PORT of vancouver | Vancouver Fraser Port Authority

PROJECT AND ENVIRONMENTAL REVIEW REPORT

20-191 Sterling Shipyards Remediation and Infill

Prepared for: Director, Project and Environmental Review

November 01, 2023

Contents

PER No.:	20-191
Tenant/Permit Holder:	Vancouver Fraser Port Authority – Planning and Development
Project:	Sterling Shipyard Remediation and Infill
Project Location	2089 to 2095 Commissioner Street, Vancouver, BC
Land Use Designation:	Port Terminal
Applicant:	SNC Lavalin
Category of Review:	C
Recommendation:	That PER No. 20-191 for Sterling Shipyard Remediation and Infill be approved.

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 report documents the port authority's project and environmental review of PER No. 20-191: Sterling Shipyard Remediation and Infill (the "Project") proposed by SNC Lavalin working on behalf of Vancouver Fraser Port Authority – Planning and Development (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 A.

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

The Applicant proposes to undertake remediation and infill activities in subtidal, intertidal, and upland areas of the former Sterling Shipyard site at 2089 to 2095 Commissioner Street, Vancouver (Location plan – Appendix B). The future use of this land has not been determined and the main priority for the Applicant is to remediate the site to address current unacceptable ecological risks associated with subsurface contamination. Any potential future development on the site would undergo a separate project and environmental review.

This site is contaminated from the operations of a former shipyard. Contaminates on the site include wood waste, metals, hydrocarbons, and polychlorinated biphenyls (PCBs), which are found to a maximum depth of 4 metres below existing grade. The Project would remove contaminated sediment in the subtidal and intertidal area and replace it with clean, engineered fill, and raise the grade of the intertidal area, reclaiming 0.5 hectares of

additional land for future port terminal or industrial use.

The site is located between the existing Lafarge Ready Mix concrete plant to the east, and the former Marco Marine Container Inc. (“Marco”) facility to the west. The upland portion of the site, as well as the Marco site, are currently used for surface parking by various nearby companies, including Lafarge Canada Inc., West Coast Reduction Ltd., and Columbia Containers Ltd. A City of Vancouver combined sewer and storm outfall extends north, into Burrard Inlet from the Marco site, just west of the Project area.

A vegetated slope, sloping down towards the intertidal area of the site from the parking area to the south, runs along the southern boundary of the beach. A wooden log retaining wall runs north to south along the western boundary and a riprap slope covered with blackberry bushes runs north to south along the eastern boundary.

The site is covered by historic and recently deposited debris and refuse. Rusted metal components of the former shipyard are abundant, as well as various debris including old wire rope. A number of cut off decaying wooden piles/posts are present on the northwest portion, along with other embedded wooden remnants of former infrastructure. On the upper limits of the intertidal zone, logs and large items of waste timber are present.

The proposed Project includes the removal of contaminated sediment, installation of a rock berm in the low intertidal/shallow subtidal area of the site, and the placement of engineered fill in both the intertidal and adjacent upland areas south of the proposed rock berm revetment.

Due to the Harmful Alteration Disruption or Destruction (HADD) of fish habitat, resulting from the proposed permanent infill of the subtidal and intertidal area, habitat offsetting is also proposed. This includes the creation of two subtidal reefs, installation of seeded kelp rope, and marine riparian planting on the southern edge of the rock berm.

Additional offsite habitat has been proposed to offset impacts to fish and fish habitat The physical works to construct this habitat are not included as part of the review of this Project but are expected to be subject to a separate review under the port authority’s project and environmental review process. An application for this has been received for this work, with the reference number PER 23-014.

An ECOncrete pilot project has also been proposed, which includes the installation of ECOncrete armour blocks placed at the foot of the rock berm to evaluate the effectiveness of ECOncrete in creating viable fish habitat. This pilot program would not be considered as additional habitat compensation for the Project.

2.1 Proposed Works

Site preparation

- Installation of erosion and sediment control measures
- Installation of a silt curtain around the in-water work area between the rock berm footprint and Burrard Inlet
- Removal of approximately 1,555 square metres of riparian vegetation, including several large trees
- Removal of wood and metal debris and other waste materials in the intertidal area
- Demolition of existing infrastructure, such as, lock block walls, sheet piles, timber cribs, anchors and anchor walls that might be buried
- Installation of temporary shoring around the east, west and south side of the Project area

Rock berm installation

- Dredging of the rock berm footprint to remove approximately 6,000 cubic metres of a liquefiable sand layer, to an approximate depth of 3.5 metres below the existing seafloor
- Installation of a rock berm, approximately 100 metres in length from east to west, and an elevation of approximately 8 metres

- Installation of a permanent retaining wall, at the northwest interface of the neighbouring site

Sediment remediation

- Excavation and dredging of approximately 12,000 cubic metres of contaminated substrate from the intertidal area of the site to an approximate depth of 5 metres below grade
- Dewatering dredged and excavated areas

Backfilling and grading

- Placement of approximately 41,000 cubic metres of engineered fill in both the intertidal and upland area to a rough elevation grade of approximately 6 metres
- Grading and vibro-compaction of the newly placed engineered fill
- Creation of a 0.5 metre berm along the western boundary of the infilled area
- Installation of an emergency stormwater overflow pipe through the rock berm to Burrard Inlet

Onsite habitat offsetting

- Creation of two riprap mounds in the subtidal zone immediately north of the rock berm to act as artificial reefs, totaling an area of approximately 1,280 square metres
- Installation of approximately 470 square metres of marine riparian vegetation on the southern edge of the rock berm
- Anchor approximately 15, 29-metre-long seeded kelp ropes, to the artificial reefs
- Placement of ECOncrete armour blocks at the foot of the revetment wall as part of an ECOncrete pilot project
- Long-term monitoring per the requirements of the *Fisheries Act* Authorization

Post remedial monitoring

- Installation of groundwater monitoring wells, for post remedial monitoring of groundwater

2.2 Proposed Construction Methods

To prepare the Project site for construction, the removal of trees and other vegetation, excluding invasive species and noxious weeds, would occur via grubbing by machinery and where possible, by hand. All invasive species and noxious weeds would be handled in line with an Invasive Vegetation Management Plan which would be developed and implemented by the Contractor. Wood waste and metal debris would be removed via hand and or machinery where required and disposed of at an appropriate facility.

Construction would include in-water and upland activities within the Project site. Marine and land equipment, including barges, clamshell dredge, cranes, excavators, rubber tracked carriers (or similar), and vibro-compaction equipment would be used.

Due to the high likelihood of the unstable ground conditions, temporary shoring would be installed on the east, west and south sides of the site. The temporary shoring system and installation methodology would be established and provided by the Contractor, in discussion with the port authority and following industry best practice. The temporary shoring would be removed following the placement of engineered fill.

The subtidal area would be dredged with a barge-mounted clamshell dredge to remove a liquefiable sand layer required to stabilize the rock berm footprint. Rocks would then be lowered into the berm footprint from a barge using a clamshell bucket or grapple. Construction of a permanent retaining wall would be constructed to the west end of the rock berm to limit the encroachment of the rock berm into the existing City of Vancouver stormwater outfall licence area. This retaining wall would be designed by the Contractor.

Remedial excavation would involve excavation of substrate from the intertidal area. Excavation in wet areas would be conducted via a land-based clamshell dredge. Excavation within dry areas would be conducted via an excavator. An excavator and vibro-compaction equipment would be used to backfill the intertidal and subtidal area with engineered fill to permanently elevate the site.

To create the artificial reefs, a layer of crushed gravel substrate would be placed on the artificial reef footprints to provide geotechnical stability for the larger rock reef material. This material would be transported by barge and lowered onto the reef footprints via a crane barge. The kelp ropes would be installed immediately following the construction of the rock reefs and would be guided and overseen by Canadian Kelp Resources Ltd. Marine riparian vegetation would be planted on the top south edge of the rock berm. Approximately two different types of ECOncrete blocks would be placed on the seabed along the rock berm toe.

Dewatering during dredging and excavation may be required. Removed water that meets applicable water quality guidelines as outlined in the Construction Environmental Monitoring Plan would be discharged into Burrard Inlet. Removed water that exceeds water quality guidelines and volumes that can be reasonably treated on-site would be disposed of at a permitted disposal facility offsite. Excavated and dredged material would be sampled and disposed of offsite via truck or barge at a permitted disposal facility.

Staging, laydown, stockpiling, and construction office areas are proposed to be located both within the site and immediately to the west, within the former Marco site and parking area. Construction of permanent roadways and driveways are not proposed as part of this Project. All land access/egress would take place via Victoria Drive north from Commissioner Street. Existing lease holders currently use the site and the former Marco site for temporary storage and parking. Should the Project be approved, they would be required to vacate the site.

Where possible, construction activity is anticipated to take place during standard construction hours (Monday to Saturday 7:00 a.m. to 8:00 p.m., excluding holidays, including statutory holidays in BC and Canada). However, some activities are dependent on tidal conditions and work may need to take place outside of standard hours. The Applicant would submit a written request, accepted in writing by the port authority, 30 business days prior to the desired start date of any such activities. The Applicant would also be required to prepare a construction notification to be sent 10 business days before commencing works outside of standard hours.

Should the proposed Project be approved, construction is expected to take approximately 10 months to complete.

3 TECHNICAL REVIEW

The following port authority departments have reviewed the application and have the following project considerations.

3.1 Planning

The proposed Project meets the port authority requirements, based on the primary considerations of the land use designation and current land use policies.

3.1.1 Land Use Designation

The proposed Project is within an area designated as “Port Terminal” in the land use plan. The Project is for site remediation and redevelopment works to allow for future development of port-related use. Ultimate use of the site is not yet known, therefore, the Project is considered to be in conformance with the land use plan.

3.1.2 Existing Land Use Policies

The following policy direction in the land use plan was considered as part of the review.

- Manage environmental contamination within port authority jurisdiction through investigation, remediation, and/or risk management approaches to address lands and sediments that have been contaminated historically

This Project is consistent with this policy direction, given the main priority for the Applicant is to remediate the site to address current unacceptable ecological risks associated with subsurface contamination from a former use.

3.1.3 East Vancouver Port Lands Area Plan

The proposed Project is within the East Vancouver Port Lands (EVPL) Area Plan and is considered to be a "yellow" development. As a result, notification and engagement with the EVPL Liaison Committee was conducted. These activities are described in detail in Section 4 – Stakeholder Consultation.

The following policies contained in the EVPL Area Plan were considered as part of the review. A description as to how the Project addresses these policies is in the table below.

Policy Considerations	Mitigation measures
Noise and ground vibrations from construction	Mitigations measures to limit noise and ground vibrations from machinery and construction activities are presented in the Project Construction and Environmental Management Plan (CEMP), including: • Turning off equipment and vehicles when not in use • Where possible, undertaking construction during standard work hours • Avoiding unnecessary use of air brakes, banging of truck tailgates and other vehicle related noise • Using equipment with noise-control features • Placing rocks in a controlled manner when constructing the rock berm wall
Air quality from construction	Mitigations and controls to limit impacts to air quality from machinery and construction activities are presented in the CEMP, including: • Minimizing the area of ground disturbance • Placing excavated material on a poly liner and covering when not in use and at night to prevent blow/run off • Hauling trucks will be covered, loads will be optimized and wheel washing stations employed, if required • Using dust suppression (water) when dry or windy

3.1.4 East Vancouver Port Lands Landscape Guidelines

The Applicant is proposing to remove vegetation in the proposed Project area to undertake remediation and infilling. However, as part of the habitat offsetting, marine riparian planting is proposed along the upper limits of the proposed revetment. The site remains subject to further (ultimate) development, and therefore, any proposed project would need to conform to the EVPL Area Plan Landscaping Guidelines at that time.

The Project is considered to be in conformance with the EVPL Area Plan Landscaping Guidelines.

3.2 Engineering

The proposed Project intends to prepare the site for future development by removing contaminated subtidal and intertidal soils, creating a rock revetment shoreline, and infilling the intertidal zone and upland area with imported engineered fill.

To contain stormwater within the temporary rough grade design of the infilled area, a berm approximately 0.5 metres high would be built along the western boundary of the intertidal area. The berm is intended to prevent stormwater from pooling on the neighboring site. In case of an emergency, such as the failure of infiltration due to high ground water, a 250-millimeter diameter overflow pipe is to be installed through the rock berm. The overflow pipe's outlet invert would be set at approximately 6.2 metres, to drain the area and avoid flooding of the surrounding area. The stormwater management measures (i.e., the outfall) are considered temporary for the rough grade design, and a final stormwater management design and analyses would be carried out for the final site design.

The proposed site elevation would be temporarily raised to a rough grade elevation of approximately 6 metres and the rock berm constructed to an elevation of approximately 8 metres, leaving a 2-metre height difference. Future development of the site by others would require the import of further fill to develop a final grade design of approximately 7 metres, which would enable utilities to be installed below grade in the new fill.

The extent of the contaminant excavation would overlap with the existing Lafarge revetment. The upper portion of the Lafarge revetment, not to be impacted by the excavation, would be temporarily retained during construction. The majority of the existing Lafarge revetment at the interface with the Project site would be infilled (i.e., buried) at the final stage.

A City of Vancouver combined stormwater pipe and outfall is located on the former Marco site, just west of the Project area, and extends into Burrard Inlet. The Applicant would construct a permanent retaining wall, at the western interface of the proposed rock berm with the former Marco site. The wall would retain the rock berm locally, to limit encroachment of revetment slope into the City of Vancouver's right of way for the outfall.

The proposed remedial excavation and infilling may result in ground movements, which could potentially cause damage to existing nearby structures and utilities.

The port authority has reviewed the application and requires the Permit Holder to adhere to the following:

- The Permit Holder shall submit a Geotechnical Instrumentation and Monitoring Plan to monitor potential settlement and damage of adjacent properties and assets due to construction activities. The Applicant shall carry out the Project in accordance with this monitoring plan and any subsequent updates.

This is reflected in the Permit conditions.

The proposal meets the port authority engineering requirements, subject to adherence to the listed project and environmental conditions in the Permit.

3.3 Transportation

It is anticipated that excavated material and rock fill would be hauled off and on to site via sea, utilizing a barge, while engineered clean fill for backfilling is expected to be delivered by land and would generate approximately 40 vehicle trips per day during peak hauling period.

The port authority has reviewed the application and requires the Permit Holder to submit an updated Construction Traffic Management Plan and ensure the following:

- Minor vehicle traffic delays are less than 2 minutes in duration and to be coordinated with available breaks in traffic flow

- Major vehicle traffic delays are a maximum of 15 minutes within a 60-minute period (either singular or multiple shorter stoppages)
- Every effort must be made to coordinate with rail crossings under the Stewart Street overpass

These shall be reflected in the updated construction parking and traffic management plan, as requested in the Permit condition.

The proposed Project meets port authority transportation planning requirements, subject to adherence to the listed project and environmental conditions in the Permit.

3.4 Marine Operations

Marine construction activities, such as dredging, rock berm placement, sediment removal, infilling and the creation of artificial reefs would take place within the Project site intertidal and subtidal zones from marine and land-based equipment. A silt curtain would also be installed between the Project area and Burrard Inlet.

The port authority has reviewed the application and requires the Permit Holder to adhere to the following:

- Advise the marine community of construction activities by issuing a Navigational Warning (NAVWARN)
- Submit a marine construction and staging plan
- Update the Database Information Office of the Canadian Hydrographic Service and final drawings to update the charts with any changes from what is currently shown on the chart

These are reflected in the Permit conditions.

The proposed Project meets port authority 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 on stakeholders and the local community and consultation activities were determined to be required. The following sections describe the stakeholder and public engagement activities undertaken by the Applicant and 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 Vancouver on November 5, 2021 notifying them of the proposed Project. A follow up email was sent to the City of Vancouver on April 5, 2023 advising them of proposed changes to the habitat offsetting.

The port authority did not receive any municipal comments.

4.2 Federal, Provincial, Regional Agency Consultation

4.2.1 Metro Vancouver

The proposed Project was assessed by the port authority to be of potential interest to other regulatory agencies. A referral letter was sent to Metro Vancouver on November 9, 2021 notifying them of the proposed Project.

Metro Vancouver responded with comments on the proposed Project. Below is a table summarizing the comments received and how they were considered as part of the project and environmental review.

Issue	Mitigations and Permit Conditions	Rationale
Metro Vancouver sewer line is located at the south side of the project, it has to be evaluated if the project is considered as proximal work, if the answer is "YES" the Metro Vancouver Proximal Work Requirements apply	The Metro Vancouver Proximal Work Requirements would be included in the tender documents for the contractor.	The Applicant indicated that Metro Vancouver Proximal Work Requirements would be included in the tender documents for the contractor.
What is the distance between the proposed laydown area to the Metro Vancouver sewer?	The Applicant would meet Metro Vancouver's Proximal Work Requirements.	The proposed laydown area is located above the Metro Vancouver sewer. However, the Applicant indicated that these laydown areas are proposed, and the contractor would be responsible for the final location of the laydown area and would meet Metro Vancouver's Proximal Work Requirements.
What is the distance between the proposed temporary storage for backfill area to the Metro Vancouver sewer?	The Applicant would meet Metro Vancouver's Proximal Work Requirements.	The proposed temporary storage for the backfill area is located 34.6 metres from the sewer line. However, the Applicant indicated these areas are proposed and that the contractor would be responsible for the final location of the laydown area and would meet Metro Vancouver's Proximal Work Requirements.
Cross section B and C should show the Metro Vancouver utilities.	None required	Cross sections B and C were updated to show the utilities and provided to Metro Vancouver.
Where is the site access for heavy machinery and trucks? Does the equipment cross the sewer on a non-paved area?	None required	Equipment would cross on an existing paved access route already used by industrial tenants of the port authority and would not cross the sewer on a non-paved area. The Applicant indicated that they anticipate heavy machinery and trucks would access the site from Commissioner Street onto Victoria Drive North. The contractor shall be responsible for the means and methods appropriate to perform the work.

A follow up email was sent to Metro Vancouver on April 5, 2023 advising them of the proposed changes to the habitat offsetting and confirming whether they had any additional comments. Metro Vancouver sent additional comments on May 1, 2023, which were:

- Metro Vancouver would prefer that no material or equipment is stored or stockpiled above Metro Vancouver infrastructure. The Engineer of Record is to review and confirm zone of influence/possible impacts. Pre-condition assessments of the utilities may be required (including CCTV). Pre-condition/baseline settlement monitoring will be required. It's advisable that the contractor understands the potential constraints when planning their temporary working space locations.
- Please provide an updated drawing set.

The port authority provided Metro Vancouver with an updated drawing set and would require the Permit Holder to adhere to the following:

- The Permit Holder shall meet the Metro Vancouver Proximal Work Requirements prior to any construction in proximity to Metro Vancouver's infrastructure. In addition, the Permit Holder shall not store equipment or stockpile material above Metro Vancouver infrastructure.
- The Permit Holder shall immediately notify Metro Vancouver of any actual or potential damage to Metro Vancouver infrastructure (including pipelines and outfalls) at: 604-985-1478.

These are reflected in the Permit conditions.

Based on the above, the port authority is of the view that the mitigations and Permit conditions developed for this Project have adequately addressed the issues raised by other regulatory agencies.

4.2.2 Fisheries and Oceans Canada

A Fisheries and Oceans Canada *Fisheries Act* Authorization was also required due to the Harmful Alteration Disruption or Destruction (HADD) of fish habitat, resulting from the proposed Project. Correspondence with Fisheries and Oceans Canada included the following:

- Clarification on the *Fisheries Act* Authorization review process
- Updates on the status of the *Fisheries Act* Authorization review and the Project and Environmental Review
- Potential coordination with respect to posting the Notice of Intent to the Canadian Impact Assessment Registry.

4.3 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 November 5, 2021, notifying them of the proposed Project:

- Lafarge Canada Inc.
- Kiewit Ledcor TMEP Partnership
- Viterra Canada Inc.
- Columbia Containers Ltd.
- West Coast Reduction Ltd.
- Telus Communications Inc.
- Canadian Pacific Railway
- FortisBC

Kiewit Ledcor TMEP Partnership responded to confirm the approximate construction schedule and advised that they sent the letter to their site team. Telus responded confirming they had no issues with the proposed Project. The port authority did not receive any other tenant comments at this time.

A follow up email was sent to the port authority tenants on April 28, 2023, advising them of proposed changes made to the habitat offsetting. The port authority did not receive any further comments.

FortisBC was notified of the Project on May 29, 2023 due to a nearby FortisBC owned gas line and asked if they had any concerns with the proposed Project. FortisBC responded via email directing the port authority to their pipeline and right of way permits, website link, which relates to potential impacts to existing gas lines (mains or services) from proposed construction.

As noted on the website, the British Columbia *Oil and Gas Activities Act* requires those who propose activities within 30 metres of a pipeline to contact FortisBC.

The Applicant confirmed that it would be likely that construction activities would take place within 30 metres of the gas line. The Applicant stated that discussions with FortisBC would take place per the British Columbia *Oil and Gas Activities Act*, at a later date, when a construction management plan would be available from a successful contractor and a construction utility locate/survey could be undertaken prior to construction.

Based on the above, the port authority is of the view that the mitigations and Permit conditions developed for this Project have adequately addressed the issues raised by adjacent tenants.

4.4 Community liaison committee notification and engagement activities

The proposed Project was assessed to be of potential interest to the East Vancouver Port Lands (EVPL) and South Shore Community Liaison Committees (SSCLC). Notification and engagement activities included:

- Email notification to the SSCLC on September 22, 2021, and an Applicant presentation on September 28, 2021, to ask the committee for input about the Project.
- Email notification to the EVPL liaison committee on September 29, 2021, and an Applicant presentation on October 6, 2021 to solicit input about the Project. According to the EVPL Area Plan, the Project is classified as “yellow” because it involves land creation through infill. As such, the committee was also consulted about the proposed public engagement approach.

Below is a table summarizing the comments received during the meetings with the liaison committees and how they were considered as part of the project and environmental review. No further email feedback was received.

Issue	Mitigations and Permit Conditions	Rationale
Local remediation of contaminated materials	None required.	The Applicant confirmed the contaminated materials would be barged to a local contaminated disposal area.
Indigenous consultation to-date	None required.	The Applicant indicated early engagement with Indigenous groups was completed, and that follow-up meetings would be set up if requested. As part of the PER process, the port authority delegated procedural aspects of consultation to the Applicant. The port authority concurrently conducted

Issue	Mitigations and Permit Conditions	Rationale
		Indigenous consultation activities and notified Indigenous groups of the delegation process.
Future use of the land	None required.	The Applicant confirmed the future use of the land is unknown at this time and that any future development would be required to undergo the port authority's PER process.
Notifying areas at a higher elevation that may perceive construction-related noise	Condition No. 20 requires the Permit Holder to distribute construction notification to the area specified in Figure 1.	The port authority expanded the public engagement notification distribution area east to include a wider distribution area (500-meter distance). The same area shall be used for construction notifications (as per condition No. 20).
Possible difficulty for the public to participate in real-time public engagement, e.g., online information session, in-person events	None required.	The port authority required the Applicant to provide engagement opportunities the public could access in their own time, e.g., website, online feedback form, dedicated email address, mailing address and phone number.

Based on the record above, the port authority is of the view that the mitigations and Permit conditions developed for this Project have adequately addressed the issues the liaison committee raised.

5 PUBLIC ENGAGEMENT

The port authority has determined that the mitigations and Permit conditions developed for this Project, as outlined in Section 5.3, have adequately addressed the concerns raised during public engagement.

The port authority required the Applicant to conduct public engagement. After reviewing the proposed works, the port authority determined that the Project may have the potential to adversely impact community interests in the surrounding area during construction and once the Project is complete.

Public engagement occurred through the Canadian Impact Assessment Registry (federal registry) and applicant-led public engagement, as follows:

- The port authority held two public comment periods through the federal registry. The first one from October 25 to November 23, 2021, and the second one from March 28 to April 16, 2023 (see Section 5.2 for details)
- The Applicant held a public engagement period from October 25 to November 29, 2021 (see Section 5.2 for details)

All feedback received during the PER process, including during and outside of the public engagement period, has been carefully considered in relation to the proposed Project and the decision. After reviewing the record of public engagement, the port authority is of the view that the Applicant made all reasonable efforts to engage with the public on the proposed Project and has considered their feedback as part of the Project.

Based on public engagement, Permit conditions have been developed to mitigate potential impacts and are outlined in the Permit.

5.1 Canadian Impact Assessment Registry

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 federal registry to provide the public 30 calendar days to comment on the Project and provide community knowledge.

The public comment period ran from October 25 to November 23, 2021. At the close of the 30-calendar day public comment period, no comments were received.

Later in the PER process, the Applicant amended the project scope to include on-site kelp seeding as part of habitat offsetting measures, therefore a new notice intent was posted to the federal registry with an opportunity for public comment. This second public comment period ran from March 28 to April 26, 2023. At the close of the 30-calendar day public comment period, no comments were received.

5.2 Summary of Applicant-led public engagement

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 engaged with the public between October 25 and November 29, 2021. Additional public engagement was not required for the Applicant's inclusion of on-site kelp seeding as these revisions to onsite habitat offsetting measures were not anticipated to impact the nearby community.

Public engagement activities during this period included:

- Posting all public engagement materials on the Applicant's website (portvancouver.com/projects/terminal-and-facilities/sterling-shipyard-remediation-and-infill-project/)
- Developing and posting a project overview document to the Applicant's website with key information about the Project
- Providing a dedicated project email address (SterlingRemediation@portvancouver.com), telephone number (604.665.9004) and mailing address for public inquiries and submissions
- Creating and posting an online feedback form to the Applicant's website to collect community input

To promote the above period and opportunities, the Applicant undertook the following notification activities:

- Mailing a notification postcard to residents and businesses in Vancouver during the week of October 25, 2021, as shown in the map on **Figure *1*:** Public notification distribution areaFigure 1
- Placing an advertisement in the Vancouver Sun on October 25, 2021
- Posting social media updates through the port authority's channels during the public engagement period (two tweets on November 5 and 19, 2021, and one Facebook post and one LinkedIn post on November 5, 2022)

The notification area was targeted by mail drop via Canada Post to cover an area as shown below, which included approximately 2,400 residents.

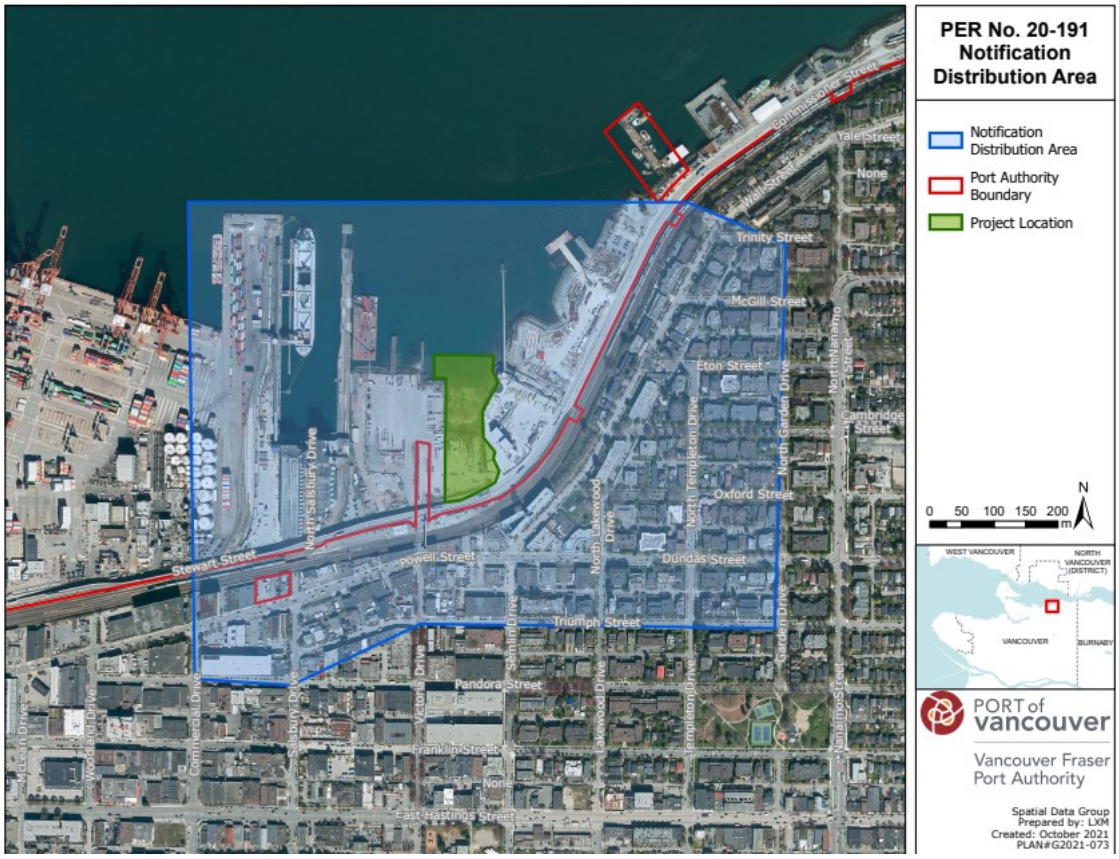

Figure 1: Public notification distribution area

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

- 14 people completed the online feedback form
- The Applicant received two comments via email and one phone call from the public

Comments from the public were mainly related to future development and use, impacts on the environment, marine habitat and wildlife, and noise during construction (including concerns about the potential for 24-hour works).

The Applicant provided a Public Engagement Summary and Consideration Report containing a detailed summary of the public engagement process, all comments received, and the Applicant's formal responses to public comments received, organized by theme. 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 January 20, 2022.

All feedback received was considered by the Applicant in the development of mitigations and by the port authority in the development of conditions for the Permit. The feedback and mitigations are summarized in Section 5.3.

5.3 Summary of issues and proposed mitigations and permit conditions

The following table summarizes issues raised by the public, and how they were considered by the port authority as part of the decision. Please note conditions referenced in the following table can be read in full in the accompanying PER No. 20-191 Permit.

Issue	Mitigations and permit conditions	Rationale
Future development and use	None required.	The Applicant indicated there were no current plans for future development of the site, and that any future development would be required to undergo the PER process. The Applicant responded to the public that the Project would create a combined 1.1 hectares of new port industrial land and that future uses would be consistent with its land use designation, Port Terminal.
Impacts to the environment, marine habitat and wildlife	The following Permit conditions are recommended to address this concern: • Condition No. 25 requires the Permit Holder to submit a soil/substrate management plan prior to construction. • Condition No. 25 requires the Permit Holder to submit a water quality management plan prior to construction. • Condition No. 34 requires that the Permit Holder engage a qualified environmental professional to monitor the Project, and that monitoring occurs full time when works are underway that have the potential to adversely affect fish or fish habitat. • Condition No. 35 requires that the Permit Holder provide environmental monitoring reports to the port authority.	The Project involves the loss of an existing intertidal area. To offset effects to marine habitat resulting from the Project the Applicant will build onsite fish habitat, including a marine riparian vegetation zone, and restore offsite habitat (under a separate Permit application) as proposed as part of a *Fisheries Act Authorization* application. Further mitigations to potential impacts to terrestrial wildlife and aquatic life are included in the Applicant's construction environmental management plan (uploaded to the Project webpage).

Issue	Mitigations and permit conditions	Rationale
Noise during construction, including potential 24-hour works	The following Permit conditions are recommended to address this concern: • Condition No. 29 requires the Permit Holder, where possible, to conduct all general construction and physical activities related to the Project during standard port authority hours. Requests for work outside standard construction hours shall be submitted in line with the Guideline for Construction Outside Regular Work Hours, accepted in writing by the port authority 30 business days prior to the desired start date. • Condition No. 20 requires the Permit Holder to distribute construction notification to the community 10 business days prior to conducting works outside of standard hours.	The Applicant indicated that due to the location of the Project, construction noise effects on adjacent communities and businesses is expected to be limited. The Applicant would also implement mitigation measures, such as placing rocks in a controlled manner during the construction of the rock berm wall. It is likely that some project activities would be conducted outside of standard construction hours to accommodate tidal windows. Prior to conducting works outside standard construction hours, the Applicant would seek approval to do this (as per condition No. 29) and notify the community (as per condition No. 20).
Indigenous consultation	None required	The Applicant indicated engagement with Indigenous groups began in December 2020, and that engagement was ongoing throughout the PER process.

Based on the record of public engagement above, the port authority is of the view that the Applicant has made efforts to engage the public and that the mitigations and Permit conditions developed for this Project have adequately addressed the concerns raised during public engagement.

5.4 Construction notification requirements

The proposed Project was assessed by the port authority to have potential impacts to community interests in the surrounding area during construction. These include potential impacts on air quality, noise and traffic levels occurring during construction activities, and possible noise from the potential for works outside of standard hours.

As a result, the Applicant is required to send a construction notification to adjacent residents and businesses in Vancouver as shown in the previous notification distribution area map (see Figure 1**:** Public notification distribution area). The notification area is within approximately 300 to 500 metres of the Project site. The construction notification shall be distributed by the Applicant at least 10 business days prior to the start of the

works, and subsequent notifications shall be distributed 10 business days prior to the start of works outside of standard hours (if required). The construction notification(s) shall be posted on the Applicant's website. This is condition No. 20 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:

- Musqueam Indian Band
- S'ólhTéméxw Stewardship Alliance via People of the River Referrals Office (PRRO)
    - Aitchelitz First Nation
    - Chawathil First Nation
    - Cheam First Nation
    - Kwaw'Kwaw'Apilt First Nation
    - Scowlitz First Nation
    - Shxwha:y Village
    - Skawahlook First Nation
    - Skwah First Nation
    - Skowkale First Nation
    - Soowahlie First Nation
    - Squiala First Nation
    - Sumas First Nation
    - Tzeachten First Nation
    - Yakweakwioose First Nation
    - Yale First Nation
- Squamish Nation
- Tsleil-Waututh Nation

The following consultation activities were conducted:

- Project introduction letters sent
- Project meetings with Indigenous groups who requested meetings
- Participation funding agreements provided to Indigenous groups
- Draft PER application provided to Indigenous groups for review and comment
- Referral package provided for review including consultation letter and application package with appendices
- Regular project updates provided via email
- Response table provided to Indigenous groups who provided comments on the referral package
- Second response table provided to Indigenous groups who provided a rebuttal comment table to the first comment table

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
Impacts to fish and fish habitat	The following Permit conditions are recommended to address this concern:	In addition to the permit conditions, potential impacts to fish and fish habitat will be

Issue	Mitigations and Permit Conditions	Rationale
	• Condition No. 38 states the Permit Holder shall not, directly or indirectly: (a) deposit or permit the deposit of a deleterious substance of any type in water frequented by fish in a manner contrary to Section 36 of the *Fisheries Act*; or (b) adversely affect fish or fish habitat in a manner contrary to Section 35 of the *Fisheries Act*. • Condition No. 34 requires the Permit Holder, or their contractor, 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 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.	managed through the *Fisheries Act* Authorization required by Fisheries and Oceans Canada (DFO).
Impacts of development on unidentified archaeological resources	To address this concern Condition No. 41 requires the Permit Holder to 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.	The Applicant will be required to have an approved Archaeological Chance Find Procedure in place during Project works.
Potential impacts to nesting birds	If there is potential to affect birds and/or their active nests and eggs, condition No. 27 requires the Permit Holder to conduct nest surveys. For any nests identified in surveys, a qualified environmental professional shall confirm that the nest is not occupied by a species protected at that time of year under applicable legislation. To reduce the risk of Project-related harm, the Permit Holder should avoid certain physical activities during the general bird breeding season, which falls	The environmental monitor on site will manage potential impacts to nesting birds according to the construction environmental management plan.

Issue	Mitigations and Permit Conditions	Rationale
	between April 1 and July 31, or outside of this time span if occupied nests are present. Immediately prior to activities with the potential to affect birds and/or their active nests and eggs.	
Request to share results of testing programs conducted throughout project activities as well as the Water Quality Management Plan	To address this concern Condition No. 42 requires the Permit Holder to provide the: • Environmental monitoring reports • Post-remediation confirmatory sampling results • Water quality management plan to the port authority and Indigenous groups who requested to receive them.	Sampling results and the Water Quality Management Plan will be provided to Indigenous groups who requested them according to the construction environmental management plan.

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 a proposed project 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.

Based on the consideration of environmental effects in Section 7.2, the characterization in Section 7.3, the mitigation measures proposed by the Applicant, and the permit conditions, the proposed Project is not likely to have significant residual adverse effects.

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.

The environmental review considered potential adverse environmental and social effects of the Project on 14 environmental components 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 environmental remediation design report provided a high-level summary of numerous environmental investigations completed at the site. The report described hydrocarbon, metal, and polychlorinated biphenyl (PCB) contamination across the Project area associated with fill containing debris and/or wood waste, and the former boat way and ancillary facilities. An estimated 11,300 cubic metres of contaminated sediment and approximately 700 cubic metres of geotechnically unsuitable marine sand will be removed in the intertidal area up to an estimated depth of 5 metres below the current surface. Approximately 6,000 cubic metres of contaminated and geotechnically unsuitable sediment would be removed in the subtidal area up to an estimated dredging depth of approximately 3.4 metres below current seabed. Post remedial monitoring of groundwater and porewater will be conducted.
- A terrestrial field survey was carried out to assess habitat conditions and identify potential temporary and permanent effects. The Project will result in the removal of approximately 1,555 square metres of riparian vegetation comprised of black cottonwood with a mix of native and invasive shrubs and grasses. Evidence of use of the Project area by multiple bird species, including gulls, ducks, bald eagle, rock pigeons, Canada geese, and crows, was observed. Several species of seabirds, including western grebes, have the potential to occur in the water lot. The Project area is considered to have low habitat value for terrestrial mammals due to a lack of connectivity to other habitats and the heavily developed nature of the surrounding area.
- An intertidal field survey was carried out to assess habitat conditions. Numerous species of seaweed and invertebrates were observed; however, no particularly sensitive habitats or sensitive species were identified. Industrial debris, scrap, waste, and contamination associated with former shipyard operations was pervasive throughout. The habitat assessment found intertidal areas to be of limited value as fish habitat and indicated that contamination from the site could potentially affect fish habitat quality off-site. Subtidal areas were observed to be similarly contaminated, although some presence of kelp bed habitat and a community of seaweeds, invertebrates and fish was observed.
- The Project would result in the permanent loss of approximately 4,870 square metres of intertidal and 2,020 square metres of subtidal fish habitat, and approximately 815 square metres of temporary disturbance to subtidal fish habitat. Permanent losses would be offset with onsite habitat offsetting by constructing two riprap reef complexes north of the infilled area, planting marine riparian vegetation on the southern edge of the rock berm and installing seeded kelp ropes onto the subtidal reef, as well as restoring offsite habitat (reviewing separately under PER 23-014) as proposed as part of a *Fisheries Act* Authorization application.
- An archaeological overview assessment considered the Project footprint to have low archaeological potential due to historical shoreline modifications. An archaeological chance find procedure is included in the Project's construction environmental management plan.
- An analysis of stormwater management for the temporary rough grade design of the infilled area predicted that with the installation of a 0.5 metre berm along the west boundary, stormwater would be stored and infiltrated in the intertidal area. In case of emergency (e.g., failure of infiltration due to high ground water season), installation of a 250 millimetre diameter overflow pipe and outfall through the rock berm to the marine environment was recommended to avoid flooding the surrounding area.
- The CEMP submitted as part of the application identified mitigation measures to be implemented during the Project. Measures included (but were not limited to): isolating the work area using floating silt curtains, undertaking environmental monitoring by a qualified professional, visual monitoring for marine mammals

and adherence to a cetacean exclusion zone during dredging, implementing erosion and sediment control measures, monitoring water quality, and implementing spill prevention and response procedures.

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	■	☐	There is potential for adverse effects on air quality during Project works from equipment operation and fugitive dust from excavation and handling of materials during construction. Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the CEMP. This includes an idling reduction, turning off emission sources when not in use, covering truckloads of fine-grained material during hauling, and dust control as needed. Construction activities will be temporary and short-term in duration (i.e., intermittent over an approximate 12-month period). After Project completion, no new air emission sources will remain on site. With mitigation measures and proposed permit conditions in place, residual adverse effects on air quality would be low in magnitude, local in geographic extent, temporary and approximately 12 months in duration, intermittent in frequency, and reversible once project construction is complete. The residual adverse effects are expected to be not significant.	☐	■
Lighting	☐	■	No new lighting will be installed as part of the Project. Work will primarily be undertaken during standard construction hours as described in the CEMP. Lighting associated with any activities outside these hours is anticipated to have minimal adverse effects due to the location of the Project in a busy, industrial area. Adverse effects due to lighting are not anticipated.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Noise	■	☐	There is potential for adverse noise effects during Project works from the use of equipment, machinery, and vehicles. Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the CEMP such as the use of noise-control features, confirming vehicles and equipment are not emitting controllable mechanical noise, and carrying out works within standard hours where possible. Construction noise is anticipated to have minimal adverse effects due to the location of the Project site in a busy, industrial area. After Project completion, no noise sources will remain on site. With mitigation measures and proposed permit conditions in place, residual adverse effects would be low in magnitude, local in geographic extent, temporary and approximately 12 months in duration, intermittent in frequency, and reversible once project construction is complete. The residual adverse effects on the acoustic environment are expected to be not significant.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Soils	■	☐	There is potential for adverse effects to soil from the temporary storage of contaminated materials on land, surface water run-off, and spills during Project works. Mitigation measures outlined in the CEMP will be implemented to mitigate adverse effects to soils. These include placing stockpiles of contaminated materials only in approved locations, using only newly sourced backfill material demonstrated to be free of environmental contamination, using clean equipment during remediation and construction, and implementing a spill prevention, containment and clean-up plan prior to works. With mitigation measures and proposed permit conditions in place, residual adverse effects would be low in magnitude, site-specific in geographic extent, temporary and approximately 12 months in duration, intermittent in frequency, and reversible once project construction is complete. The residual adverse effects on soil quality are expected to be not significant.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Sediments	■	☐	Removal of contaminated sediments and infill with clean material will have a long-term positive environmental effect. During construction, there is potential for adverse effects to sediment from suspension of sediments during dredging, rip rap placement, run-off from contaminated soils on land or in barges, and spills during marine works. Mitigation measures outlined in the CEMP will be implemented to mitigate adverse effects to sediments. These include, isolating the work area using floating silt curtains, lining barges used for loading of dredged material with waterproof containment, monitoring water quality during dredging, placing riprap in a controlled manner, and implementing a spill prevention, containment and clean-up plan. The Permit Holder is also required to submit a soil/substrate management plan prior to construction to the port authority's satisfaction. This plan will address handling and transportation of all excavated material, including dredged materials. Once the Project is complete, sediment quality is anticipated to improve due to the removal of contaminated material. With mitigation measures and proposed permit conditions in place, residual adverse effects on sediment quality would be site-specific in geographic extent, temporary and approximately 12 months in duration, intermittent in frequency, reversible after project construction, and the magnitude of the effect would be a net benefit once the project is complete. The long-term residual effects are expected to be positive or not significant.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Groundwater	■	☐	Removal of contaminated sediments and infill with clean material is likely to have a long-term positive effect on groundwater. During construction, there is potential for adverse effects to groundwater from temporary storage of contaminated materials on land and spills during construction activities. Mitigation measures outlined in the CEMP will be implemented to mitigate adverse effects to groundwater. These include, placing stockpiles of contaminated materials only in approved locations, using only newly sourced backfill material demonstrated to be free of environmental contamination, using clean equipment during remediation and construction, and implementing a spill prevention, containment and clean-up plan prior to works. The Permit Holder is also required to submit a post-remedial groundwater and porewater monitoring plan following construction to the port authority's satisfaction. This plan will outline sampling requirements and applicable standards and guidelines to be met. With mitigation measures and proposed permit conditions in place, residual adverse effects on groundwater quality would be site-specific in geographic extent, temporary and approximately 12 months in duration, intermittent in frequency, reversible after project construction, and the magnitude of the effect would be a net benefit once the project is complete. The long-term residual effects are expected to be positive or not significant.	☐	■

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	■	☐	There is potential for adverse effects on surface water and water bodies from suspension of sediments during dredging, excavation and riprap placement, run-off from contaminated soils on land or in barges, and spills during remediation and construction activities. Mitigation measures outlined in the CEMP will be implemented to mitigate potential adverse effects to surface water and water bodies, including, isolating the work area using a floating silt curtain, lining barges used for loading of dredged material with waterproof containment, monitoring water quality during dredging, placing riprap in a controlled manner, implementing erosion and sediment control measures, and implementing a spill prevention, containment and clean-up plan. The Permit Holder is also required to submit a dredge and excavation management plan prior to construction to the port authority's satisfaction. This plan will outline measures to manage water generated during excavation and dredging. Once the Project is complete, stormwater is anticipated to infiltrate the infilled area, or in case of an emergency (e.g., high ground water), through a 250 millimetre overflow pipe with drainage to the marine environment. With the removal of contaminated sediment, water quality in the Project area is anticipated to improve. With mitigation measures and proposed permit conditions in place, residual adverse effects on surface water and water bodies would be low in magnitude, local in geographic extent, temporary and approximately 12 months in duration, intermittent in frequency, and reversible once project construction is complete. The residual adverse effects are expected to be not significant.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Species/habitat with special status Assessed under section 79 of the *Species at Risk Act*, as applicable	■	☐	There is potential for adverse effects on species that are extirpated, endangered, or threatened and/or their critical habitat that are protected under the *Species at Risk Act*. Barn Swallow (Threatened), Northern Abalone (Endangered), Basking Shark – Pacific (Endangered), Killer Whale - Transient (Threatened), and Killer Whale – Resident (Endangered) have the potential to occur on or near the Project site. Potential use by wildlife species at risk is considered to be temporary and transient in nature, with no permanent residence or nesting on site. Mitigation measures to reduce the potential for adverse effects will be implemented as detailed in the CEMP, including visual monitoring for marine mammals during dredging, environmental monitoring during vegetation removal, and conducting nest surveys prior to any tree removal during the songbird nesting seasons. The Permit Holder received a *Fisheries* Act Authorization. Mitigation measures included in the *Fisheries Act* Authorization will be implemented to avoid potential effects on aquatic species at risk including habitat offsetting. With mitigation measures and proposed permit conditions in place there would be no residual adverse effects on species/habitat with special status.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Terrestrial resources (e.g., vegetation, wildlife, etc.)	■	☐	The Project will remove approximately 1,555 square meters of riparian vegetation. Tree and vegetation removal will result in the loss of nesting and foraging habitat for birds and potential foraging habitat for bats. Mitigation measures to reduce the potential for adverse effects will be implemented during remediation and construction as detailed in the construction environmental management plan, including environmental monitoring during vegetation removal, conducting nest surveys prior to any tree removal during the songbird or raptor nesting seasons, and implementing erosion and sediment control measures. Upon completion of infilling and compacting, marine riparian vegetation will be planted in an approximate 470 square metre area. Remedial measures, such as additional planting, will be conducted as needed based on monitoring and requirements of the DFO *Fisheries Act* Authorization. With mitigation measures and proposed permit conditions in place, residual adverse effects on terrestrial resources would be low in magnitude with a net loss of 1,085 square meters, site-specific in geographic extent, occur over a short time during construction when the vegetation is removed, and would be permanent. The residual adverse effects are expected to be not significant.	☐	■
Wetlands	☐	■	The Project is located within subtidal, intertidal and upland areas in Burrard Inlet. Wetland habitat is not anticipated to be affected by the Project.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Aquatic resources (e.g., aquatic plants, fish and fish habitat, waterbirds, marine mammals, etc.)	■	☐	Removal of contaminated sediments and infill with clean material is likely to have a long-term positive effect on aquatic resources. The Project will result in the permanent loss of approximately 4,870 square meters of intertidal and 2,020 square meters of subtidal fish habitat, removal of approximately 1,555 square meters of marine riparian vegetation, and temporary disturbance to approximately 815 square metres of subtidal fish habitat. The habitat is of limited value to fish given the pervasive debris and contamination. Project-related remediation and construction 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, disruption to migrating fish populations, and accidental spills). Mitigation measures outlined in the CEMP will be implemented to mitigate potential adverse effects on aquatic resources, including environmental monitoring by a qualified professional, isolating the work area using floating silt curtains, visual monitoring for marine mammals, and salvaging and relocating fish and large crustaceans outside of the Project area prior to dredging. The permanent loss or alteration of habitat within the Project footprint will be mitigated through habitat offsetting as required under a DFO *Fisheries Act* Authorization. Onsite, two riprap reef complexes will be constructed. Marine riparian vegetation will be planted in an approximate 470 square meter area and seeded kelp ropes will be anchored to the subtidal reef. Offsite aquatic habitat will also be restored to offset habitat loss. With mitigation measures and proposed permit conditions in place, residual adverse effects on aquatic resources would be low in magnitude, site-specific in geographic extent, occur for approximately 12 months in duration, be intermittent in frequency, and reversible once construction of the project and habitat offsetting is complete. The residual adverse effects are expected to be not significant.	☐	■

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Health and socio-economic conditions	☐	■	Based on the very low magnitude of residual effects on air and noise, the Project is not expected to cause adverse effects on health or socio-economic conditions of people, including Indigenous people.	☐	■
Archaeological, physical, and cultural heritage resources	☐	■	The Project is located within an area of historical shoreline modification and disturbance. An archaeological overview assessment considered the Project footprint to have low archaeological potential. Adverse effects on archaeological, physical, and cultural heritage resources are not anticipated.	☐	■
Accidents and malfunctions Assessed as required by the *Canada Marine Act*	■	☐	There is potential for adverse effects on surface water, soil, and sediment from accidental equipment leaks or spills. Mitigation measures outlined in the construction environmental management plan will be in place during remediation and construction to reduce the potential for adverse, Project-related effects due to accidents including keeping equipment and machinery in good working order, environmental monitoring, use of spill kits, use of spill pads and secondary containment, implementation of a fuel management plan, and implementation of a spill response plan for on land an in water. With mitigation measures and proposed permit conditions in place, the effect of an accident or malfunction on the environment, if it were to occur, would be low in magnitude, local in geographic extent, temporary, and reversible once any clean-up or restoration is complete. The residual adverse effect is predicted to be not significant.	☐	■

7.3 Environmental Effects Characterization

The proposed Project will result in a net positive effect on the environment through remediation of contaminated material and infill of subtidal, intertidal, and upland areas with clean material and the creation of offsite and onsite habitat including two subtidal reefs, seeded kelp rope installation, and marine riparian planting.

Despite a net positive effect, residual adverse effects (i.e., effects that remain with mitigation in place) were identified for the following environmental components:

- Air quality
- Noise
- Soils

- Sediment
- Groundwater
- Surface water and waterbodies
- Terrestrial resources
- Aquatic resources
- Accidents and malfunctions

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

- Low in magnitude: The Project footprint is relatively small and the most notable adverse residual effects during construction are for surface water and water bodies from suspension of contaminated sediments, aquatic resources from disturbance of the seabed and terrestrial resources through the removal of riparian vegetation.
- Site specific in geographic extent: Most effects would occur within the proposed Project site, however some effects (e.g., noise during construction) could extend to the adjacent community.
- Duration and frequency of effects ranges from temporary/intermittent during construction to long-term/continuous during operations.
    - During construction, effects would be temporary in duration, during the 12 months of Project construction, with intermittent frequency.
    - Post-construction, the positive effects of remediation and offsetting habitat would be long-term and continuous in frequency as they are permanent.
- Reversible: Effects from construction will cease once construction is complete. Post-construction, the positive effects of the remediation and habitat creation will be permanent.

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 the attached draft Permit **PER No.** Error! Reference source not found..

APPENDIX A
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 Applicant between September 2, 2021 and August 17, 2023
- All Project correspondence from September 2, 2021 to October 31, 2023
- All plans and drawings labelled PER No.**Error! Reference source not found.**-A to I
- Construction Environmental Management Plan, June 2, 2021, SNC Lavalin
- Geotechnical Instrumentation and Monitoring Plan, July 8, 2021, SNC Lavalin
- Options Memorandum, January 19, 2021, SNC Lavalin
- Traffic Management Plan, July 23, 2021, SNC Lavalin
- VFPA Noise Assessment Screening Worksheet, September 19, 2021
- Project and Environmental Review Overview Memo, September 2, 2021, SNC Lavalin
- Revised Project and Environmental Review Overview Memo, November 1, 2022, SNC Lavalin
- Revised Project and Environmental Review Overview Memo, August 17, 2023, SNC Lavalin
- Fisheries Act Application and Habitat Offsetting Plan, September 24, 2021, SNC Lavalin
- Revised Fisheries Act Application and Habitat Offsetting Plan, November 2, 2022, SNC Lavalin
- Habitat Assessment, September 24, 2021, SNC Lavalin
- Revised Habitat Assessment, June 6, 2023, SNC Lavalin
- 90% Environmental Remediation Design Report, October 21, 2021, SNC Lavalin
- Stormwater Management Design Criteria, October 29, 2021, SNC Lavalin
- 90% Geotechnical Report, October 12, 2021, SNC Lavalin
- Marine Design Criteria, October 26, 2021, SNC Lavalin

APPENDIX B
Location Plan