SNC·LAVALIN

Project and Environmental Review Overview Memo

Sterling Shipyard Remediation and Infill

Prepared for:

Vancouver Fraser Port Authority

August 16, 2023

Revision Index

Revision	Prepared	Reviewed	Approved	Date	Remarks
0	VO	JB	JK	2021 04 28	
1	VO	JB		2021 05 19	*Revised as per comments from CF on Project Description portion*
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6	MT	EM	EM	2023 08 03	*Revision to area of vegetation removal. Addition of Utility Management section*
7	MT		JK	2023 08 16	*Revisions to Section 5.1.4 to include additional engagement activity regarding the habitat offsetting proposal.*

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Signature Page

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Executive Summary

The Vancouver-Fraser Port Authority (the port authority) have retained SNC-Lavalin Inc. (SNC-Lavalin) to provide design, permitting and environmental support services for planned remedial excavation at the Former Sterling Shipyard facility located at 2089 to 2095 Commissioner Street, Vancouver, BC on the southern shore of the Inner Vancouver Harbour, within the port authority grounds in Vancouver, BC. The Project, titled “Sterling Shipyard Remediation and Infill”, aims to remediate the Site and create new industrial land. This Project Description has been prepared to support the Project Environmental Review (PER) submission for the Project for the port authority’s internal review. VFPA has retained SNC-Lavalin to conduct environmental permitting and assessment works for the Project, including the preparation of a Category C PER submission to the port authority. To support the PER process, SNC-Lavalin was retained to conduct engineering services, remediation design and habitat offsetting measures.

Overview

The port authority is proposing a remedial excavation and infilling at the former Sterling Shipyard facility (the 'Site') located at 2089 – 2095 Commissioner Street, Vancouver, BC. The Site is currently contaminated with metals, polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCBs) up to approximately 4 metres (m) depth. The purpose of the proposed excavation is to address the ecological risk associated with subsurface contamination, as well as to create new port industrial land. The proposed scope of work for the Site includes site preparation, site isolation, dredging, remedial excavation, backfilling and grading, and habitat offsetting.

This memo is intended to provide an overview of the scope of work on the southern shore of the Burrard Inlet, within the port authority grounds in support of our application for a Category C permit, as described in the PER Application Guide.

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Table of Contents

Table of Contents (Cont'd)

Table of Contents (Cont'd)

In-Text Figures

In-Text Tables

Table of Contents (Cont'd)

Appendices

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1 General Submission Requirements

1.1 Application Form

The Preliminary Application can be found in **Appendix I.**

1.2 Contact

Eileen Miranda, Technical Director, - Environmental Impact Assessment, SNC-Lavalin Inc.

2 Project Description

2.1 Project Contacts

The following personnel and contacts, listed in **Table 1** below, have been identified as having key roles in the management of this Project:

Table 1: Key Project Personnel and Contacts

Name	Organization	Role	Contact Information
Deborah Renn	VFPA	Applicant Lead	Tel: 604-665-9561 Email: Deborah.Renn @portvancouver.com
Katherine Huggins	VFPA	PER Team Contact	Tel: 604-366-6170 Email: Katherine.Huggins@portvancouver.com
TBD	VFPA	Environmental Manager	Tel: 000-000-0000 Email: email@email.com
Philippa (Pip) Humphreys	VFPA	Compliance, Monitoring and Enforcement (CME)	Tel: 604-762-6914 Email: philippa.humphreys@portvancouver.com
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John Kitson	SNC-Lavalin	Project Manager	Tel: 604-785-5797 Email: John.Kitson@snclavalin.com
Eileen Miranda	SNC-Lavalin	PER Application Contact	Tel: 604-317-1222 Email: Eileen.Miranda@snclavalin.com

2.2 General Scope

2.2.1 Project Purpose and Rationale

The Project aims to undertake a brownfield redevelopment to create approximately 0.5 ha of new port industrial land on the Site. The majority of Project works will take place within the Site's intertidal zone, of which approximately 80% is considered to be contaminated. The Site substrate is contaminated with industrial woodwaste, metals, polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) up to approximately 4 m depth. The redevelopment of the Site will include remedial excavation of contaminated sediment to address current unacceptable ecological risks, followed by infilling with clean engineered fill material.

A rock berm will be installed in the low intertidal area of the Site in order to provide revetment for the development. The rock berm will be 100 m in length (east to west) with a maximum elevation of 7.7 m. The remedial excavation will occur at an average depth of 3.5 m in the intertidal area consisting of approximately 11,300 m^3 by shored excavation and at an average depth of 1.7 m in the subtidal area consisting of approximately 5,475 m^3 by dredging.

The excavation will be backfilled with engineered fill, which will be compacted after placement. Engineered fill will also be placed on the upland area of the Site. The finished surface of the Site will be graded gravel.

2.2.2 Project Setting

2.2.2.1 Project Location

The Project is located at 2089 to 2095 Commissioner Street, Vancouver, BC, on the southern shoreline of the Central Vancouver Harbour, within the Burrard Inlet, at the Former Sterling Shipyard. The Site has an area of approximately 1.1 ha and is located within port authority jurisdiction in the northern portion of the City of Vancouver, BC. The Site comprises of an upland terrestrial area, an intertidal beach area and a subtidal water lot. The coordinates of the Site are presented in **Table 2** below.

Table 2: Project Coordinates

Latitude	Longitude
49° 17' 12.5" N	123° 03' 52.7" W

Please refer to **Figure B** in **Section 3.1** for the Project location and **Appendix II** for Site plans.

2.2.2.2 Project Area

The Project is located within a “Port Terminal” land use designation within the Burrard Inlet South Shore planning area under the VFPA Land Use Plan. The Project is located along the south shore at the foot of Victoria Drive N, on the north side of Commissioner Street, just north of the City of Vancouver’s Grandview-Woodland neighbourhood. Areas designated under “Port Terminal” land use are primarily associated with deep-sea marine and river terminals that handle a variety of cargo, as well as cruise passengers. The land use also includes primary trade-related uses that support shipping, transportation of goods and passengers, and handling of goods. Ancillary uses may include offices, storage areas, caretaker facilities, and other uses required to support the primary use. A railway operated by Canadian Pacific Railway runs east to west approximately 100 m southeast of the Site, isolating the subject site from the residential and commercial areas located to the south of the Project. It is located within the port authority’s East Vancouver Port Lands committee area.

The Site is located between the existing Lafarge Ready Mix concrete plant which is east of the Site and former Marco Marine Container Inc. (Marco; which is west of the Site), with Pacific Elevators Terminal located further to the west. **Table 3** presents the features and properties that are adjacent to and bound the Site.

Table 3: Features and Properties Neighboring the Site

Direction	Feature or Property	Distance
North	Burrard Inlet	Adjacent
East	Lafarge Ready Mix concrete plant	Adjacent
South	Port authority Grounds, CP Railway	Adjacent
	Commissioner Street	Adjacent
	CP Railway	50 m
West	Former Marco Site[1]	Adjacent
	Parking Area[1]	Adjacent
	Pacific Elevators Terminal	160 m
	West Coast Reduction plant	350 m

[1] – Please refer to **Section 2.2.2.2.1**.

2.2.2.2.1 Lease Areas

A number of lease areas exist within the Site and the parking area adjacent to the west of the Site. **Table 4** below identifies the lease areas. The lease areas are also depicted in **Figure C**.

Table 4: Lease Areas Within and Adjacent to the Site

Location	Lease holder	Area Description
Within the Site	Lafarge Canada Inc.	Covering the Site's southern and eastern limits adjacent to Commissioner Street and Lafarge Ready Mix concrete plant.
	West Coast Reduction Ltd.	East of Victoria Drive N, covering the majority of the southern upland area of the Site.
Within parking area (West of the Site)	Columbia Containers Ltd.	Northeast of Victoria Drive N, covering the northeast corner of the parking area.
	Viterra Canada Inc.	On the west side of Victoria Drive N, covering the southwest corner of the parking area.

2.2.2.2.2 City of Vancouver Zoning

City of Vancouver commercial, residential and industrial zoning districts are present within 500 m of the Project. **Table 5** lists the zoning districts within 500 m of the Project, as designated under the City of Vancouver's *Zoning and Development By-law 3575*.

Table 5: City of Vancouver Zoning Districts within 500 m of the Site

Vancouver Zoning Code	Zoning Description	Location
CD-1	Comprehensive Development District Zone	› Semlin Drive, between Triumph Street and Franklin Street.
M-2	Industrial	› Mixed Industrial area south of the Canadian Pacific Railway.
RS-1	One-Family Dwelling	› Cambridge Park and Oxford Park. › Pandora Park. › Trinity Park.
RM-3A	Multiple Dwelling	› Approximately 180 m east of the Site, bound by the Canadian Pacific Railway to the north and East Hastings Street to the south.
C-2	Commercial	› Approximately 140 m southeast of the Site, at Dundas Street and Lakewood Drive.
I-2	Industrial	› Approximately 100 m south of the Site, adjacent to the south side of the Canadian Pacific Railway.
MC-1	Industrial	› Approximately 480 m south of the Site, along the south of East Hastings Street.
MC-2	Industrial	› Approximately 480 m south of the Site, along the north of East Hastings Street.

2.2.2.2.3 Industrial Areas

The municipally-zoned industrial properties within 500 m of the Site to the south are industrial in nature, located within I-2, M-2, MC-1 and MC-2 zoning districts. These industrial areas extend beyond 500 m of the Site to the south (refer to **Table 5**). Additionally, properties within VFPA jurisdiction, within 500 m of the Site, are designated as Port Terminal land use as per the VFPA Land Use Plan. This land use designation includes industrial uses in support of shipping and transportation operations.

2.2.2.2.4 Sensitive Receptors

For the purposes of this section, sensitive receptors are defined as physical areas with human use and socioeconomic value that may experience impacts as a result of the Project. The Project is located in proximity to densely populated and highly utilized areas of Vancouver. Potential impacts, such as impacts to air quality, visual quality and impact from noise, have been considered. **Table 6** below lists sensitive receptors have been identified in proximity to the Project.

Table 6: Sensitive Receptors in Proximity to the Project

Sensitive Area	Location	Notes
Residential Areas		
Multiple Dwelling (RM-3A) and One-Family Dwelling (RS-1) zoned areas	Approximately 150 m southeast of the Site, adjacent to the south side of the Canadian Pacific Railway.	Multiple Dwelling (RM-3A) zoning comprises the majority of the residential area. The residentially zoned area is located to the east of the Site.
Parks and Community Centres		
Cambridge Park and Oxford Park	Approximately 150 m southeast of the Site.	Under RS-1 Zoning. These two parks are adjoined. Cambridge Park also hosts a community garden (Wall Street Community Garden).
Pandora Park	Approximately 480 m southeast of the Site.	A larger recreational area of approximately two city blocks. Located within RS-1 Zoning. Pandora Park also hosts a community garden.
Trinity Park	Approximately 467 m northeast of the Site.	A small residential park, located adjacent to the south side of the Canadian Pacific Railway within RS-1 zoning.
Kiwassa Neighbourhood House	2425 Oxford Street, approximately 640 m east of the Site.	Community Centre.
Schools		
Xpey' Elementary School	1950 East Hastings Street, approximately 660 m south of the Site.	Located within Two-Family Residential (RT-5) Zoning.
Tillicum Annex	2450 Cambridge Street, approximately 670 m east of the Site.	Located within One-Family Dwelling (RS-1) Zoning.
Templeton Secondary School	727 Templeton Drive, approximately 1 km south of the Site.	Located within Two-Family Residential (RT-5) Zoning.
Hastings Elementary School	2625 Franklin Street, approximately 1 km southeast of the Site.	Located within One-Family Dwelling (RS-1) Zoning.

2.2.3 Project Potential Impacts

Potential impacts associated with the Project are currently being studied by SNC-Lavalin. Specific studies have been conducted to assess baseline conditions and potential impacts resulting from Project Works (please refer to **Section 2.2.4** for more information). The following subsections identify potential impacts to land, water, air and adjacent communities and business that are anticipated as a result of the Project.

2.2.3.1 Land

The Project modifies land fully within port authority jurisdiction. Impacts to land beyond the Site and adjacent industrial area are not anticipated. The following potential impacts have been identified for the Site:

- Temporary access disruptions to neighboring sites may occur during some phases of construction.
- Vegetation removal activities are expected to have impacts to the local habitat:

- Approximately 1,555 m^2 of vegetation, currently comprised of Black Cottonwood trees (*Populus balsamifera trichocarpa*), as well as native and invasive shrubbery, will be removed as part of the Project.
- Vegetation removal will remove potential nesting and foraging habitat for local bird species, as well as potential foraging habitat for bat species such as the Little Brown Myotis (*Myotis lucifugus*).
- Further details on potential Project impacts on terrestrial habitat are available in the Habitat Assessment prepared by SNC-Lavalin for this Project (Document No. 677011-0000-4ERA-0001; **Appendix III**).

Mitigations and controls to prevent impacts to wildlife and species at risk are presented in the Project Construction Environmental Plan (CEMP) (Document No. 677011-0000-4ERA-0003; **Appendix IV**).

2.2.3.2 Water

The Project is expected to have temporary effects on water quality and permanent effects on aquatic conditions within the affected portion of Vancouver Harbour. Baseline conditions on the Site including marine habitat and species at risk, as well as potential Project impacts, are discussed in the Habitat Assessment Report for the Project (**Appendix III**).

Project effects are not anticipated to occur beyond the Project Site. The following potential impacts to water have been identified for the Site:

- Approximately 3,500 m^2 of Intertidal and subtidal land will be permanently elevated to create new land, removing fish habitat.
- Approximately 1,555 m^2 of marine riparian vegetation will be removed as part of the Project, potentially affecting the quality of fish habitat within Vancouver Harbour.
- Potential water quality impacts may occur during remedial excavation, dewatering and backfilling activities.
- Potential impacts to marine mammal species in Vancouver Harbour may occur as a result of noise-generating Project activity.
- Potential death of fish from impacts to water quality, use of machinery, dewatering and other construction activities may occur.

A comprehensive CEMP has been developed for the Project in order to avoid, minimize and mitigate potential Project impacts to water. Mitigations and controls in the CEMP include measures to prevent impacts to water quality and death of fish. This information is provided in full in the Project CEMP (**Appendix IV**).

2.2.3.3 Air

Impacts to air quality are anticipated to be minor and temporary in nature and are not expected to occur beyond the immediate project vicinity. The following potential effects on air quality are anticipated:

- Temporary air quality impacts from machinery operating during Construction.
- Temporary air quality impacts occurring from the generation of fugitive dust during excavation, sediment transportation and infilling activities.

Mitigations and controls to prevent impacts to air quality from machinery and construction activities are presented in the Project CEMP prepared by SNC-Lavalin (**Appendix IV**).

2.2.3.4 Adjacent Communities and Businesses

Impacts to nearby residential communities are not expected to occur but have been considered as part of Project planning. Additionally, due to the Site being adjacent to currently operational facilities, some impacts to neighbouring businesses have the potential occur. The following potential effects on adjacent communities and businesses are anticipated:

- Temporary disruption to access to neighboring sites due to ongoing construction activity.
- Temporary increase in suspended dust and vehicular exhaust affecting properties neighbouring the Site during construction.
- Temporary increase in baseline noise affecting properties neighbouring the Site during construction.
- Temporary disruption of neighboring site activities due to air quality, noise impacts, and access disruption during construction.
- Temporary minor impacts on air quality and noise affecting nearby residential areas (approximately 150 m southeast of the Site) during construction.
- Impacts to sensitive receptors identified in **Section 2.2.2.2.4** are anticipated to be minor, with temporary impacts on air quality and noise occurring during construction activities. Impacts are anticipated to be minor due to the distance buffer between the Site and sensitive receptors and the active adjacent industrial activities (e.g., Lafarge, Marine terminals, CP Rail) ongoing near the Site.

2.2.4 Project Studies

Various environmental and socioeconomic components with potential to be affected by the Project have been evaluated by SNC-Lavalin. **Section 4** contains required studies and reports that have been prepared for this Project.

2.3 Construction

2.3.1 Project Schedule

The Project construction timeline is expected to start in Q2 2024 and conclude by Q2 2025.

The least-risk work dates applicable to the Project are presented in **Table 7** and **Table 8** below.

Table 7: Project Least-Risk Timing Windows

Least-Risk Period	Start Date	End Date
Fisheries and Oceans Canada (DFO) Least-Risk work window for Burrard Inlet[1]	August 16	February 28
Outside of the General Bird Nesting Period for Nesting Zone A1[2]	August 16	March 14
Outside of the Raptor Nesting Season[3]	September 1	January 4

[1] DFO. 2014. British Columbia Marine/Estuarine Timing Windows for the Protection of Fish and Fish Habitat - South Coast and Lower Fraser Areas.
[2] Government of Canada. 2018. Nesting Periods.
[3] BC Ministry of Environment and Climate Change Strategy. 2013. Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia.

Table 8: Gantt Chart for Least-Risk Project Construction Periods

Period	Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov	
DFO Least-risk window																								
General Bird Nesting period																								
Raptor Nesting Season																								

Unshaded areas represent least-risk periods.

Initial Site preparation and construction activities are planned start outside of least-risk periods. Ground disturbance activities (e.g., vegetation removal, wood debris removal) will not commence until a silt curtain has been installed around the work area. Vegetation/tree removal activities will not commence within the general nesting period prior to a songbird nesting survey conducted by a Qualified Environmental Professional. Additionally, if raptors are observed within 200 m of the Site, appropriate no-disturbance buffers will be established.

In-water works will be kept within the DFO least-risk work window for Burrard Inlet as much as possible. Due to the long-term nature of the Project, in-water works outside the least-risk window may occur. In-water works will not occur until a fish salvage has been completed by a Qualified Environmental Professional. If in-water works are planned outside of the DFO least-risk period, additional monitoring and mitigation measures will be implemented to prevent impacts to species during sensitive life stages, at the discretion of the Project Environmental Monitor. Vegetation clearing and noise-generating activity will be coordinated to take place outside of bird and raptor nesting seasons as much as feasible. In the event that nesting periods cannot be accommodated, additional mitigation measures will be implemented to minimize impacts. Please refer to the Project CEMP for sensitivity-period related mitigations (**Appendix IV**).

2.3.2 Project Construction Activities

A detailed assessment of design options was undertaken by SNC-Lavalin in February 2021 (Document No. 677011-1000-4PEN-0002; **Appendix V**) to determine the most feasible and lowest risk Project approach. Several options were considered for revetment prior to remediation, including:

- An anchored Combi-wall embedded into the seabed;
- A tubular piled perimeter wall embedded into the seabed;
- A rock berm on top of the seabed; and
- A rock berm on top of the seabed with a sheet pile wall embedded into the seabed.

Following geotechnical investigation, options involving pile-driving and walls embedded into the Site substrate were considered not practical due to dense till presence limiting the feasibility of pile driving. Additionally, options involving embedded infrastructure were assessed to have less sustainability value and higher risk level. As a result, the rock berm revetment option was chosen as the most feasible design option and for Site isolation.

Installation of the rock berm will require initial dredging with marine equipment in order to remove a layer of liquefiable sand from the footprint of the rock berm in order to provide stability. Dredge material is planned to be loaded to barges for disposal. Following initial dredging, rock berm material is planned to be lowered down to the seafloor from barges in order to construct the rock berm. After rock berm installation, all subsequent works are anticipated to take place from land, continuing to load excavated onto barges from land, later to be unloaded on the Site or transported directly to an approved disposal facility. Following rock berm installation, remedial excavation of substrate will take place, followed by backfilling and vibro compaction of the Site surface.

Based on information available as of the date of this report, the following Project scope is anticipated:

1) Site Preparation.
2) Rock Berm Construction.
3) Dredging.
4) Sediment Remediation.
5) Backfilling and Grading.
6) Habitat Offsetting.

2.3.2.1 Project Scope

The following scope is anticipated for the Project.

2.3.2.1.1 Site Preparation

The following tasks are anticipated for Site preparation:

- Establishment of Site access points and routes;
- Removal of trees and other vegetation on the southern portion of the Site;
- Establishment of laydown, stockpiling, equipment storage and any other areas required for Project works (refer to **Figure A**);
- Installation of erosion and sediment control measures where applicable;
- Installation of a silt curtain around the in-water work area;
- Establishment of water quality monitoring sites upstream and downstream of the work area;
- Demolition of existing infrastructure;
- Mobilization of machinery, materials and equipment onto the Site; and
- Initial dredging up to a depth of 3 m within the in-water work area to provide clearance for barges, if determined to be necessary.

2.3.2.1.2 Rock Berm Installation

The following tasks are anticipated for rock berm installation:

- Initial dredging/excavation of liquefiable sand layer from footprint of the proposed rock berm:
  - Initial dredging is to take place from barge.
- Installation of rock berm revetment:
  - Lowering of stones from barge into footprint.

2.3.2.1.3 Sediment Remediation

The following tasks are anticipated for remedial excavation:

- Excavation of substrate from the intertidal and subtidal areas of the Site, up to an average depth of 3.5 m below Site grade;
- Excavation is to take place in wetted conditions from both barge and land;
- Sampling and testing of excavated substrate;
- Management of dredge decant water; and
- Disposal of contaminated substrate.

2.3.2.1.4 Backfilling and Grading

The following tasks are anticipated for backfilling and grading:

- Placement of engineered fill on the Site:
  - Backfilling the excavation site with 41,000 m^3 of engineered fill; and
  - Placement of additional engineered fill to elevate Site grade to approximately 6 m elevation.
- Grading and compaction of the newly placed engineered fill.

Please refer to Site plans in **Appendix II** for Site Plans depicting the approximate limits of the Project.

2.3.2.1.5 Habitat Offsetting

After Project completion, habitat offsetting will be implemented for the Project. A Habitat Offsetting Plan has been prepared (Document No. 677011-0000-4EER-0002; **Appendix VI**) and will be implemented as part of permit application under the federal *Fisheries Act* and VFPA's PER process. Habitat offsetting will follow guidelines from Fisheries and Oceans Canada (DFO) and input from the port authority in order to create new fish habitat on the Site to compensate for fish habitat lost as a result of the Project, as well as riparian vegetation loss resulting from the Project.

The Project is anticipated to include on-site and off-site habitat offsetting in the form of Habitat Restoration and Enhancement. Through discussions with PER, the Project Team understands that the off-site habitat offsetting project will be submitted as a separate PER application.

The Habitat Offsetting Plan will include specific offsetting measures, their specifications, and their methodology of implementation. In addition, a comprehensive monitoring program has been developed and will be implemented in order to manage the inherent uncertainties associated with habitat restoration and

establishment. Habitat offsetting will also follow consultation with the port authority, First Nations representatives and other stakeholders. Specific details, considerations and rationale of habitat offsetting are discussed in the Habitat Offsetting Plan (**Appendix VI**).

2.4 Marine Construction & Staging Plan

The Project involves work in water, potentially from barges with support from other small construction vessels and includes the installation of a rock berm in the subtidal zone of the Site. Therefore, some navigation-related hazards may exist for the Project. The following subsections present the marine construction items have been taken into consideration for these works.

2.4.1 Navigation-related Hazards and Risk Mitigation

A detailed assessment of navigation-related risks has not been conducted. Significant navigational risks are not anticipated due to the nature of vessels to be used during the Project (standard construction barges) and the nature of the Site (near-shore and recessed inland, far from navigational routes).

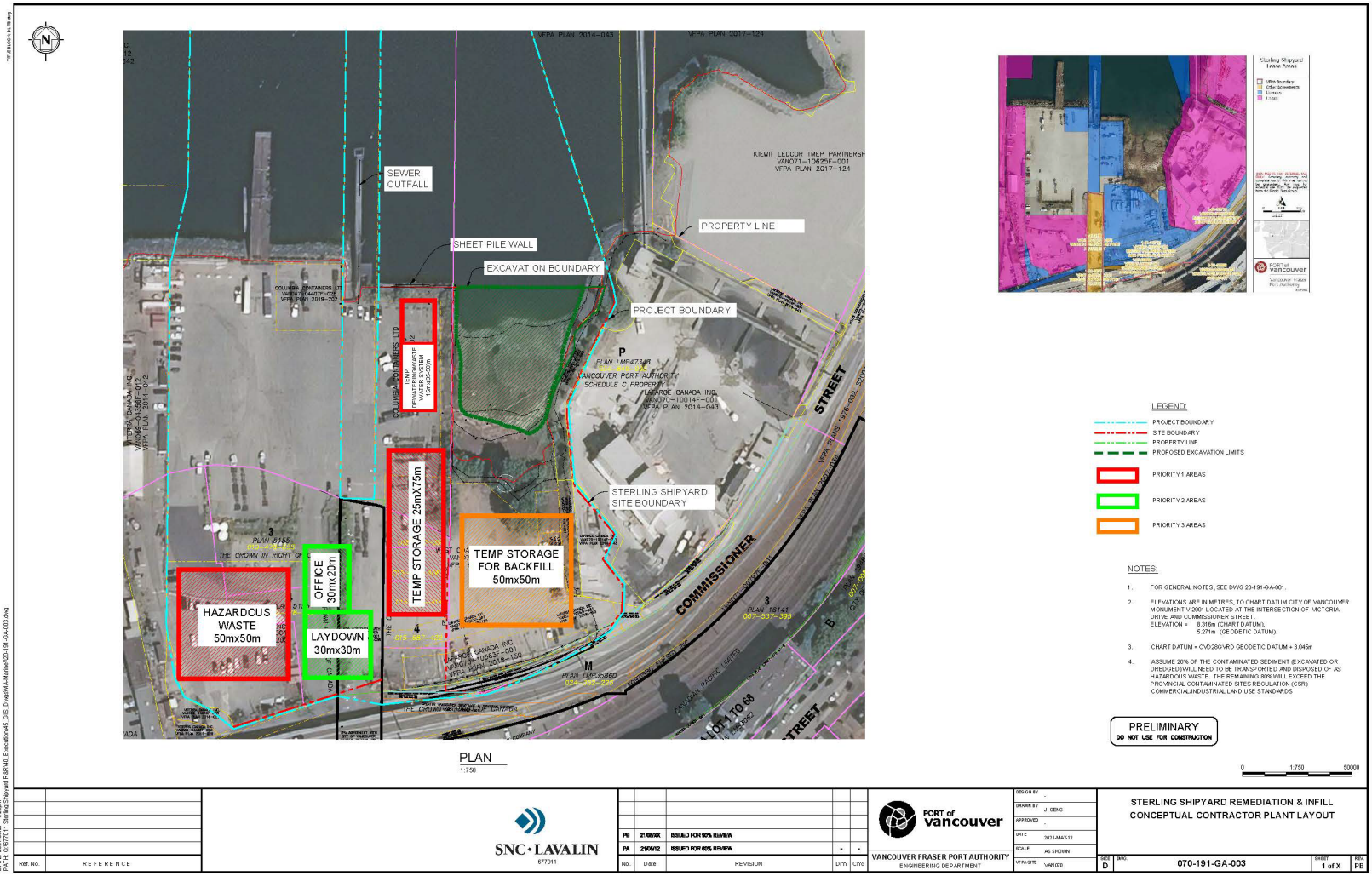
Prior to construction, the Contractor will develop their workplan in consideration of navigational hazards, including the identification of potential risks and associated mitigation measures.

2.4.2 Staging and Construction Areas

The Project is anticipated to involve work from marine equipment within the intertidal and shallow subtidal zones of the Site. It is assumed that barges loaded with dredge material would require minimum of 3 m water depth, which will require work within high-tide periods for the initial rock berm installation activities, if dredge spoil is to be loaded onto barges. Installation of the rock berm will require initial dredging from marine equipment to remove liquefiable sand from the rock berm footprint, which can be reached during reasonable tidal work windows. Following dredging, the revetment will be constructed from barge. The excavation south of the revetment may be completed from either land or barge. Equipment is anticipated to be a combination of land and barge-based equipment. Additionally, dredging to 3 m depth in order to provide access for barges for work during low-tide levels is currently being considered.

Staging, laydown, stockpiling and construction office areas are proposed to be located both within the Site and immediately to toe west of the Site, within the former Macro site and parking area, overlapping with locations leased to the parties identified in **Section 2.2.2.2.1**. **Figure A** below depicts the anticipated temporary land uses for the Project.

Figure A: Staging Plan



2.4.3 Dates and Hours of Operations

Where possible, all construction activity is anticipated to take place during standard construction hours, in adherence to the City of Vancouver's *Noise Control By-law 6555*, and the port authority's *Project & Environmental Review Guidelines – Construction Outside of Regular Work Hours* (VFPA, 2021). Work is expected to occur between 7:00 AM to 8:00 AM Monday to Saturday, with no work permitted on Sundays or holidays. It is recognized that construction activity will need to occur when the tidal conditions are appropriate. Therefore, work outside of these guidelines may be required. Construction is not anticipated to occur on Sundays or during holidays. Any deviations from the permitted construction times will be requested for approval by the port authority prior to construction.

Construction work will follow VFPA's Noise Guidelines and any requests to work outside of the designated work hours will be requested as per VFPA's *Project & Environmental Review Guidelines – Construction Outside of Regular Work Hours* (VFPA, 2021). A noise assessment screening worksheet has been completed as part of the Project PER application (**Appendix VII**).

2.4.4 Description of Activities Taking Place

Marine-based activities are anticipated to include the following:

- Dredging from barge;
- Moving operations in and out of containment enclosures and/or moving such enclosures (silt curtains or release controls);
- Dredging from land;
- Loading and transportation of dredge material via barges (if employed as a method of dredge material disposal);
- Remediation confirmation sampling and other environmental impact monitoring and inspection activities (as discussed in the Project CEMP);
- Post-dredging survey prior to rock berm construction;
- Construction of rock berm; and
- Infilling.

Please refer to **Section 2.3.2** for an overview of proposed construction activities.

2.4.5 Equipment and Vessel Sizes

Marine construction activities will take place within the Site's intertidal and subtidal zone from marine-based equipment as well as from land.

At the present time, specifications relation to vessel sizes are not known. Vessels beyond standard construction barges with capacity to operate a clamshell dredger are not anticipated to be required. The following subsections identify marine construction-related equipment is anticipated to be used during the Project.

2.4.5.1 Marine-based Equipment

The following equipment will operate within water for the following activities:

- Transportation barges (minimum of 2):
  - A minimum of one (1) barge to be loaded with dredge material throughout initial dredging and intertidal excavation; and
  - One (1) barge to be loaded with rock for the construction of the rock berm.
- Barge with mounted clamshell dredger (1):
  - For the Initial dredging of rock berm footprint and intertidal dredging/excavation.
- Barge with mounted crane (1):
  - For lowering of rocks into rock berm footprint.
- Boat (1):
  - For the installation of the silt curtain between the work area and Burrard Inlet;
  - For personnel changes;
  - For water quality sampling, monitoring/inspections; and
  - For maintenance of the silt curtain.

2.4.5.2 Land-based Equipment

The following equipment will be based on land, but will operate in water for the following activities:

- Clamshell dredger (1):
  - Land-based dredging of wetted portion of intertidal zone.
- Excavator (minimum of 1):
  - Remedial excavation within dry portions of intertidal zone;
  - Remedial excavation of wetted portions of intertidal zone; and
  - Backfilling.
- Morooka carriers;
- Vibrocompaction equipment (a downhole vibrator):
  - Crawler crane may be required.

2.4.6 Marine Communication

Prior to construction, the Contractor will develop their workplan in consideration of navigational hazards, including the identification of potential navigational risks and a communication protocol. It is anticipated the Contractor will utilize radio communication prior to vessel movements where vessels unrelated to the Project have the potential to be present.

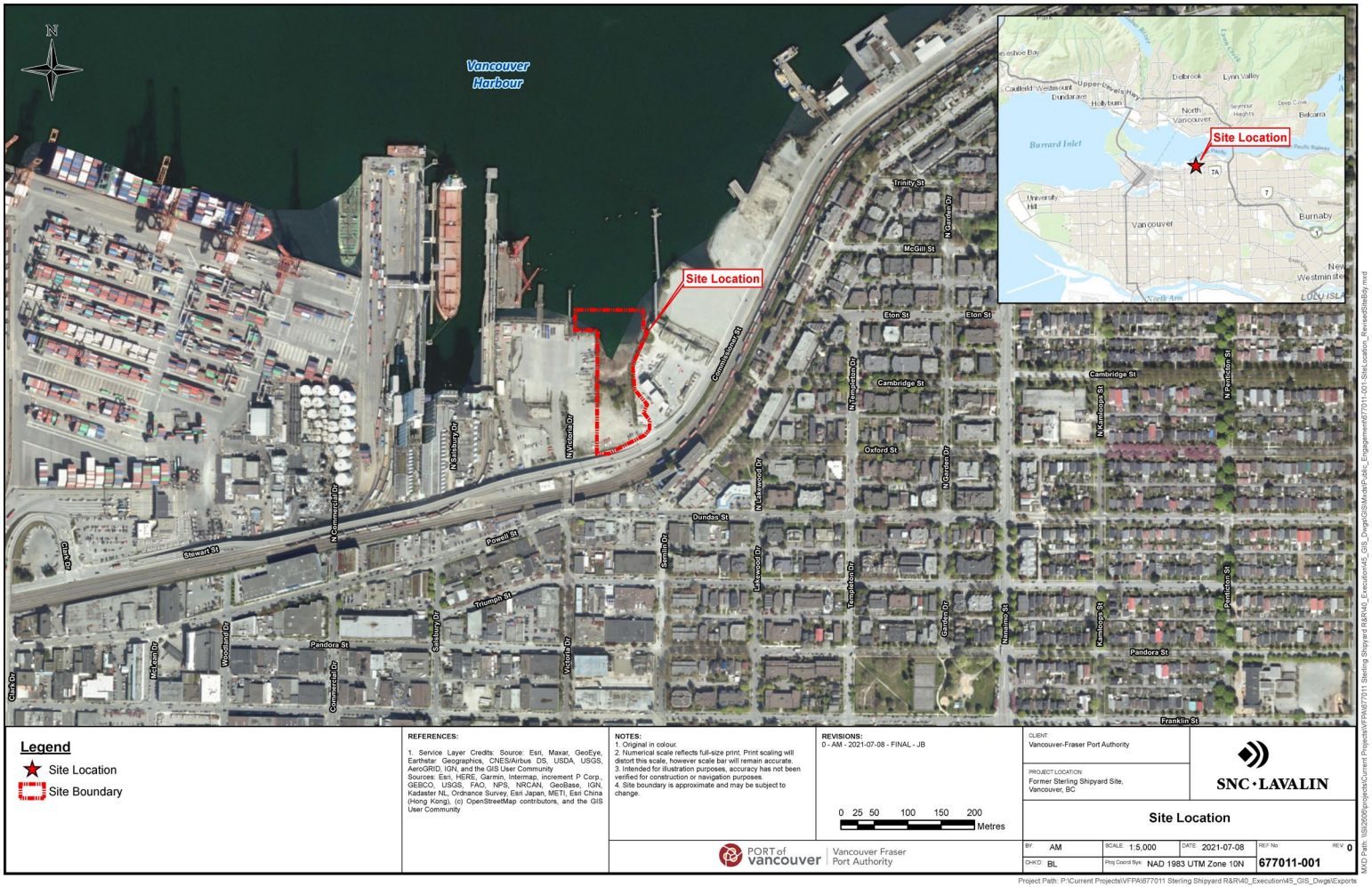
3 Drawing Requirements

This section outlines the requirements for the drawings submitted as part of this PER application.

3.1 Location Plan

Plan showing the relationship of the proposed Project to surrounding area at a 1:5000 scale. The relationship of the proposed Project to the surrounding area (Location Plan) can be found in **Figure B** below:

Figure B: Location Plan



3.2 Site Plans

The following Site Plans have been developed for this PER application:

- Site Plan.
- Marine or in-water Structures.
- Lot Grading and Utilities.

Site Plans that illustrate the location and dimensions of all existing and proposed structures and marine structures can be found in **Appendix II.**

3.3 Access

Construction of permanent roadways/driveways are not proposed for this Project. All land access/egress will take place via accessing Victoria Drive N from Commissioner Street. **Figure C** below shows the proposed access route.

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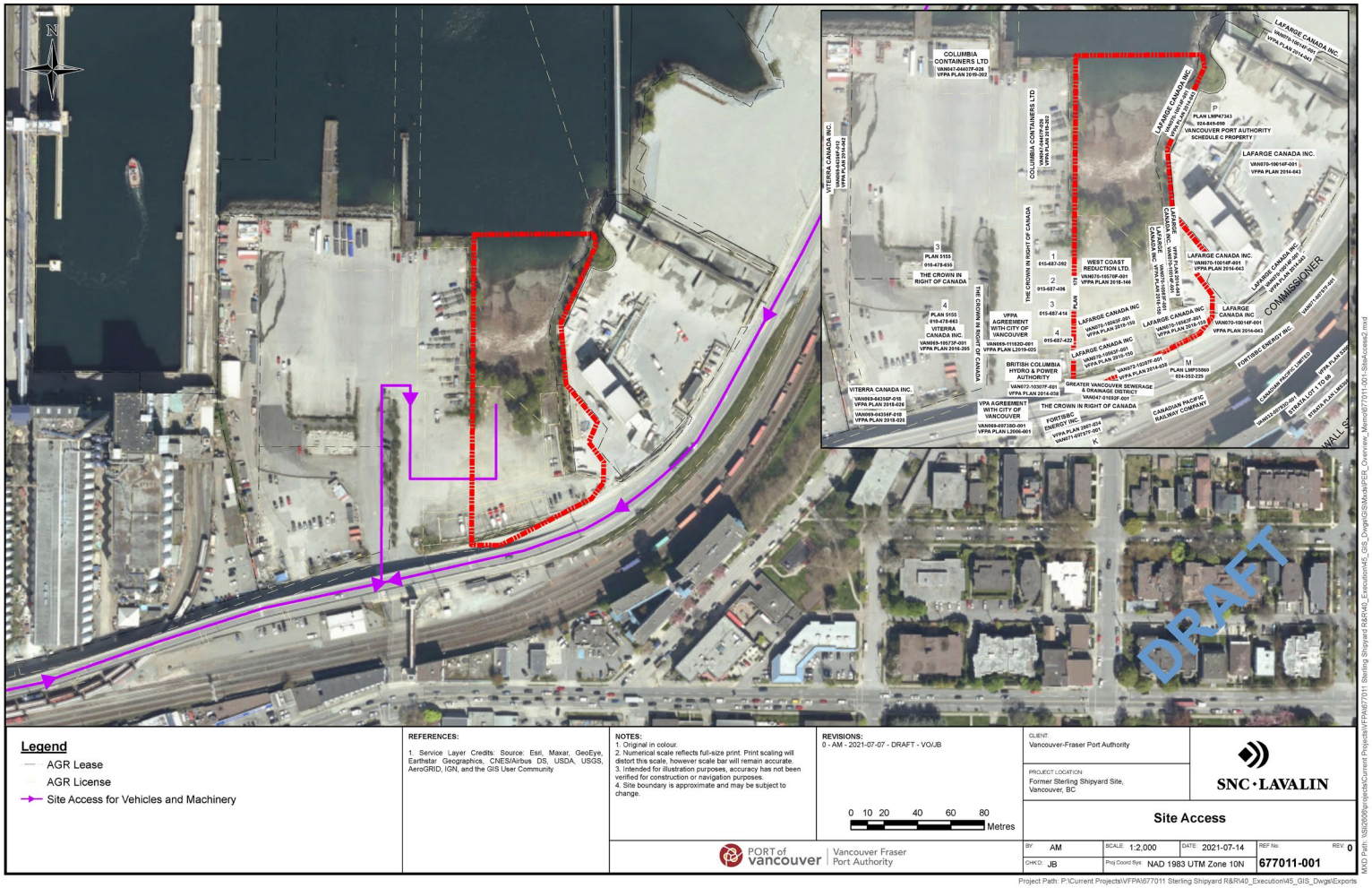
Figure C: Site Access and Egress



3.4 Vegetation Plan

The **Habitat Assessment Report** found in **Appendix III**, lists existing trees and vegetation types (including listed plant species, biodiversity/species richness, invasive species types and relative abundance). At the time of this memo, it is anticipated that tree removal will take place at the southern portion of the Site. Approximately 24 small-to-medium and large black cottonwood trees will be removed, including 13 large mature trees. Additionally, approximately 15 small (under 6 m in height with a diameter of under 7 cm) cottonwood trees are anticipated to be removed by grubbing.

Further details on vegetation management, including a mitigation plan, are provided in the Project CEMP (**Appendix IV)**. No replanting is currently being considered. The Project CEMP also contains details about monitoring and management of invasive vegetation on the Site.

4 Required Studies and Reports

A number of required studies and reports have been completed in support of this Project and the PER Application. Reference is provided in the subsections below.

4.1 Geotechnical Report

A geotechnical report has been completed the describes the site seismic and geologic hazards. The **Geotechnical Report** can be found in **Appendix VIII**.

4.2 Traffic Management Plan

The **Traffic Management Plan (TMP)** outlines the traffic control procedures and requirements for the Project. The TMP must be executed by a qualified Traffic Control Company and any field adjustments to the plan shall be made by qualified personnel. Details outlined in the TMP shall be reviewed and updated by the prime contractor (Contractor), per contract requirements once the construction contract is awarded. The TMP can be found in **Appendix IX**.

4.3 Noise Study

Noise resulting from construction, demolition or nonroutine maintenance activities are addressed through the Project CEMP. A **Noise Assessment Screening Worksheet** was completed for the Project and can be found in **Appendix VI**.

The assessment of future potential use (i.e., development of a terminal or industrial facility) was not within the scope of this assessment. Therefore, potential impacts resulting from post-construction operational noise were not considered.

4.4 Archaeological Overview Assessment (AOA)

Project activities, such as excavation, infilling, and grading have the potential to alter undocumented archaeological sites that may be located within the Project area. **An Archaeological Overview Assessment (AOA)** was conducted for the Project in order to identify areas of archaeological potential and guide potential subsequent archaeological investigations recommended for the project area. The **AOA** can be found in **Appendix X.**

4.5 Construction Environmental Management Plan

A **Construction Environmental Management Plan** has been developed for the Project in order to provide guidance, mitigations, and best practices to be followed and undertaken for the planned remedial excavation and backfilling works at the Former Sterling Shipyard. The CEMP has been prepared in accordance with Project & Environmental Review Guidelines, provincial and federal best management practices (BMPs), as well as SNC-Lavalin's knowledge of environmental mitigations and understanding of the proposed Project scope. The CEMP can be found in **Appendix IV**. Mitigations and practices around **Waste Management** and **Soil and Water Management** are included in the Project CEMP. In addition, the

Contractor will be responsible for developing detailed Environmental Protection Plans (EPP)s and Component Plans for specific activities, including **Soil/Substrate Management**, and **Dredge and Excavation Water Management** (including **Dewatering**).

Requirements of Contractor EPP and Component Plan contents to be developed and implemented by the Contractor are identified in the Project CEMP.

4.6 Habitat Assessment

A **Habitat Assessment Report** has been completed for the Project and can be found **Appendix III**. This report includes an assessment of baseline conditions, species at risk and invasive species associated with the terrestrial, intertidal and subtidal portions of the Site.

4.7 Flood Protection

The Design Water Level (DWL), which accounts for astronomical tide, storm surge and sea level rise (SLR) over the 50-year Project life, as well as the Flood Construction Level (FCL), are summarized in the **Marine Design Criteria** (677011-0000-4PEC-0001) and can be found in **Appendix XI**. The DWL does not include wave effects due to wave-structure or wave-shoreline interaction, such as wave run-up or overtopping.

5 Consultation Requirements

This section outlines and describes the consultation requirements associated with the Project. Specific areas of consultation focus are identified in the subsections below.

5.1 Indigenous Groups

5.1.1 Overview of Pre-engagement

A pre-engagement period was incorporated into the Project in an effort to support VFPA's commitment to meaningful consultation and to the advancement of reconciliation with Indigenous groups. During pre-engagement, Indigenous groups were invited to provide input and feedback during the early stages of project design. This input was then incorporated into the materials included for submission as part of the Project and Environmental Review (PER) Application.

5.1.1.1 Scope of Indigenous Engagement

The proposed project falls within the traditional territory of the following Indigenous groups:

- Leq'a:mel First Nation;
- Musqueam Indian Band;
- Seabird Island First Nation;
- Shxw'ow'hamel First Nation;
- S'ólhTéméxw Stewardship Alliance:
  - 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 First Nation;
- Vancouver Island Groups;
- Cowichan Tribes;
- Halalt First Nation;
- Lyackson First Nation;
- Penelakut Tribe;
- Stz'uminus First Nation; and
- Ts'uubaa-asatx Nation (Lake Cowichan).

Given the location of the project in the Burrard Inlet, focus of pre-engagement was with the following Indigenous groups:

- Musqueam Indian Band;
- Tsleil-Waututh Nation;
- S'ólhTéméxw Stewardship Alliance; and
- Squamish Nation.

5.1.2 Summary of Pre-Engagement Activities

Engagement with Indigenous groups regarding the proposed project began in December 2020 when Indigenous groups were sent a letter introducing the project. The port authority's archaeological consultant provided Indigenous groups with a copy of the Archaeological Overview Assessment (AOA) report for review in January 2021. Early meetings with Indigenous groups regarding the project occurred in February and March of 2021.

Due to the confidential nature of the project, including the nature and location of the contamination on site, the port authority required Indigenous groups to sign a Non-Disclosure Agreement (NDA) to receive information during the pre-engagement period. Once an NDA was executed with an Indigenous group, project-related materials were distributed for review and comment.

Project-related materials were sent to those Indigenous groups who had executed an NDA in May 2021. A 45-calendar day comment window was provided. Early draft versions of documents were provided wherever possible to provide Indigenous groups with the opportunity to provide input prior to documents being finalized for submission to PER.

Members of the project team met with Indigenous groups to discuss feedback on the project in July 2021 and formal responses were issued to Indigenous groups, where possible, in August 2021 prior to submission of the application to the PER process. Issues raised by Indigenous groups were in relation to the rationale for the project, composition of imported fill, proposed approach to habitat offsetting, impacts to fish and fish habitat, economic benefits, and archaeology and cultural heritage.

During this early engagement process, Indigenous groups provided the project team with feedback in regard to project design. One of these comments was specifically related to the size of the vegetation band at the top of the rock berm, and the request was made for the project team to increase the size of the vegetation band in the next phase of design. In response to this request, the project team is currently revisiting the project design to determine if the size of the vegetation band can be increased.

Engagement with Indigenous groups is ongoing, and the project team continues to seek opportunities to incorporate input provided by Indigenous groups during pre-engagement into the project.

5.1.3 Summary of Engagement Activities during the PER Consultation Process

Upon commencement of the PER process, the port authority PER team formally delegated the procedural aspects of consultation to the applicant in an effort to support continuity of ongoing discussions between Indigenous groups. The following is a summary of consultation during the PER process, and has been included here, as the Project Team continued to discuss the Habitat Offsetting Plan and other details with respect to the FAA application during the PER Indigenous consultation process.

The project team sent Indigenous groups a referral package on September 28, 2021, and requested to receive comments by November 12, 2021. This referral package included the following documents, which were submitted as part of the application to PER:

- Project and Environmental Review Overview Memo;
- Application Form;
- Site Plans (60% Drawings);
- Geotechnical Report (60% Geotechnical);
- Habitat Assessment;
- Construction Environmental Management Plan (CEMP);
- Habitat Offsetting Plan – Included within the Fisheries Act Authorization application;
- Noise Assessment Screening Worksheet;
- Traffic Management Plan;
- Archaeology Overview Assessment (AOA)
- Marine Design Criteria; and
- Geotechnical Instrumentation and Monitoring Plan.

The project team also shared updated versions of the Project documents partway through the PER process, as the Project design advanced. The following documents were provided to Indigenous groups at the end of November 2021, at the 90% design stage:

- 90% engineered drawings;
- 90% geotechnical report (redlined version);
- 90% marine design criteria (redlined version);
- 90% Environmental Remediation Design Report; and
- Stormwater Management Design Criteria for the rough grade design.

In early December 2021, the project team also provided Indigenous groups with updated, redlined versions of the FAA application to help support early engagement with Indigenous groups, in advance of consultation by Fisheries and Oceans Canada (DFO). The FAA application was updated to incorporate changes based on early feedback from Indigenous groups, including an increase in the size of the riparian vegetation planting zone, and the addition of an ECOncrete pilot project.

The project team provided Indigenous groups with the following documentation for review in advance of DFO consultation on the file to support Indigenous groups with their review of the file, once the referral was sent by DFO:

- *Fisheries Act* Authorization application report – including Habitat Offsetting Plan (redlined version); and
- Planting plan for the proposed vegetation band.

Through the PER consultation phase, the project team responded to several rounds of comments from Indigenous groups and held meetings with Indigenous groups to discuss key issues, as requested. Key issues raised during PER consultation included comments pertaining to the design of habitat offsetting for the Project, proposed approaches to environmental monitoring, potential impacts on water quality due to sedimentation and runoff, potential impacts to air quality, potential impacts of noise, and management of invasive species.

On March 7, 2022, the Project Team submitted a final report to PER outlining the consultation activities performed during the PER review period. On March 8, 2022, the Project Team received confirmation from PER that the report was accepted and the procedural aspects of consultation during the PER process had been completed.

5.1.4 Summary of Supplementary Engagement on the Habitat Offsetting Proposal

In April 2022, DFO notified the Project Team that the habitat offsetting proposed in the FAA application was insufficient. The Project Team was directed to find options to add to the habitat offsetting proposal, and to conduct additional Indigenous engagement for proposed revisions to the FAA application.

The Project Team re-initiated engagement with Indigenous groups in May 2022. Engagement activities included:

- A site visit to the Project site for interested Indigenous groups;
- A series of workshops and meetings;
- Document review; and
- Response and comment tables.

The objective of this supplementary engagement was to involve Indigenous groups in shortlisting potential habitat projects for further feasibility study, and to identify additions to the habitat offsetting proposal that would be deemed satisfactory by Indigenous groups.

In October 2022, the Project Team presented Indigenous groups with proposed revisions to the FAA application, including a preliminary draft of revised habitat balance calculations. These proposed changes were accepted by Indigenous groups, and the Project Team was directed to move forward in resubmitting the FAA application to DFO with these changes incorporated.

In March 2023, DFO notified the Project Team that the plan for supplemental habitat offsetting was sufficient and that it would commence its 90-day review of the application.

On April 25, 2023, DFO informed the Project Team that an Indigenous group had shared new monitoring data from a combined sewer outfall (CSO) located near the project site that had been obtained from the City of Vancouver. DFO informed the Project Team it would be putting its review of the port authority's FAA application on hold until more information had been provided that considered the implications of the CSO on the proposed habitat offsetting.

On June 8, 2023, the port authority met with DFO, PER, and Indigenous group representatives to present the contents of a draft memo of its assessment of the impact of the CSO on proposed project offsetting plans. The Project Team affirmed that it remains confident in the proposed habitat offsetting design and monitoring program, and outlined contingency measures should the habitat not be functioning as intended.

On July 19, 2023, the Project Team sent the finalized memo to DFO and interested Indigenous groups.

On July 27, 2023, DFO informed the Project Team that it was satisfied with the memo and that it would recommence its review of the FAA application.

5.1.5 Engagement Activities by Indigenous Group

Engagement activities undertaken with each Indigenous group is outlined in further detail in **Appendix XII**.

5.2 Public Engagement

The proposed Project Site is completely located within the jurisdiction of the port authority. SNC-Lavalin recognizes the longstanding and respectful relationship established between the port authority and the communities adjacent to port lands, represented locally by the East Vancouver Port Lands and Liaison Committee (EVPL) and South Shore Community Liaison Committee.

Engagement with the local community is being undertaken as part of the Project. A copy of the Public Engagement Plan can be found in **Appendix XIII**. Draft notification materials for public notification (Draft notification postcard, draft print advertisement and draft web content material) can be found in **Appendix XIV**.

6 Other Requirements/Considerations

6.1 Infrastructure Considerations and Mitigation plan

A Geotechnical Instrumentation and Monitoring Plan (GIMP) has been developed for this Project. The purpose of the GIMP is to identify existing adjacent structures and evaluate anticipated impacts resulting from vibration and ground subsidence due to the proposed work. The GIMP specifies monitoring thresholds, monitoring frequencies, development of a response action plan, and reporting requirements. The Project GIMP can be found in **Appendix XV**.

6.2 Utility Management

Verification, isolation, or protection of utility services in and adjacent to the Project area will be required prior to commencing any clearing, excavation or heavy equipment operation activities. If there are underground utilities to be concerned of, the utilities will be exposed in advance by hand digging or using a vacuum truck for further safe and secure management. All necessary permitting or approval will be obtained per applicable regulations from respective authorities.

6.3 Access to the Site

It is anticipated that access to the Site to and from Commissioner Street for remediation and construction works and for long-term development will continue to take place according to the current entrance/exit to the site. No additional changes to access are anticipated. Details on traffic management can be found in the Project TMP, located in **Appendix IX**.

Appendix I

PER Application Form

Appendix II

Revised Site Plans (November 2022)

Appendix III

Habitat Assessment

Appendix IV

Construction Environmental Management Plan (CEMP)

Appendix V

Revetment Options Memorandum

Appendix VI

Revised Habitat Offsetting Plan (November 2022)

Appendix VII

Noise Assessment Screening Worksheet

Appendix VIII

Geotechnical Report

Appendix IX

Traffic Management Plan

Appendix X

Archaeology Overview Assessment (AOA)

Appendix XI

Marine Design Criteria

Appendix XII

Engagement Activities by Indigenous Group (November 2022)

Appendix XIII

Public Consultation and Stakeholder Engagement Plan

Appendix XIV

Public Consultation – Draft Materials

Appendix XV

Geotechnical Instrumentation and Monitoring Plan

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