



PORT of  
**vancouver**

Vancouver Fraser  
Port Authority


# **PROJECT AND ENVIRONMENTAL REVIEW REPORT**

**PER NO. 20-209  
NEW POTASH EXPORT – WESTSHORE**

Prepared for: Director, Project and Environmental Review

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 <p><b>VANCOUVER FRASER PORT AUTHORITY</b> <b>PROJECT AND ENVIRONMENTAL REVIEW</b> <b>REPORT</b></p>	
<b>PER No.:</b>	<b>20-209</b>
<b>Tenant:</b>	<b>Westshore Terminals Limited Partnership</b>
<b>Project:</b>	<b>New Potash Export – Westshore</b>
<b>Project Location</b>	<b>1 Roberts Bank, Delta</b>
<b>Vancouver Fraser Port Authority SID No.:</b>	<b>DEL034</b>
<b>Land Use Designation:</b>	<b>Port Terminal</b>
<b>Applicant(s):</b>	<b>Westshore Terminals Limited Partnership</b>
<b>Applicant Address:</b>	<b>Westshore Terminals, 1 Roberts Bank, Delta</b>
<b>Category of Review:</b>	<b>C</b>
<b>Recommendation:</b>	<b>That PER No. 20-209 for New Potash Export – Westshore be approved.</b>

## 1 INTRODUCTION

The Vancouver Fraser Port Authority (the "Port Authority"), a federal port authority, manages lands under the purview of the *Canada Marine Act*, which imparts responsibilities for environmental protection. The Port Authority accordingly conducts project and environmental reviews of works and activities undertaken on these lands to ensure that the works and activities will not likely cause significant adverse environmental effects. This project and environmental review report documents the Port Authority's project and environmental review of PER No. 20-209: New Potash Export – Westshore (the "Project") proposed by Westshore Terminals Limited Partnership (the "Applicant").

This project and environmental review was carried out to address the Port Authority's responsibilities under the *Canada Marine Act*, and to meet the requirements of the *Impact Assessment Act*, as applicable. The proposed Project is not a "designated project" under the *Impact Assessment Act* and an impact assessment as described in the *Impact Assessment Act* is not required. However, Port Authority authorization is required for the proposed Project to proceed and in such circumstances, where applicable, Section 82 of the *Impact Assessment Act* requires federal authorities to assure themselves that projects will not likely cause significant adverse environmental effects. The project and environmental review process is designed to provide that assurance. In addition, the Port Authority considers other interests, impacts and mitigations through the project and environmental review.

The project and environmental review considered the application along with supporting studies, assessments and consultations carried out or commissioned by the Applicant, as well as other information provided by the Applicant. In addition, this project and environmental review considered other information available to the Port Authority and other consultation carried out by the Port Authority. A full list of information sources germane to the review is provided in Appendix B.

This project and environmental review report is NOT a project authorization. This project and environmental review report summarizes the review outcome, and provides the basis for approval or denial. Should the Project be approved, the report is accompanied by a project permit (the "Permit") and the conclusions described in this report require compliance with the conditions in the Permit.

## 2 PROJECT DESCRIPTION

Westshore Terminals Limited Partnership proposes to undertake various upgrades to the existing Westshore Terminal facility to use a portion of the site for potash export, with a capacity of 4.5 million metric tonnes per annum (MMT/a).

The Project site is approximately 55 hectares in size and is located at 1 Roberts Bank, in Delta. Adjacent to the site to the north is the GCT Terminal. To the south, east and west, the site is bounded by open water, with the Tsawwassen Ferry Terminal located approximately two kilometers to the southeast. The Westshore Terminal facility currently handles coal as its sole commodity. This Project proposes to export potash, a new commodity at the site, through the terminal. This necessitates new infrastructure and upgrades to on-site equipment. The project includes construction of a new potash storage building, modification to existing on site rail, installation of new conveyors and shiploaders, and upgrades to the existing Berth 2. Further details of the proposal are included in Section 2.1 below.

Potash would be received at the site via rail from the Jansen Mine operated by BHP in Saskatchewan. Upon arrival at the site, the potash would be off-loaded from enclosed railcars to a new railcar dumper building and transferred via enclosed conveyors to the new potash storage building. From there, potash would be transferred via enclosed conveyor systems to the shiploaders and onto vessels at the existing Berth 2 for export. The proposed conveyor system running from the storage building to the shiploaders consists of two enclosed conveyors - one a dedicated potash conveyor, the other a dual-purpose coal and potash conveyor. The dual-purpose conveyor would be cleaned between the handling of products to prevent cross contamination.

Upon completion of the Project, it is proposed that Berth 2 will be used for the export of both coal and potash. The current terminal design capacity for coal handling is 36 million metric tonnes per year (MMT/a), which would remain unchanged. After construction of the proposed project, the addition of potash export capacity to the terminal would reduce the theoretical capacity available for coal export to 31.5 MMT/a. Historically the terminal has handled less coal than the theoretical maximum design capacity.

### 2.1 Proposed Works

In order to incorporate potash operations, works at the Westshore Terminal will be required, which will broadly include:

- Site preparation works comprising:
  - removal of existing asphalt in various locations
  - demolition of some existing coal handling infrastructure, including the existing coal handling conveyors and the coal surge bin
  - placement of preload for the potash storage building
  - removal or relocation of various site utilities
  - removal of preload material following a period of approximately two years
- Construction of a new A-framed potash storage building (approximately 400 meters long by 70 meters wide by 40 meters high), including tripper conveyor and portal reclaimer located on the northwest corner of the site
- Construction of a new enclosed potash railcar dumper on the south side of the site, adjacent to the existing dumpers
- Modifications to the existing inbound rail system, including the removal of portions of the existing rail line
- Installation of a new section of inbound and outbound rail lines (approximately 700 meters) to connect the new railcar dumper to the existing inner rail loop
- Construction of new enclosed gallery style conveyors and transfer towers to transport potash to Berth 2
- Installation of dust collectors at conveyor transfer points
- Modifications to or replacement of the existing Berth 2 shiploader feed conveyors
- Removal of two existing quadrant-style shiploaders at Berth 2
- Installation of two new dual-purpose shiploaders at Berth 2 to allow for both potash and coal handling

- Installation of spout changeout towers at Berth 2
- Installation of two temporary barge landings
- Electrical infrastructure and upgrades
- Civil infrastructure and upgrades
- Installation of miscellaneous utilities.

The placing of preload material is proposed in order to meet site seismic requirements and settlement criteria in the potash storage building 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 preloading operations completing. The remaining material will stay on-site and be reused as fill.

Works associated with the two temporary barge landings include excavating soil at the locations to a depth of approximately 2.5 meters (approximately 500 cubic meters), placing clean fill (approximately 170 cubic meters) and installing barge ramps. Rip-rap removed for the temporary barge landings is proposed to be replaced after the barge landings are removed. The temporary barge landings would be used to facilitate off-loading some of the Project's required equipment and materials during the construction phase.

## 2.2 Proposed Construction Methods

Work would primarily take place during the Port Authority's standard work hours of Monday to Saturday 7:00 a.m. to 8:00 p.m. (excluding holidays). However, works that require a terminal shutdown would take place outside of regular construction hours in order to minimize impact to existing operations. These works include installation of shiploaders and transfer towers, rail installation and modifications, and certain activities such as pile cap installation associated with Berth 2 works. Pile driving and other large noise-emitting activities would be completed during standard construction work hours. Piles are proposed to be installed using a vibratory hammer and an impact hammer would only be used if necessary to set piles.

Construction works are proposed to take place both on the upland and in water. The majority of works would be performed by machinery working upland on the existing terminal. In-water works would be limited to retrofitting the existing marine foundations and installing two elevated spout storage platforms and associated reinforcements. Conventional land and marine-based construction equipment would be used, including land-based cranes, excavators, dump trucks, and graders, and marine-based barge mounted cranes and pile driving equipment.

Equipment and materials may arrive or depart by barge or vessel at the two proposed temporary barge landing facilities located on the east and west sides of the site. All construction activities at the temporary barge landing sites would take place above the high-water mark.

Laydown areas would be located within the existing terminal, mainly along the northern coal stockpile, with some localized laydown areas located south of the southern stockpile, in the vicinity of the new and existing dumpers. Work on the Project, if approved, is proposed to commence in early Q2 of 2022, and take approximately four years to complete.

## 3 VANCOUVER FRASER PORT AUTHORITY INTERNAL REVIEWS

The following Port Authority teams have reviewed the application and have the following project considerations.

### 3.1 Planning review

#### 3.1.1 Land Use Planning

Land Use Planning has reviewed the application and has the following land use comments.

The Project proposes to export potash as a new bulk commodity at the terminal, which involves the construction of a new potash building, modification to existing on site rail, installation of new conveyors and shiploaders, and upgrades to Berth 2. The proposal meets Land Use Planning's requirements, based on the primary considerations of the land use designation.

### **3.1.2 Land Use Designation**

The proposed bulk export use conforms to the designation of “Port Terminal” in Vancouver Fraser Port Authority’s Land Use Plan.

### **3.1.3 Building Permit Requirements**

The proposed development of the potash storage building, railcar dumper building, conveyors, and berth structures require review under the 2015 National Building Code and 2015 National Fire Code of Canada. The Applicant is required to obtain a Port Authority building permit before proceeding with construction of these works and, where relevant, cannot occupy these structures until they have obtained a Port Authority occupancy permit.

## **3.2 Engineering**

The proposed Project scope includes various construction activities that support the installation of new facilities (potash storage building, railcar dumper, conveyors) and modifications to existing infrastructure. In addition, the foundations of various existing structures will be seismically retrofitted to improve their life-safety performance in an earthquake event.

Due to the low occupancy of the existing Berth 2, the Port Authority agreed that it was appropriate to use the limited performance objective, as described in ASCE 41 - Seismic Evaluation and Retrofit of Existing Buildings. The limited performance objective allows the Applicant to meet Life Safety criteria for the seismic event with a return period of 1:225-years.

Proposed seismic retrofit work for Berth 2 includes:

- Soil densification using stone columns at the top of slope
- Structural strengthening of piles and pilecaps
- Addition of piled structures to restrain the existing quadrant beam structure from excessive displacement.

The Applicant has submitted reports and memos in support of the application that demonstrate that the proposed retrofits will sufficiently strengthen the existing Berth 2 foundations to meet Life Safety Structural Performance requirements for a 1:225-year seismic event.

Engineering has reviewed the application and requires the Applicant to submit Issued for Construction drawings. The drawings of the structural elements receiving retrofit works must clearly indicate the actual seismic design return period achieved for Life Safety and Collapse Prevention Performance levels. In addition, the Applicant is required to submit analysis to confirm the actual seismic design return period achieved for the Collapse Prevention Performance Level (National Building Code 2015) for the Berth 2 works.

These are reflected in conditions No. 17, 18 and 19 in the Permit.

The proposal meets Engineering’s requirements, subject to adherence to the listed project and environmental conditions in the Permit.

## **3.3 Transportation Planning**

The Project proposes receiving trains from BHP’s proposed Jansen Mine 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, which at the design capacity of the terminal, translates to approximately 240 to 250 trains per year, or an average of 4.8 trains per week.

The Project proposes modifications to existing rail and installation of new sections of inbound and outbound rail lines to connect the railcar dumper to the existing inner rail loop.

The proposed terminal operations at the site can accommodate four trains in the rail yard and one train on each of the two dumper loops, for a total accommodation of six trains. There are four sidings in the BC Railway Corporation (BCR) yard on the causeway and an exit track to accommodate the existing dumpers at Westshore.

There is no switching or shunting of trains required because the existing terminal operates as a unit loop operation. As the inner loop can hold only one train at a time and potash operations are restricted to the inner loop, only one process can occur at any given time, either coal or potash dumping. As such, the Project would not result in any net increase in train traffic.

The combined design capacity of the terminal as a whole is not increasing; it will remain at 36 MMT/a. An annual throughput of 4.5 million metric tonnes of potash can be accomplished at the terminal by reducing the capacity available for coal export to 31.5 MMT/a.

As the operation relies on the BCR yard, a letter of support was requested from the BC Railway Corporation in support of the operations proposed by the Applicant in the Rail Operations Plan. A letter of support has been provided.

Based on the above, Transportation Planning has reviewed the Rail Operations Plan and is satisfied that the appropriate assessment has been completed.

The construction phase of the proposed Project will require a Traffic Management Plan, which is a condition (No. 22) of the Permit. This relates to road transportation, during construction.

The proposal meets Transportation Planning's requirements, subject to adherence to the listed project and environmental conditions in the Permit.

### **3.4 Marine Operations**

The proposed Project intends to introduce a new commodity to the terminal that will arrive by rail and depart at the existing Berth 2 via vessel. Once complete, the addition of the potash export to the terminal operations will result in an increased number of vessels. It is anticipated that, if the terminal is operating at the maximum design capacity of 36 MMT/a, 20 additional vessels per year will visit the site as a result of this potash proposal. The vessels to be used for potash export are anticipated to be smaller in size than those currently using Berth 2 to export coal.

During the construction phase of the Project, there will be works performed in water as well as marine-based construction equipment. In addition, the Applicant has proposed to install two temporary barge landings located on the east and west side of the site for the duration of the construction. The landings would be used for the purpose of equipment and materials arriving or departing by barge or vessel. Upon completion of the Project, the barge landings would be removed.

Marine Operations has reviewed the application and requires the Applicant to:

- Submit a marine construction and staging plan prior to commencing any vessel related activities
- Notify BC Coast Pilots and provide information such as staging and construction area, dates and hours of work prior to commencing any vessel related activities

These are reflected in conditions No. 25 and 26 in the Permit.

The proposal meets Marine Operations' requirements, subject to adherence to the listed project and environmental conditions in the Permit.



## 4 STAKEHOLDER CONSULTATION

The proposed Project was assessed to have potential impacts to stakeholders and consultation activities were determined to be required. The following sections describe the stakeholder engagement activities undertaken by the Port Authority as part of the project and environmental review.

### 4.1 Municipal Consultation

The proposed Project was assessed by the Port Authority to have potential impacts to municipal interests. A referral letter was sent to the City of Delta on December 10, 2021 notifying them of the proposed Project.

The Port Authority did not receive any municipal comments.

### 4.2 Adjacent Tenant Consultation

The proposed Project was assessed to have potential impacts to adjacent Port Authority tenant operations. A referral letter was sent to the following Port Authority tenants on December 10, 2021 notifying them of the proposed Project:

- Global Container Terminals Deltaport
- Seaspan ULC

The Port Authority did not receive any tenant comments.

### 4.3 Marine Users Consultation

The proposed Project was assessed to have potential impacts to marine users. A referral letter was sent to the BC Coast Pilots on December 10, 2021 notifying them of the proposed Project.

The Port Authority did not receive any comments from the BC Coast Pilots.

### 4.4 Port Community Liaison Committee – Delta Notification Activities

The proposed Project was assessed to be of potential interest to the Port Community Liaison Committee – Delta (PCLC). As a member of the PCLC, the Applicant provided a brief introduction to the Project during the September 21, 2021 meeting. On December 9, 2021, the Applicant provided a project presentation. Minutes from this meeting and the presentation were sent to PCLC on December 30, 2021. No additional comments were received after this.

Below is a table summarizing PCLC's comments and how they were considered as part of the project and environmental review.

Issue	Mitigations and Permit Conditions	Rationale
Impacts to traffic during construction	Condition No. 22 requires the Applicant to submit, and carry out the Project in accordance with, a construction parking and traffic management plan.	The Applicant anticipates a 3% increase in traffic for the pre-load phase of construction, and 1% for general construction.
Impacts to jobs	None required.	The Applicant confirmed current job levels would be maintained.
Pile driving hours	Condition No. 29 requires that all pile driving activities are conducted during standard Port Authority hours (Monday to Friday, 7:00 a.m. to 8:00 p.m.).	The Applicant confirmed pile driving would be conducted during daylight hours, and during standard Port Authority hours.



Issue	Mitigations and Permit Conditions	Rationale
Water discharge	Condition No. 45 requires that the Applicant provide a copy of the updated ENV Permit PE-6819 prior to operational discharge from the new or modified water treatment systems.	The Applicant confirmed that, with potash being a salt and a new commodity at the site, the amount of concentrated salt water would be assessed prior to discharge, and that testing is done by the Applicant's hired environmental consultant. The Applicant does not anticipate a nutrient increase in the discharge environment.
Live species testing	None required.	The Applicant confirmed its existing permit requires quarterly testing of effluent discharge, which is currently conducted on rainbow trout (as per Environment and Climate Change Canada's standard test method), and processed at an independent lab. The Applicant is requesting the ability to test on a saltwater-adjusted species like the marine three-spine stickleback.
Storage facility construction and sourcing	None required.	The Applicant confirmed the structure would need to be non-corroding, i.e., wood, and that suppliers for this type of structure are in Oregon and Alberta.
Contracting model	None required.	The Applicant indicated it is designing the system with an independent consultant, and will bring it to the local market to select a contractor for construction.
Overlap with other proposed projects in the area during construction	None required.	The Applicant does not anticipate a significant overlap with other possible projects in the area as many of the materials would arrive by barge.
Meaningful engagement with Musqueam Indian Band	None required.	The Applicant and the Port Authority have provided notification of the Project to 15 Indigenous groups. The Applicant expressed openness to correspond directly with Musqueam Indian Band and provide additional information. The Port Authority undertook consultation with Musqueam Indian Band during the review process, as described in Section 6 of this report.

## 5 PUBLIC ENGAGEMENT

To meet requirements of section 86 of the *Impact Assessment Act*, the Port Authority posted a description of the Project and notice of public participation to the Canadian Impact Assessment Registry to provide the public 30 calendar days to comment on the Project and provide community knowledge.

The comment period ran from November 15 to December 14, 2021. At the close of the 30 calendar day public comment period, no comments were received.

In addition to posting information about the Project on the Registry website, the Port Authority required the Applicant to conduct public engagement activities with a 25 business day public engagement period. The objective of public engagement as part of the review is to solicit feedback from the public on the proposed Project, the completed technical studies, and proposed mitigations during construction and operation.

The Applicant carried out their public engagement activities on the proposed Project from November 15 to December 17, 2021. The Port Authority reviewed the record of public engagement, including all comments received and the Applicant’s response to comments, in determining mitigation requirements and in making a decision on the proposed Project.

### 5.1 Summary of Public Engagement

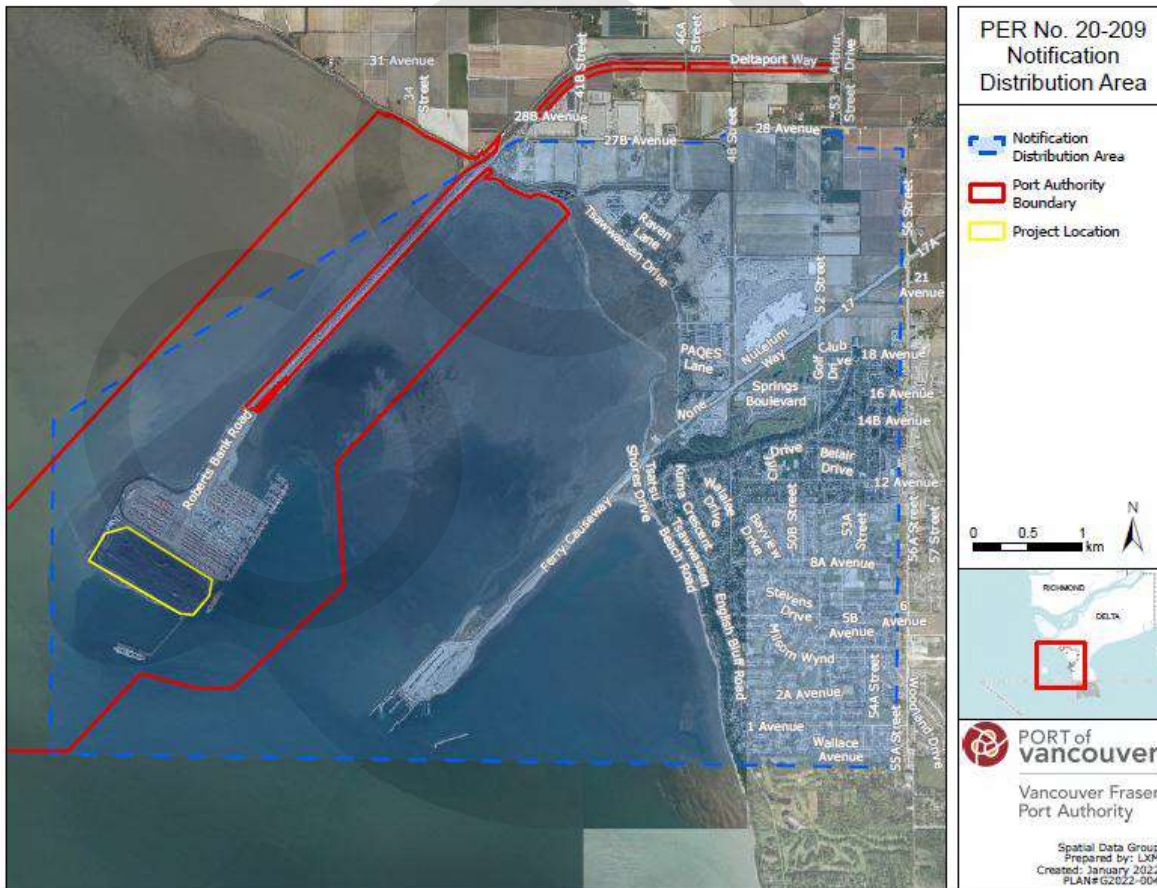
A description of the Project and proposed works, and all supporting materials were posted to the Port Authority’s website on November 1, 2021 for public review and comment. Details of the Applicant’s public engagement period and links to the Applicant’s website were posted on the Port Authority’s website for more information.

The Applicant notification and public engagement activities included the following:

- Publishing a project website (<https://www.westshore.com/#/new-cargo>) on November 2, 2021, which included a presentation with detailed project information, information on public engagement opportunities, and a feedback form to be sent by email or mail
- Distributing a public engagement notification postcard between November 5 and 10, 2021
- Placing a print advertisement in the Delta Optimist for publication on November 11, 2021
- Providing an email address for inquiries and submissions ([newcargo@westshore.com](mailto:newcargo@westshore.com))

The Applicant mailed notification letters to 7,280 residents and businesses in the area as shown in the map below with information about the proposed Project and upcoming public engagement period and opportunities. The notification area included all residents and businesses in postal code V4M, which is adjacent to the Project site.

Mail drop area for public notification



During the public engagement period, public participation was as follows:

- 1 person completed and emailed the feedback form
- 5 comments were received via emails
- 2 phone calls were received

Comments from the public were mainly seeking clarification on the Project purpose and activities, and were related to concerns over potential air quality impacts upon completion, possible traffic impacts during construction, possible impacts to coal operations, and requests to receive future Project updates.

The Applicant provided a detailed summary of the public engagement process, comments received and responses and considerations to the feedback in a public engagement summary and consideration report dated January 26, 2022. The Port Authority has reviewed the document and found it to be acceptable. The report was posted on the Port Authority and the Applicant’s websites on February 14, 2022 and March 24, 2022.

Below is a table summarizing issues raised by the public, and how they were considered by the Port Authority as part of the project and environmental review.

Issue	Mitigations and Permit Conditions	Rationale
Potential impacts to air quality, e.g., dust	Condition No. 46 requires the Applicant to provide a copy of the amended Metro Vancouver Air Quality Management Permit Number GVA0153, when available.	The Applicant noted that analysis completed to date indicates the emissions would be similar to existing emissions, and that emissions have decreased over time as a result of technology and procedural changes to reduce dust emissions at the terminal. The new potash infrastructure would be fully enclosed and provided with dust collection. The Applicant also confirmed they would amend their current Metro Vancouver Air Quality Management Permit (GVA0153).
Possible changes to terminal affecting coal operations, including possible reduction or elimination of coal export from the terminal	None required.	The Applicant clarified aspects that would remain unaffected, including offsite rail, terminal lease area or water lot, number of berths, hourly equipment capacity, and overall design capacity. The Applicant anticipates the loading time for potash vessels will be shorter than for coal vessels (on average), and that the number of trains will be slightly reduced. The Applicant confirmed the addition of potash export would reduce the capacity available for coal export.
Future project updates	Conditions No. 20 and No. 21 require the Applicant submit a construction communication plan detailing how the community will be kept informed during construction, and distribute construction notification with information on how to obtain Project updates.	The Applicant has committed to providing a construction communication plan, and updating the project website as relevant information becomes available during construction.

The Port Authority has reviewed the record of public engagement and, provided that the mitigation measures and conditions outlined in the table above are included in the Permit, is of the view that the Project has adequately addressed the concerns raised during public engagement.

The proposed Project was assessed by the Port Authority to have potential impacts to community interests in the surrounding area during construction and upon completion. These include potential impacts such as noise from short-term pile driving activities during the day, and an increase in construction traffic during peak work periods.

As a result, the Applicant is required to send a construction notification to adjacent residents and businesses consistent with the distribution area used for public engagement notification (postal code V4M). The notification area covers a maximum radius of 7.5 kilometers. The construction notification shall be distributed by the Applicant upon commencement of any construction or physical activities. The construction notification will be posted on the Applicant's website. This is condition No. 21 in the Permit.

## 6 INDIGENOUS CONSULTATION

The Port Authority reviewed the proposed works and determined that the Project may have the potential to adversely impact Aboriginal or Treaty rights.

Every best effort was made to consult the following Indigenous groups:

- Cowichan Tribes
- Halalt First Nation
- Lyackson 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
- Tseil-Waututh Nation
- Ts'uubaa-asatx First Nation, formerly Lake Cowichan First Nation

The following consultation activities were conducted:

- Referral packages provided for review including consultation letter and link to FTP site to download the application package and appendices
- Participation funding agreements provided to Indigenous groups
- Project meetings with Indigenous groups who requested meetings
- Discussion of the Project at monthly project and environmental review meetings the Port authority has with several Indigenous groups
- Response table provided to Indigenous groups who provided comments on the referral package
- Secondary response table provided to Indigenous groups who provided a second round of comments on the referral package

Below is a table summarizing comments received by the Port Authority from Indigenous groups and how they were considered as part of the project and environmental review.

Issue	Mitigations and Permit Conditions	Rationale
<p>Visual impact of new potash shed to the navigation of Indigenous fishers</p>	<p>None.</p>	<p>Indigenous group provided Indigenous knowledge regarding sense of place and possible navigation impacts for community fishers from the proposed potash shed. Indigenous group noted changes to visual sight lines and sense of place while being on the water. Indigenous group did not identify a mitigation for the issue; a request was made for the issue to be noted for the record.</p>
<p>Impacts of development on unidentified archaeological resources</p>	<p>The following Permit Condition is recommended to address this concern:</p> <p>The Applicant shall carry out the Project in accordance with the Port Authority's Archaeological Chance Find Procedure or a similar Archaeological Chance Find Procedure accepted in writing by the Port Authority, and any subsequent updates made to the Port Authority's satisfaction.</p>	<p>Review of existing archaeological assessments, historical development information, the Remote Access to Archaeological Data database and geotechnical drilling logs for the terminal all support an assessment of low archaeological potential for the Project area. No further archaeological assessment work was required for the Project however, an archaeological chance find procedure will be in place prior to any groundbreaking activities.</p>
<p>Impacts to fish and fish habitat from construction activities</p>	<p>The following Permit Conditions are recommended to address this concern:</p> <p>The Applicant shall carry out the Project in accordance with the Construction Environmental Management Plan provided by the Permit Holder, and any subsequent updates made to the Port Authority's satisfaction.</p> <p>The Applicant shall immediately cease work and notify the Port Authority if the Applicant has reasonable grounds to believe that the Project has harmed fish or fish habitat, including observation of distressed, injured, or dead fish. The Applicant shall not resume work until authorized by the Port Authority.</p> <p>The Applicant, or their contractor, shall engage a qualified environmental professional to monitor the Project in order to ensure that the works are carried out in compliance with this Permit. Monitoring events shall take place</p>	<p>Specific mitigation measures to protect fish and fish habitat are provided in the Construction Environmental Management Plan (CEMP). Additionally, a Fisheries and Oceans Canada (DFO) Letter of Advice is on file for the Project.</p>

Issue	Mitigations and Permit Conditions	Rationale
	<p>as required by the environmental monitor, the Construction Environmental Management Plan, or the Port Authority, provided that monitoring will be full time when works are underway that have the potential to adversely affect fish or fish habitat.</p>	
<p>Impacts to water quality by discharge water from the terminal</p>	<p>The following Permit Conditions are recommended to address this concern:</p> <p>The Applicant shall carry out the Project in accordance with the Construction Environmental Management Plan provided by the Applicant, and any subsequent updates made to the Port Authority's satisfaction.</p> <p>The Applicant shall provide a copy of the updated ENV Permit PE-6819 prior to operational discharge from the new or modified water treatment systems.</p>	<p>Specific mitigation measures regarding ground water and surface water during construction activities are provided in the Construction Environmental Management Plan. Operational discharge water from the terminal is managed under BC Ministry of Environment (ENV) Permit PE-6819 and must meet the requirements of that permit prior to discharge.</p>
<p>Air quality monitoring</p>	<p>The following Permit Conditions are recommended to address this concern:</p> <p>The Applicant shall carry out the Project in accordance with the Construction Environmental Management Plan provided by the Applicant, and any subsequent updates made to the Port Authority's satisfaction.</p> <p>The Applicant shall provide a copy of the amended Metro Vancouver Air Quality Management Permit Number GVA0153, when available.</p>	<p>Specific mitigation measures regarding air quality during construction are available in the Construction Environmental Management Plan. Operational air quality at the terminal is managed through Metro Vancouver Air Quality Management Permit Number GVA0153.</p>

The Port Authority has made a meaningful effort to consult with all potentially affected Indigenous groups. Based on the record of consultation, the Port Authority is of the view that the duty to consult has been met.

## 7 ENVIRONMENTAL EFFECTS REVIEW

To fulfill its responsibilities under the *Canada Marine Act* and the *Impact Assessment Act*, the Port Authority must make a determination on the potential environmental effects of projects proposed on Port Authority managed lands and waters prior to authorizing those works to proceed. To make that determination, the Port Authority considers the residual adverse effects of the project, that is, the effects after mitigation measures have been taken into account.



This section of the project and environmental review report summarizes the environmental effects review conducted for the Project, and provides the environmental effects decision. The environmental review also considered the information provided in the previous sections of this report.

## 7.1 Scope of Environmental Review

The environmental review includes consideration of the potential environmental effects of the proposed Project, taking into account mitigation measures to avoid or reduce those effects. This review considered the Project components and physical activities described in Section 2.

The temporal scope of the review includes Project construction and operation.

The environmental review considered potential adverse environmental and social effects of the Project on 14 environmental components (e.g., species with special status, aquatic species and their habitat, recreational interests, etc.) and from accidents and malfunctions. These environmental components are aspects of the biophysical and socio-economic environment considered to have ecological, economic, social, cultural, archaeological, or historical importance.

Section 7.2 summarizes the results of the environmental effects review and proposed mitigations.

## 7.2 Environmental Effects and Mitigation Summary

Project information pertinent to the environmental review includes the following:

- An air emissions inventory characterized existing air quality and evaluated the change in emissions resulting from the Project. Estimated emissions were determined to generally decrease across all contaminants for both on-site and supply chain boundaries for future scenarios when compared to the baseline. In the future scenario including 4.5 million metric tonnes per annum of potash, PM<sub>10</sub> and PM<sub>2.5</sub> emissions are estimated to increase due to differences in coal and potash handling equipment. However, as emissions across all other contaminants generally decrease or remain the same, the Project is anticipated to have similar or reduced emissions compared to current conditions.
- A qualitative noise assessment evaluated four future operating scenarios including varying combinations of shipping coal and/or potash. New activities and noise sources associated with shipping potash are not expected to substantially increase noise impacts. Buildings or claddings are predicted to provide attenuation so that potential noise impacts from conveyors and drivers are negligible at the closest residences approximately four kilometers from the terminal. Dust collector noise impacts are also predicted to attenuate well below the existing sound level at the closest residences. Noise impacts associated with train traffic are expected to decrease marginally due to reduced train frequency.
- A habitat assessment included a desktop review of environmental resources in the Project area and identified aquatic habitat that could potentially be affected, fish presence, and the potential for species at risk. The quality of the habitat for fish, other marine fauna, algae and eelgrass is considered very low. Marine fauna that could occur in the Project footprint includes Dungeness crabs, which are highly mobile. The Project is located within critical habitat for southern resident killer whale. Adverse residual impacts to fish or the habitats that support their life functions are considered unlikely with the implementation of mitigation measures described in the construction environmental management plan.
- The construction environmental management plan submitted as part of the application identified mitigation measures to be implemented during the Project, including: environmental monitoring by a qualified professional, visual monitoring for marine mammals during in-water pile driving activities and adherence to a cetacean exclusion zone, hydroacoustic monitoring during in-water pile driving to monitor underwater sound, and implementing spill prevention and response procedures.



- The Applicant submitted a Request for Review to Fisheries and Oceans Canada (DFO). In response, DFO recommended mitigations to be implemented to reduce potential impacts to fish and fish habitat, and aquatic species at risk. These include monitoring by a qualified environmental professional, conducting hydroacoustic monitoring during pile driving, implementing additional mitigation measures if peak sound pressure levels exceed 206 dB re: 1 µPa and a SELcum of 186 dB re: µPa2s, monitoring by a qualified marine mammal observer during marine construction, and establishing a cetacean exclusion zone.
- A stormwater pollution prevention plan outlined existing and future operational stormwater management systems on-site, including collection, treatment and monitoring of potash washdown water and stormwater. Two new treatment facilities will be constructed, including a coal/potash water treatment facility for storm and washdown water at Berth 2, and a potash water treatment facility for washdown water from the enclosed potash dumper, transfer towers, and storage building.

The following table summarizes the potential environmental effects the project could have on the identified environmental components.

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Air quality	■	<input type="checkbox"/>	<p>There is potential for adverse effects on air quality during construction activities from equipment operation and soil movement. Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the construction environmental management plan. This includes managing vehicle track out, covering loads of soil and similar materials when hauling, implementing idling reduction, and turning off emission sources when not in use. Construction activities will be temporary and short-term in duration (i.e., intermittent over an approximate four to five year period).</p> <p>During operation, potash railcar unloading/dumping will occur in a new enclosed shed equipped with three baghouses to treat fugitive emissions. Potash conveyor transfer points will also be enclosed and equipped with controlled flow chutes under negative pressure and discharging through baghouse filters (dust collectors). Stacking, stockpiling, and reclaiming of potash will be conducted in a fully enclosed storage building. The shiploader will be equipped with telescopic cascade/DCL chutes, or similar.</p> <p>With mitigation in place, residual adverse effects on air quality are expected to be not significant.</p>	<input type="checkbox"/>	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<b>Lighting</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects from lighting during nighttime construction activities and operation. Mitigation measures will be implemented to reduce those effects, including pointing temporary construction lights downward and placing task lighting close to the work area. Lighting is anticipated to have minimal adverse effects due to the location of the Project in an existing industrial terminal that operates 24 hours a day, seven days a week.</p> <p>With mitigation in place, residual adverse effects from Project-related lighting are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Noise</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse noise effects during construction and operation.</p> <p>Mitigation measures to reduce the potential for adverse effects during construction will be implemented as detailed in the construction environmental management plan. Pile driving and other large noise-emitting activities will not be conducted outside regular construction hours. Construction noise is anticipated to have minimal adverse effects due to the location of the Project within an existing industrial terminal with 24 hour operations.</p> <p>The new potash handling systems are designed to be enclosed or include cladding during operation. All new outdoor dedicated potash conveyors will be cladded. The conveyor drives (i.e., motor, gear box, and coupling) will be located in an enclosure. A noise prediction of all 13 new dust collectors operating continuously is 24 dBA or less at the closest residence, well below measured 2019 sound levels of 49.2 dBA and 49.9 dBA at nearby long-term noise monitoring stations.</p> <p>The site layout limits the total amount of equipment that can be operational at any one time: a maximum of two rail car loops can be unloaded and a maximum of two vessels can be loaded at the same time. This is not affected by the addition of potash into the product line.</p> <p>The overall train operation frequency for the combined coal and potash shipping operation scenarios is expected to decrease.</p> <p>With mitigation in place, residual adverse effects on noise are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<b>Soils</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects to soil quality resulting from construction activities. Ground disturbing construction activities are expected to be limited to excavation, backfill, dewatering, and ground densification activities. The Project is located in an industrial area that has been subject to historic fill placement.</p> <p>Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the construction environmental management plan, including appropriate containment, handling, and disposal of potentially contaminated soils, and implementing a spill prevention and response plan prior to works.</p> <p>With mitigation in place, residual adverse effects on soils are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Sediments</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects to sediment from accidental spills during marine construction activities and surface water discharge. Measures to reduce these impacts are outlined in the construction environmental management plan and stormwater pollution prevention plan.</p> <p>Mitigation measures include monitoring for turbidity during in-water works, containing and treating water prior to discharge using the existing stormwater management system, and implementing a spill prevention, containment and clean-up plan.</p> <p>During operation, washdown and storm water will be directed to new and existing treatment systems.</p> <p>With mitigation in place, residual adverse effects on sediments are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<b>Ground water</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects to ground water from construction activities. Ground disturbing construction activities are expected to be limited to excavation, backfill, dewatering, and ground densification activities. The Project is located entirely within an industrial area that has been subject to prior disturbance and historic fill placement.</p> <p>Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the construction environmental management plan, including confirming the quality of backfill material prior to use on-site, and implementing a spill prevention and response plan prior to works.</p> <p>With mitigation in place, residual adverse effects on ground water are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Surface water and water bodies	■	<input type="checkbox"/>	<p>There is potential for adverse effects on surface water and water bodies from spills, concrete works, and turbidity during marine construction activities. During upland construction, surface water runoff may deposit sediment and contaminants in water bodies. The Project is located within an industrial facility with an existing stormwater management system in place.</p> <p>Potential adverse effects will be reduced through the implementation of mitigation measures outlined in the construction environmental management plan, including monitoring for turbidity during in-water works, completely isolating concrete forms for cast-in-place concrete works near or over the marine environment, and implementing a spill prevention, containment and clean-up plan. Water generated by construction activities, such as deep excavations, that is not suitable for treatment by the existing wastewater treatment system will be treated using specialized treatment systems prior to discharge.</p> <p>The addition of new potash-handling infrastructure will increase the impervious surface area of the site by up to 51% during operation. A washdown system will be implemented at Berth 2 to limit cross-contamination when switching between products and will include construction of a new coal/potash water treatment facility for storm and washdown water. The existing Berth 2 deck will remain completely contained by existing splash guards, flumes, and sumps. Potash washdown water from the enclosed potash dumper, transfer towers, and storage building will be collected and sent directly to a new potash water treatment facility. The stormwater collection system has sufficient retention capacity to contain and treat all water prior to discharge.</p> <p>With mitigation in place, residual adverse effects on surface water and water bodies are expected to be not significant.</p>	<input type="checkbox"/>	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Species/habitat with special status</b></p> <p>Assessed under section 79 of the <i>Species at Risk Act</i>, as applicable</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on species with special status during marine construction activities. Federally-listed fish, birds, and marine mammal species have the potential to be found in the Project area. The Project is located within southern resident killer whale critical habitat.</p> <p>Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the construction environmental management plan, including: visual monitoring by a qualified marine mammal observer during in-water pile driving, adherence to a cetacean exclusion zone and work stoppage procedure, and hydroacoustic monitoring during in-water pile driving to monitor underwater sound. If peak sound pressure levels exceed 206 dB re: 1 µPa, the activity will cease and additional mitigation will be implemented as required at the direction of the environmental monitor.</p> <p>With mitigation in place, residual adverse effects on species/habitat with special status are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p><b>Terrestrial resources</b> (e.g., vegetation, wildlife, etc.)</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The majority of the Project involves modifications and construction within an existing industrial facility. No disturbance or removal of terrestrial vegetation is proposed as part of the Project.</p> <p>Terrestrial resources are not anticipated to be affected by the Project.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p><b>Wetlands</b></p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The Project is located on land within an existing industrial facility and in the Strait of Georgia. Wetland habitat is not anticipated to be affected by the Project.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<b>Aquatic resources</b> (e.g., aquatic plants, fish and fish habitat, waterbirds, marine mammals, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Project-related activities have the potential to disturb aquatic species and fish habitat (e.g., through induced turbidity and other changes to water quality, underwater noise, displacement of species during construction, and accidental spills).</p> <p>Retrofitting works at Berth 2 include installing new concrete-filled steel piles, reinforcing existing concrete pile caps and pile-to-pile cap connections, and infilling existing piles with concrete. Up to 44 steel piles with an approximate diameter of 1 to 1.5 m will be installed in-water. The Project footprint on the seabed is estimated to be between 32 and 77 square meters, depending on final pile configuration.</p> <p>Potential adverse effects will be reduced through the implementation of mitigation measures outlined in the construction environmental management plan, including: environmental monitoring by a qualified professional, visual monitoring for marine mammals and adherence to a cetacean exclusion zone, hydroacoustic monitoring during pile driving to monitor underwater sound and apply additional mitigations as needed, and implementing a spill prevention, containment and clean-up plan.</p> <p>With mitigation in place, residual adverse effects on aquatic resources are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Health and socio-economic conditions</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Based on the very low magnitude of residual effects on air and noise, the containment and treatment of process and storm water prior to discharge, and the implementation of spill prevention and response procedures, the Project is not expected to cause adverse effects on health or socio-economic conditions of people, including Indigenous people.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Archaeological, physical, and cultural heritage resources</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The Project is located within an area of historical fill and disturbance. The risk of impact to archaeological or protected historical resources is low. Adverse effects on archaeological, physical, and cultural heritage resources are not anticipated.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
<p><b>Accidents and malfunctions</b></p> <p>Assessed as required by the <i>Canada Marine Act</i></p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on surface water, soils, ground water, and aquatic resources from accidental equipment leaks or spills.</p> <p>Mitigation measures will be in place to reduce potential for adverse, Project-related effects due to accidents by implementing the measures outlined in the construction environmental management plan.</p> <p>With mitigation measures in place, the effect of an accident or malfunction on the environment, if it were to occur, is predicted to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Residual adverse effects (i.e., effects that remain with mitigation in place) were identified for the following environmental components:

- Air quality
- Lighting
- Noise
- Soil
- Sediment
- Ground water
- Surface water and waterbodies
- Species or habitat with special status
- Aquatic resources
- Accidents and malfunctions

Overall, the residual adverse effects of the Project on the environmental components are characterized as:

- Low in magnitude, because impacts are anticipated to be not significant with mitigations in place
- Local in geographic extent, because effects will be limited to the Project area and immediate vicinity
- Short-term in duration because Project construction will be intermittent and temporary for approximately four to five years and unlikely to result in ongoing effects on air quality, noise, surface water or aquatic resources once construction is complete
- Continuous (daily to weekly) in frequency during Project construction
- Reversible/temporary because residual adverse effects of the Project would cease once the Project construction is complete

Based on the characterization above, the mitigation measures proposed by the Applicant, and the permit conditions, the residual adverse effects from the Project are predicted to be not significant.

## 8 CONCLUSION

It is the recommendation of staff that this application be approved subject to conformance with the project and environmental conditions listed in project permit **PER No.** 20-209.



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**APPENDIX A  
Location Plan**

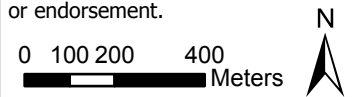


**PER #20-209**

**Westshore Potash  
Site Location Plan**

-  Project Location
-  VFPA Boundary

Vancouver Fraser Port Authority:  
This drawing has been reviewed by  
Vancouver Fraser Port Authority  
solely for the purpose of VFPA's  
issuance of a Project Permit. This  
Permit in no way denotes design,  
engineering, or structural approval  
or endorsement.



**Vancouver Fraser  
Port Authority**

Date: November 25, 2021

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**APPENDIX B**  
**List of Information Sources**

**The Port Authority has relied on the following sources of information in the project and environmental review of the Project:**

- Application form and materials submitted by the Applicant between September 17 and December 10, 2021
- Project correspondence from September, 17, 2021 to March 24, 2022
- Plans and drawings labelled PER No.20-209-A to J

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