, including all five species of juvenile salmon on their seaward migration and invertebrates such as juvenile Dungeness crabs. Adult crabs, which support commercial, recreational and Aboriginal fisheries, inhabit shallow intertidal to deep subtidal waters. Several species of marine mammals, including southern resident killer whales (SRKWs), occasionally occur at Roberts Bank.

Protected areas near or in the Project area include:

- SRKW critical habitat established through the *Species at Risk Act* (SARA) occurs in the Project area and throughout the southern Strait of Georgia.
- Wildlife Management Areas (WMAs) established through the *BC Wildlife Act*:
    - Sturgeon Bank WMA, approximately 13 km north of the Project;
    - Roberts Bank WMA, directly to the north of and adjacent to the Project;
    - Boundary Bay WMA, located approximately 9 km east of the Project; and
    - South Arm Marshes WMA, located approximately 9 km north of the Project.
- Alaksen National Wildlife Area was established through the *Canada Wildlife Act*, located approximately 9 km north of the Project area.

5.0 POTENTIAL PROJECT EFFECTS

The following subsections provide descriptions of potential environmental and community effects that may result, including potential effects to land, water, air, and adjacent community, as a result of Project construction or operation, and proposed mitigation.

5.1 GEOTECHNICAL

Westshore retained Braun Geotechnical Ltd. (Braun) and Naesgaard Amini Geotechnical Ltd. (NAGL) to provide geotechnical engineering services in support of the Project. A preliminary geotechnical assessment was prepared to provide geotechnical recommendations for the Project to support structural design for the proposed railcar dumper, storage building, transfer towers, and conveyor support towers (see Appendix A2 Geotechnical Report). The assessment includes a review of historical geotechnical information, geotechnical exploration and laboratory testing, evaluation of soil and groundwater conditions, and a seismic and liquefaction assessment to characterize the potential effects of seismic and geologic site hazards on ground movement and structural damage. The assessment also provides measures and actions to be incorporated to reduce the risk, and potential consequences of these hazards should a seismic event occur.

Based on the assessment results, the Project will include ground improvement works and shallow foundation support for the storage building, transfer towers, and conveyors to meet design and seismic requirements. The storage building and some of the conveyor and tower foundations will use preload material and/or stone column densification to meet settlement and seismic requirements.

To date, the design for the in-water Project components is based on the recommendations provided in the Geotechnical Engineering Assessment Report, Berth 2 Foundation Retrofits Report and Thurber Engineering Ltd.'s report for the Berth 2 Mooring Upgrades project (see Appendix A2 Geotechnical Reports). The Berth 2 Mooring Upgrades assessment considered dolphin arrangement, pile size, and depth requirements for installation to mitigate the risk of damage or failure should a seismic event occur. The Geotechnical Engineering Assessment Report and the Berth 2 reports contain specific analysis of the ground conditions for the design of marine structures as part of the Project.

Construction contractor requirements for site preparation, encountering potentially contaminated soil or groundwater, and ground improvement works are provided in the CEMP (Appendix A1), including the implementation of appropriate Best Management Practices (BMP) and environmental mitigation measures.

5.2 TRAFFIC

Westshore has prepared a construction traffic assessment (see Appendix A3 Construction Traffic Impact Memorandum) detailing potential and anticipated short-term vehicle traffic impacts during Project construction.

The entrance to the terminal is on Roberts Bank Road, located near the southwest end of Deltaport Way. Deltaport Way is fed by Highway 99 (via Massey Tunnel), the South Fraser Perimeter Road (Highway 17) and the Tsawwassen Highway (Highway 17A). The existing daily (Monday through Friday) average vehicle traffic on Highways 17 and 17A range from 13,600 to 19,000 in each direction, respectively. Weekday traffic

averages over 1000 vehicles per hour in each direction on each highway. The Massey Tunnel traffic is approximately 48,000 vehicles daily on weekdays and 39,000 daily on weekends, each southbound and northbound. The Project does not require any modifications to existing roads, off-site railways, or the terminal's access gate.

Construction activities will result in short-term increases in vehicle traffic as a result of construction personnel on-site and material delivery throughout the construction period (see Appendix A3, Section 5.0 Consideration of Potential Effects). It is anticipated that the construction traffic can be managed with existing traffic controls.

Anticipated construction-related traffic (trucking) is primarily associated with the storage building earthworks. A peak of 10 to 15 trucks per hour (averaging one truck every 4 to 6 minutes) is anticipated during this time associated with storage building earthworks, with additional trucks associated with other construction activities for an anticipated peak of approximately 400 trucks per day based on two 10-hour shifts. Consideration may be given to three 8-hour shifts (24-hour working days) per day of trucking for some activities which would increase the daily number of trucks during earthworks but result in a slight decrease in duration of the peak trucking period. A portion of the trucking would occur outside normal high traffic times for both the base case (two 10-hour shifts) and for a 24-hour workday.

Peak trucking on surrounding access roads may occur during three periods of up to six months in total, depending on the number of shifts, throughout the storage building civil works. For example, the preload material required for the storage building site preparation will be brought to the site (estimated at up to four and a half months with two 10-hour shifts, and up to three and a half months with 24-hour operations) and placed within the area. No preload trucking activity will occur for approximately six months while the ground is settling. The material will then be moved within the Project site over an estimated timeframe of one to two months with supplemental material being brought on-site as required, and then the material is transported off-site over a three-month period. After the building civil works are complete, it is anticipated that the average daily trucking will vary from 5 to 150 trucks per day with occasional increases for specific construction activities (e.g., major concrete pours).

The construction trucking would temporarily increase the daily traffic on the surrounding highways (Highway 17) by approximately 3% during preload hauling periods (anticipated up to 400 trucks per day) and peak at approximately 1% (at an anticipated maximum of 150 trucks per day) after preload activities. A peak truck traffic estimate for the Massey Tunnel, which may be considered a congestion point by commuters and other users, would increase by approximately 0.8% during preload hauling and peak at 0.3% after preload activities, assuming all trucks originate on the north side of Massey Tunnel. As this will not be the case due to some trucks using alternate routes, such as the South Fraser Perimeter Road, the actual numbers are anticipated to be lower.

Westshore is investigating the feasibility of alternatives for bringing the initial preload material to site, such as by vessel. However, this option may not be feasible due to scheduling and site constraints. Preload removal would still be by truck in the alternative.

The peak construction personnel of approximately 280 will be on-site from mid-2024 through early 2025. The Project expects 140 parking spaces to be available within Westshore's lease area. Additional existing

parking areas off-site, within industrial lands, are being investigated to accommodate the remaining construction personnel.

Staffing and labour levels for Westshore, are not anticipated to change operationally with the addition of the Project. Transportation impacts during construction are anticipated to be limited and without notable increase from existing conditions on the surrounding highways. Operationally, road traffic conditions are anticipated to remain unchanged.

5.3 AIR QUALITY

An emissions assessment was undertaken in 2013 by SNC-Lavalin Environment & Water for Westshore's Terminal Infrastructure Reinvestment Project. Westshore has since established monitoring from two mobile air quality monitoring units (MAMU's), one typically located in Point Roberts and a second in the community of Delta, BC. In addition, as part of Westshore's existing air discharge permit from Metro Vancouver (MV), the terminal has been collecting and reporting on-site and off-site ambient particulate matter data to evaluate air quality. Westshore retained EnviroChem to prepare an air emissions inventory for the Project to support the PER process (see Appendix A4 Air Emissions Inventory Report).

The Project will also require an amendment to the existing MV air discharge permit amendment due to the changes associated with the Project (i.e., the addition of potash and associated dust collection equipment). Westshore will engage MV to determine air dispersion modelling requirements to support the air permit amendment. Engagement and coordination with MV and VFPA will occur during the permit amendment process to keep VFPA informed.

The air emissions assessment prepared for the Project considers the potential for changes in air quality from Project operations, which may have a potential effect on the surrounding environment and communities. It is worth re-iterating that the terminal's total capacity is not changing with the incorporation of the Project and that, overall, air emissions are predicted to be reduced with the Project at design potash capacity due to the potash being covered during rail transport and enclosed in conveyor galleries and buildings until shiploading operations, unlike the current open coal stockpiles and conveyors systems. Therefore, potential effects to air quality related to the Project are anticipated to be similar or reduced emissions to current conditions, as the ultimate capacity of 4.5 Mtpa of potash export is reached, with variations depending on the coal to potash ratio.

The estimated emission inventories presented in Westshore's air emissions inventory (Appendix A4) include emissions from the following source groups on-site:

- Marine vessels;
- Rail;
- Off-road equipment;
- On-road vehicles;
- Administration (electricity usage and propane consumption); and
- Material handling equipment.

Emissions associated with the immediate supply chain vicinity/regional study area are also estimated.

The emission estimates include the following air contaminants:

- Criteria Air Contaminants;
- Greenhouse Gases; and
- Diesel Particulate Matter.

The inventory presents baseline (pre-Project-2019) emissions and future (with Project-2026) emissions based on the terminal's export capacity per commodity. The baseline considers full capacity export of 36 Mtpa of coal, using 2019 existing condition data scaled to this capacity. The two future emission scenarios include: 1) 36 Mtpa of coal with the coal storage area reduced by area of the potash storage building and 2) 31.5 Mtpa of coal and 4.5 Mtpa of potash. These two scenarios allow for the initial ramp up and future fluctuations in potash supply.The resulting emission estimates for baseline and future cases incorporated activity levels for marine vessels, rail locomotives, material handling, and processing at Westshore, and consider adjustments in operations (i.e., material flow, commodity handling capacities) associated with the Project.

Estimations show a slight overall decrease from baseline for both on-site and supply chain boundaries for the future case with the addition of the Project in both the future 36 Mtpa of coal scenario (due to reduction in coal stockyard) and the 31.5 Mtpa coal and 4.5 Mtpa potash scenario. It is important to note that there will be a transition period at the start of operations of the Project to reach the ultimate capacity of 4.5 Mtpa of potash.

Mitigation measures for potential air quality related impacts during the Project's construction are described in the Project CEMP (Appendix A1).

5.4 NOISE

In 2017 Westshore engaged Stantec Consulting Ltd. (Stantec) to complete a noise baseline assessment as part of the VFPA PER permit condition for the Terminal Infrastructure Reinvestment Project (#2013-144). In 2020 Stantec completed a post-construction noise assessment to fulfill the conditions of the permit (Stantec 2020). The baseline assessment found that the noise levels for the equipment at the fenceline are generally below 60dBA. The post-construction assessment determined no significant noise impacts from the Terminal Infrastructure Reinvestment Project.

Westshore completed a Noise Assessment Screening Worksheet for the Project in accordance with the VFPA Environmental Noise Assessment Guidelines. Based on outcomes and VFPA guidance, it was determined that no formal noise assessment was required to support the PER process. However, Westshore still endeavoured to undertake a qualitative assessment of potential noise impacts recognizing there may be concern around the potential for increased noise effects from the Project and impacts to the local community. Stantec was retained to complete this assessment (see Appendix 5 Qualitative Noise Assessment), which incorporates knowledge gained from the Terminal Infrastructure Reinvestment Project studies. The assessment qualitatively assessed the potential noise impact from the Project (i.e., the addition of potash handling and shipping at the Westshore terminals) and compared it against a baseline case (i.e., existing handling and shipping of coal). Based on the operational scenarios and additional equipment information available, the assessment concludes that noise from the Project activities associated with the Project changes, as described in Section 3.0, are not expected to result in significant noise impacts at the closest community, which is more than 4 km from the Project.

Given the Project involves installing equipment similar to that currently operational at the site, except that the conveyors for potash will be covered, noise levels from the facility are not anticipated to change. The installation of the storage building on the north side of the site is anticipated to act as further noise shielding from the operations.

There is a potential for underwater noise and vibration impacts during in-water pile driving works in the marine environment for the two additional elevated spout storage platforms and retrofits to the existing marine foundations at Berth 2. The storage platform will include the installation of two steel beams underneath the existing wharf head concrete decking. Noise levels are expected to be below thresholds for the protection of fish and marine mammals. Mitigation measures for underwater noise and vibration impacts are described in the Project CEMP (Appendix A1) and the Habitat Assessment (Appendix A7).

Potential project-related impacts to noise are expected to be limited to the Project's construction phase. Mitigation measures for noise impacts are described in the Project CEMP (Appendix A1).

5.5 LIGHTING AND ENERGY EFFICIENCY

Westshore retained enCompass to perform an Energy Efficiency Study for the Project (Appendix A6 Energy Efficiency Study), which followed the approach of the VFPA Project Energy Study Guidelines (VFPA 2016) and previous studies of similar projects. The purpose of the study is to identify energy savings as a result of conservation measures incorporated into Project design and operation. The study discusses the energy savings from implementing the energy conservation measures (ECMs) into the Project design and operation.

Energy calculations were performed for baseline conditions and compared to the optimized design to determine the energy efficiency of the overall system. The study found that using energy-efficient equipment to operate motors and using the optimal operational mode to transfer the product into the vessel will provide the most cost and energy savings. The study's calculations show that the most significant energy savings can be found by using Variable Frequency Drives (VFDs) to run conveying equipment (i.e. a possible energy savings of 1,068.1 MWh/year). VFDs have been incorporated into the Project conveyors, railcar indexer, vibrating feeders and are being considered for the dust collection equipment. Other energy-saving measures may include the installation of low electricity LED lights, which is in line with Westshore's current initiative of replacing existing outdoor and indoor lighting with LED lights under the BC Hydro Power Smart Program[2]. Savings were estimated to be 16.4% a year for the Project.

The majority of new lighting will be interior to the enclosed conveyor galleries, transfer towers and buildings. As noted in Section 3.2.3.4, Project lighting will be similar to existing, and any new external lighting will be limited to buildings entrances and exits and was planned using IESNA standards and will follow VFPA's Lighting Guideline. Given the existing operations and planned use of energy-efficient lighting in the limited areas where new outdoor lighting is required, potential impacts to the surrounding communities related to operation lighting are expected to be minimal.

The facility currently operates 24-hours a day. Given the terminal's existing operational lighting, potential impacts related to construction lighting are expected to be minimal. Mitigation measures for lighting impacts are described in the Project CEMP (Appendix A1).

[2] https://www.powersmart.ca/

5.6 VIEW

Westshore retained LOCI Landscape Architecture and Urban Design (LOCI) to conduct the Project's visual assessment. Given the location of the Westshore terminal and distance to the surrounding communities, the viewpoint locations were identified from the surrounding areas that are potentially impacted by the modifications to the Project site and which meet selection criteria as required in VFPA's PER Guidelines (VFPA 2015). Considerations for site selection for the graphics were as follows:

- Visual impacts from publicly accessible areas (streetscape, parks, public trails);
- Proximity and visual impacts from residential areas (single-family); and
- Visual impacts along public thoroughfares (South Fraser Perimeter Road [SFPR] near BCFerries Terminal, from a transiting BC Ferries vessel).

The final viewpoint locations used in the visual assessment and rendering process were determined to be as follows:

- Viewpoint 1: Dike Trail, near Brunswick Point;
- Viewpoint 2: Tsawwassen Drive North;
- Viewpoint 3: Fred Gingell Park; and
- Viewpoint 4: Aerial/ Drone, Ferry Route.

An orthographic map indicating locations of visual assessment viewpoints used is provided in Figure 7. Images presented in Figures 8a, 9a, 10a, and 11a are existing view photographs taken approximately at the locations indicated on the orthographic map during a site visit by LOCI on January 21, 2021. Images presented in Figure 8b, 9b, 10b, and 11b include computer rendering showing the visual change as a result of the Project. Viewpoints 1 and 3 have pedestrian traffic, while Viewpoint 2 has light vehicle traffic and all three viewpoints are approximately 5 km from the Project. Viewpoint 4 was considered to represent a perspective from the ferry routes used by BCFerries, although closer and higher angle. It is also worth noting that Viewpoint 4 is only relevant during the ferry transition by Westshore on route to its final destination.

As shown through the comparison of Figure 8a and 8b, the new storage building presents a small change to visual quality from Viewpoint 1. The new storage building is undetectable from Viewpoint 3 (Figure 10a and 10b) and, although viewable from Viewpoint 2 (Figure 9a and 9b) and Viewpoint 4 (Figure 11a and 11b), presents no change to the boundary of visual extent of the existing terminal. The remainder of the infrastructure upgrades are similar to the existing operational equipment and therefore are not anticipated to have any impact on views.

The Project will not result in a change to overall terminal capacity, and the current site operations are 24 hours a day, 364 days a year. Considering this, the night visible light sources are not expected to change during Project operations. The location of the Project is such that view and shade impacts to residential properties and public areas are not anticipated, and overall visual character will remain unchanged.

As described in Section 5.5, given the terminal's existing operational lighting, potential impacts related to construction lighting are expected to be minimal. Mitigation measures for construction impacts are described in the Project CEMP (Appendix A1), including efforts to minimize construction lighting to that which is required to maintain workplace safety.

Figure 7 Orthographic map of all visual assessment viewpoints.

Figure 8 Viewpoint 1, Dike Trail.

Figure 8a: Existing viewpoint 1.

Figure 8b: Rendered viewpoint 1.

Figure 9 Viewpoint 2, Tsawwassen Drive North.

Figure 9a: Existing viewpoint 2.

Figure 9b: Rendered viewpoint 2.

Figure 10 Viewpoint 3, Fred Gringell Park.

Figure 10a: Existing viewpoint 3.

Figure 10b: Rendered viewpoint 3.

Figure 11 Viewpoint 4, Aerial/Drone, Ferry Route.

Figure 11a: Existing viewpoint 4.

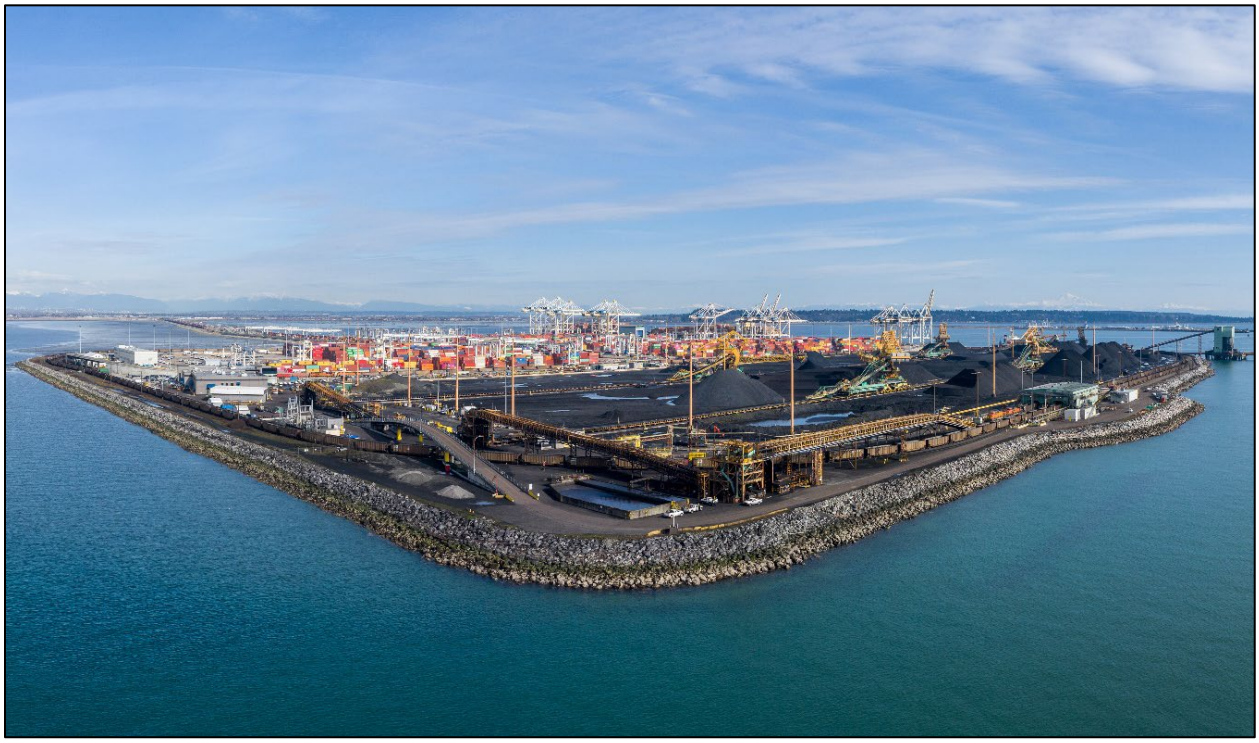
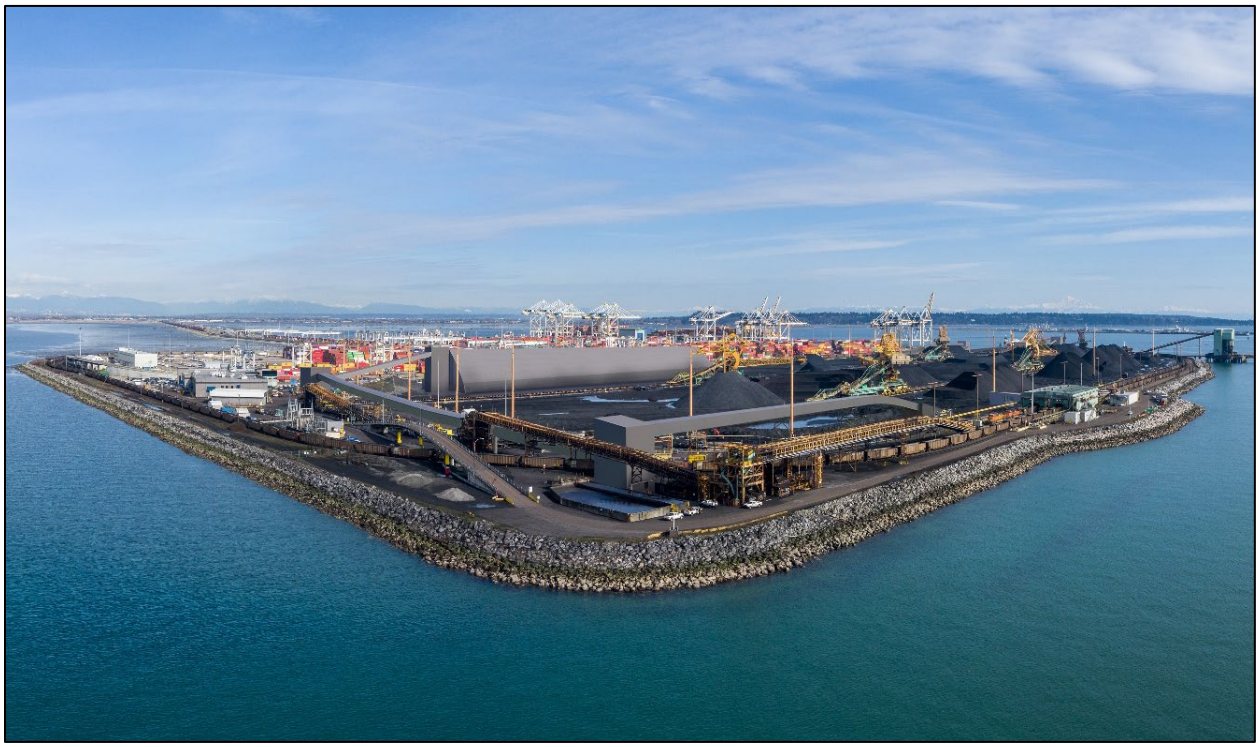


Figure 11b: Rendered viewpoint 4.



5.7 HABITAT

Given Westshore's current operations, most project activities will be conducted on previously disturbed land. There is no upland natural habitat or terrestrial vegetation in the Project area, as shown on Figure 2. The habitat assessment for the Project was limited to the in-water works, including permanent Project footprint impacts of the piles to retrofit the existing Berth 2 marine foundations and piles to support the two spout changeout towers as well as the potential temporary and short-term effects from construction activities over water.

Hatfield was retained by Westshore to complete a habitat assessment for the Project for the in-water activities (see Appendix A7 Habitat Assessment). This assessment was developed in accordance with VFPA PER Guidelines for Habitat Assessment (VFPA 2015).

The natural habitat near Berth 2 is highly disturbed and modified from industrial use. The quality of the habitat near the proposed Project spout changeout towers and existing Berth 2 for fish, other marine fauna, algae, and eelgrass is considered very low. Marine fauna that could occur in the Project area includes Dungeness crabs, which are highly mobile. Project-related impacts, including the death of fish or destruction of habitat, can be avoided through construction mitigation measures and BMPs, as outlined in the Habitat Assessment (Appendix A7) and the Project CEMP (Appendix A1).

Based on the size of the in-water Project footprint, existing site conditions, and the application of mitigation and construction BMPs outlined in the Habitat Assessment and the CEMP, it is Hatfield's opinion that adverse residual impacts to fish or the habitats that support their life functions will not occur. Specifically, the Project will not result in the death of fish or Harmful Alteration, Disruption and Destruction (HADD) of fish habitat.

In September 2020, DFO provided a letter in response to Westshore's Berth and Mooring Dolphin Replacement Project at Berth 2 (DFO 2020). Proposed measures as described in the DFO letter, that were determined to be sufficient to avoid and mitigate the potential for prohibited effects to fish and fish habitat, have been considered in the Project habitat assessment and integrated into mitigation measures outlined in the Project CEMP. Westshore intends to submit a Request for Review to DFO for the Project to confirm appropriate mitigation measures have been identified.

5.8 STORMWATER MANAGEMENT

The Project will require modifications to the existing water management system at the site. Both the existing and planned site water collection infrastructure will be a fully enclosed system with ocean discharge. Section 3.2.3 provides a description of the planned stormwater infrastructure upgrades required for the Project and details on the existing water effluent discharge permit that Westshore holds.

Given the existing site elevations, drainage patterns, and stormwater management system, there is very limited potential for site run-off to directly enter the ocean and result in impacts to fish and fish habitat due to increased sedimentation or the potential introduction of contaminants. All site water during construction and operations will be collected, stored, treated, and tested to confirm it meets current or future permit requirements regarding discharge rate, total suspended solids, oil and grease, and toxicity before discharge via Westshore's water treatment system.

A Stormwater Pollution Prevention Plan (SPPP) has been prepared for the Project (Appendix A8) in alignment with the VFPA Stormwater Pollution Prevention Guidelines (VFPA 2015). The SPPP includes assessments of site stormwater, regulatory requirements, and preliminary mitigation and monitoring plans during Project operation. The SPPP details the management of stormwater pollution risks from the additional Project activities and systems and will be used in conjunction with Westshore's existing Spill Response Plan (Appendix A8)

The changes to the existing water management system will require an amendment to Westshore's existing permit from ENV, as noted in Section 3.2.3. As such, an application and separate technical report will be prepared to assess the required changes to the system from the addition of potash handling and an assessment of any potential interactions and effects of materials within stormwater. The ENV permit amendment technical report will include an assessment of management strategies and preventative measures for containment, spill prevention, and treatment. The effects from potash entering the stormwater are likely to be reduced since stormwater is not anticipated to contact potash as the new conveyors, storage building, and transfer towers are enclosed or covered. However, there is expected to be potash within the washdown water from Berth 2, as described in Section 3.2.3. The potash washdown water will be conveyed through the new stormwater conveyance infrastructure to the new treatment facility prior to discharge through the existing outfall.

Westshore has an existing operational Emergency Contingency Program (Appendix A9) and a Spill Response Plan which has been included as part of the SPPP (Appendix A8). These documents include information and procedures to identify potential site hazards and risks and corresponding mitigation and prevention strategies. In the event of an emergency or spill, it provides information on emergency organization and management, internal and external communication, response procedures, and post-incident evaluation requirements.

Mitigation for stormwater handling, spill prevention, and emergency response during construction is addressed in the Project CEMP (Appendix A1).

5.9 FLOOD ASSESSMENT

Westshore engaged R.F. Binnie & Associates Ltd. to undertake a flood risk assessment for the Project. The details of Binnie's assessment are provided in the High-Level Flood Evaluation Memo (Appendix A10. They assessed the storage building's proposed location and foundation elevation relative to the surrounding topography to evaluate the potential risk of the building flooding during a flood event. The other areas of the site were not included in the assessment as those areas generally have similar site topography and will not contribute to flooding around the storage building.

The flood scenarios evaluated for the study included flooding caused by tidal water and stormwater. For tidal water, various tide levels, projected sea level increases, and storm surges were reviewed. A worst-case situation was reviewed for stormwater wherein extended loss of power at the site occurs during a storm event.

Water ingress to the storage building from underground utility failures, such as a water main break or mechanical piping failures above ground, were not considered since this infrastructure is located outside the building footprint and at a lower elevation than the building foundation.

The results of the sea level analysis at Roberts Bank determined a maximum sea level elevation of approximately 6 m above Chart Datum, which considers an extreme high-water level combined with a forecasted sea-level rise by the year 2100. The storm flood assessment concluded that should a storm flood event occur with an infinite storm duration simultaneously with a power outage; the floodwaters would reach an approximate elevation of 7 m prior to overflowing into the adjacent Deltaport terminal to the north and over the foreshore to the east in the Salish Sea. The top of the building elevation foundation is set at approximately 7.5 m and is considered the minimum elevation, taking into consideration predicted long-term settlements.

6.0 INDIGENOUS ENGAGEMENT

Throughout the course of existing operations and previous terminal improvement projects, Westshore has had ongoing engagement with Indigenous nations with interest in the Project area, primarily with Tsawwassen First Nation, given their close proximity to the Project site. Westshore is aware from previous discussions and ongoing operations of the importance of the area for fisheries, particularly the crab fishery surrounding the site.

The following Indigenous Nations have been identified by VFPA that may have an interest in the Project. In addition to engaging with Tsawwassen First Nation, Westshore will support consultation undertaken through the regulatory agencies' permitting review for the Project.

- Westshore engagement:
  - Tsawwassen First Nation
- VFPA/ENV/MV led consultation with Westshore support:
  - Cowichan Tribes
  - Halalt First Nation
  - Lyackson First Nation
  - Malahat First Nation
  - Musqueam Indian Band
  - Pauquachin First Nation
  - Penelakut Tribe
  - Semiahmoo First Nation
  - Stz'uminus First Nation
  - Tsartlip First Nation
  - Tsawout First Nation
  - Tsawwassen First Nation
  - Tseycum First Nation
  - Tsleil-Waututh First Nation
  - Ts'uubaa-asatx Nation (Lake Cowichan)

Further opportunities for engagement with Indigenous groups during the PER application review are being coordinated and determined with VFPA. Engagement may include virtual meetings or phone calls, and emails as a means to seek input and provide any updated information regarding the Project.

Before submitting the VFPA PER application, Westshore met virtually with Tsawwassen First Nation representatives on July 14, 2021, to introduce the Project and solicit any initial feedback. A presentation was provided which outlined the Project, permitting processes, studies undertaken, and the permitting and

Project schedule. An electronic copy of the presentation was provided after the meeting by email on July 14, 2021. Also, as requested in the meeting, electronic copies of the PER Application Report (Version 3.0) and associated study reports were provided to Tsawwassen First Nation on July 21, 2021. No comments have been received from Tsawwassen First Nation to date.

In addition, on August 31, 2021, Westshore emailed a notification and provided a Project summary document to all the Indigenous Nations identified by VFPA above before submitting the Project PER application. The Project summary introduced Westshore, the Project rationale and components, included a proposed Project rendering, an overview of the studies and permit requirements, schedule, opportunities for feedback and contact information.

7.0 COMMUNITY AND STAKEHOLDER ENGAGEMENT

Westshore has been in operation at its current location for 50 years and as such has long-standing and ongoing relationships with the community within which it operates. Through past project engagement and consultation efforts, Westshore has held meetings, site visits, and open houses for the City of Delta mayor and staff and other government officials, and the public. Westshore is also a member and participates on the Port Community Liaison Committee in Delta.

As an ongoing operation, Westshore provides contact information on their website[3] to monitor ongoing feedback, concerns, and requests of the community. Westshore makes the best efforts to address questions and concerns from the community as they arise.

Prior to the submission of the PER application for the Project, Westshore met virtually with City of Delta representatives on August 18, 2021, to introduce the Project and solicit any initial feedback. A presentation was provided which outlined the Project, permitting processes, studies undertaken, and the permitting and Project schedule. Westshore will continue to solicit feedback and provide any information on the proposed Project for the City of Delta as the PER application undergoes review with VFPA. Initial questions from the City of Delta were regarding air quality (particularly dust), traffic impacts, fire response considerations, train requirements and operational staff levels.

Westshore is planning to provide a presentation on the Project in a meeting with the Port Community Liaison Committee following PER submission.

Given the current circumstances of COVID-19 and the unknown duration of physical distancing requirements that may impact the ability of Westshore to conduct in-person meetings, Westshore intends to engage on the Project in the following ways:

- A 25-day public engagement period (as identified on the Project Checklist) on the Project;
- A public notification post card distributed to the surrounding community with Project information and an email to provide feedback or comments;
- A newspaper advertisement;
- A Project dedicated website with information on the Project and an email address to provide comments or feedback on the Project; and
- An online feedback form for the Project that can be downloaded.

The detailed engagement plan and draft engagement materials have been provided to the VFPA separately.

[3] https://www.westshore.com/#/contactus

8.0 REFERENCES

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APPENDICES

Appendix A1

Construction Environmental Management Plan

Provided as separate pdf.

Appendix A2

Geotechnical Reports

Provided as separate pdf.

Appendix A3

Construction Traffic Impact Memorandum

Provided as separate pdf.

Appendix A4

Air Emissions Inventory Report

Provided as separate pdf.

Appendix A5

Qualitative Noise Assessment

Provided as separate pdf.

Appendix A6

Energy Efficiency Study

Provided as separate pdf.

Appendix A7

Habitat Assessment

Provided as separate pdf.

Appendix A8

Stormwater Pollution Prevention Plan (includes Spill Response Plan)

Provided as separate pdf.

Appendix A9

Emergency Contingency Program Including Fire Safety Plan, Site Map and Fire Hydrants

Provided as separate pdf.

Appendix A10

High-Level Flood Evaluation Memo

Provided as separate pdf.

Appendix A11

Drawing Package #1

Provided as separate pdf.

Appendix A12

Drawing Package #2

Provided as separate pdf.