Construction Permit Application – Overview of Potential Project Effects Vancouver Harbour Response Base 2800 Commissioner Street, Vancouver, BC

Prepared for:
Western Canada Marine Response Corporation
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Prepared by:
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HEMMERA

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Western Canada Marine Response Corporation
201 Kensington Avenue
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Attn: Jody Addah, Project Manager

Dear Jody,

Re: Construction Permit Application – Overview of Potential Project Effects, 2800 Commissioner Street (Vancouver Harbour) Response Base

Hemmera Envirochem Inc. is pleased to provide you with this final report for the 2800 Commissioner Street Project and Environmental Review (PER) Application for a spill response base.

We have appreciated the opportunity to work with you on this project and trust that this report meets your requirements. Please feel free to contact the undersigned by phone or email regarding any questions or further information that you may require.

Regards,
Hemmera Envirochem Inc.

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Cc: Matt Mylemans, WCMRC

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1.0 INTRODUCTION

Hemmera has been retained by Western Canada Marine Response Corporation (WCMRC) to prepare a Construction Environmental Management Plan (the "CEMP") for the property located on 2800 Commissioner Street in Vancouver, BC (the "Site"). The Vancouver Harbour Response Base (the "Project") is a proposed new spill response facility to be constructed and operated by WCMRC. The site is federal land owned by the Vancouver Fraser Port Authority (VFPA). Hemmera understands that the new facility will serve as a hub location for Vancouver Harbour spill response. Key features of the proposed facility include two modular office buildings, parking for 20 vehicles, floats to accommodate vessels, gangway access to floats, and ramp access (Moffatt & Nichol, 2016).

The intent of this memo is to provide an overview of Project construction activities and description of potential effects to land, water, air and adjacent community and businesses as a result of Project construction.

1.1 PROXIMITY TO SENSITIVE FEATURES

1.1.1 Aquatic Environment Sensitive Features

The Site is relatively flat and groundwater is typically encountered at depths from 1.3 m to 2.7 m below ground surface, depending on tidal fluctuations, seasonal flows, and precipitation (exp 2015). Historical groundwater and soil contamination is present beneath the Site. Based on a previous investigation (SNC Lavalin 2011; exp 2015), the subsurface contamination poses a low risk to human health and the environment based on current Site conditions if managed appropriately during construction.

Watercourses identified in the vicinity of the Project are Burrard Inlet and several ditches of varying habitat quality for fish. Fisheries values for the site are described in the **Aquatic Effects Assessment – Vancouver Harbour Response Base.**

The Project site is located on Burrard Inlet, approximately 350 m west of New Brighton Park. The site is at about 7 m asl near Commissioner Street and gently slopes to 4 m asl at the top of the shore protection adjacent to Burrard Inlet. Stormwater infrastructure already present on the site includes underground pipes, catch basins, and manholes.

1.1.2 Terrestrial Environment Sensitive Features

The Project site is located in the Coastal Western Hemlock Eastern Very Dry Maritime (CWHxm1) biogeoclimatic variant subzone. Climate in the CWHxm1 is characterized by warm, dry summers and moist, mild winters with relatively little snowfall (Pojar, Klinka and Demarchi 1991). Vegetation at the site has been highly altered. The existing patches of vegetation are predominantly located along the edges of the property, with several young (less than 30 years) cottonwood on the north side of the site and the remainder primarily invasive plant species such as Himalayan blackberry (*Rubus armeniacus)*.

Streambank lupine (*Lupinus rivularis*) is federally listed under the *Species at Risk Act* (SARA) (**Table 1**). No critical habitat for streambank lupine was identified as occurring on the Project site (EC 2016).

The nearest sensitive wildlife to the site are breeding birds, including birds of prey (raptors), and songbirds and waterbirds. Waterbirds such as gulls, terns, ducks, grebes, herons, and cormorants may use shoreline areas within this section of the Burrard Inlet. No known occurrences of vertebrate or invertebrate species at risk are found within 1 km of Project site. Other than for clearing, it is unlikely that construction activities will adversely affect waterbirds and therefore, these interactions are not considered further in this report. Additional detail is available in the **Terrestrial Biophysical Survey Report – Vancouver Harbour Response Base.**

1.1.3 Sensitive Community Features

The nearest sensitive community features are residences on the 2800 block of Wall Street in Vancouver which are located approximately 100 m from the Project site. These residences are located south of Commissioner Street and south of the CN railway. New Brighton Park, a municipal facility with a network of trails, beach area and used primarily for passive recreation, is located about 350 m to the east of the site.

1.2 Overview of Potential Construction Activities and Potential Effects to land, water, air, and adjacent community and businesses

Construction of the response base will include both upland and marine components. The duration of construction is anticipated to be eight to ten months, assuming workdays are 7 am to 5 pm Monday to Friday. Abutment beam demolition work (jack hammer) may have extended hours due to the need to work at low tides. However, this activity can be done independently of most other construction and may be scheduled to avoid night work.

Construction includes the following components:

Construction of the Project will include the following activities (Moffatt & Nichol, 2016):

- Asphalt re-surfacing of existing concrete wharf (approximate footprint area of 1,980 m^2);
- Repairs of concrete abutment beam;
- Installation of:
  - Timber bull rails around the perimeter of the existing wharf;
  - Two modular steel clad office buildings (60 ft x 14 ft) (18 m x 4 m);
  - Aluminum gangway and piled steel support platform (2.4m x 24m);
  - Concrete landing float (3.0m x 116m);
  - Steel-piled dolphins to moor and berth barges;

- Sewage pump on float;
- In-ground sewage lift station;
- Water supply to buildings and floats;
- Lock block retaining wall along existing wharf to retain fill for parking area and provide ramp access to the existing wharf;
- New riprap shore protection along the foreshore;
- New pavement and storm water drainage for the parking area, and;
- Electrical utilities for the floats and modular buildings, and lighting for the upland area, wharf and float.
- Coordination with utility providers (e.g., for installation of BC Hydro substation)

Equipment anticipated to be used during construction will include:

- Barge and barge-mounted pile drilling rig
- Vessels for transport of pre-constructed floats
- Support vessels
- Backhoes
- Small crane
- Front end loaders
- Tandem dumptrucks and pups
- Paving equipment
- Smaller equipment including jack hammers, welders, acetylene, electric rod welders, metals saws, generator sets, small air compressor, and various tools.

This Project will be for the redevelopment of the Site as a spill response base by the Client. This section summarizes how construction activities interact with the biophysical and socio-economic environment. Key areas of study were selected based on ecological importance and value to the existing environment, the relative sensitivity of environmental components to Project-related influences, and their social, cultural, or economic importance. Key areas of study for this Project were chosen using the interactions identified in **Table 1**.

Where a potential Project interaction has been identified in **Table 1**, a discussion of Project-related effects and proposed mitigation is provided in **Section 2.1** for each key area of study. Given the anticipated daytime scheduling of construction activities, interactions between Project activities and lighting required for construction are not anticipated and, therefore, are not considered further.

Table 1 Potential Interactions between Project Construction Activities and the Environment

Pathway of Effect (DFO 2014)	Project-related Activity	Duration
Land-based activities		
Grading	Re-grading and re-surfacing of the existing concrete deck for drainage and safety; installation or upgrade of utilities; management of groundwater; other earthworks, as required.	4-6 weeks
Use of industrial equipment	Operation of mechanical equipment for the purpose of construction on land, including fueling, lubricating and emissions.	8-10 months
Vegetation clearing	Vegetation (primarily invasive species) removal for upland Project components	1 week
Placement of material or structures	New riprap shore protection along the foreshore; lock block ramp; installation of pre-fabricated buildings and connecting utilities	1-2 months
Waste management	Management of asphalt, wastewater disposal, construction waste (such as strippings and other construction waste), clean and contaminated soil and groundwater	8-10 months
In-water activities		
Addition or removal of aquatic vegetation	New riprap shore protection along the foreshore; installation of lock block retaining wall (to be installed along existing wharf to retain fill for parking area and provide a ramp access to existing wharf); repairs to seaward face of abutment beam.	2-3 months
Placement of material or structures in water	Barge-based pile removal and vibration and drilled pile installation for floating docks and dolphins; installation of lock block retaining wall for wharf ramp; installation of floats	1 month
Use of industrial equipment	The use of barge-based marine mechanical equipment for the purpose of construction, including fueling, lubricating and emissions.	3-4 months

2.0 CONSTRUCTION

2.1 OVERVIEW OF POTENTIAL ENVIRONMENTAL AND COMMUNITY EFFECTS

This section provides an overview of the potential environmental and community effects on sensitive receivers as a result of construction activities. Sensitive receivers are humans and other organisms that may have a significantly increased sensitivity or exposure to Project effects by virtue of their age and health, status, proximity to the contamination, dwelling construction, or the facilities they use. Sensitive receivers will vary based on the type of project effect. For example, Port Metro Vancouver recommends that habitat assessments are carried out to determine whether significant biological resources would be affected by a project (PMV 2015).

Based on the potential for Project interactions identified in **Table 1**, the following key areas of study are described below:

- Aquatic biophysical environment
- Terrestrial biophysical environment
- Hazardous and contaminated materials
- Archaeological resources
- Air quality
- Noise
- Traffic

For each key area of study, a description of the Project interaction and potential Project-related effects are provided below. Where required, mitigation measures are proposed in **Section 2.1.7**.

2.1.1 Aquatic Biophysical Environment

Description of Interaction: Burrard Inlet is the nearest fish-bearing waterbody and is located within the Project construction footprint. Potential interactions between the Project and the aquatic biophysical environment will occur during project construction activities including marine pile drilling, installation of floats, ramp and riprap and during upland grading and excavation will interact with the aquatic biophysical environment primarily during site preparation.

Potential Effects: Potential effects to the aquatic biophysical environment from construction activities include underwater noise due to pile drilling and other marine work, accidental introduction of deleterious substances during marine work, and the potential for the release of sediment and other deleterious material from upland works including site preparation, grading and paving.

2.1.2 Terrestrial Biophysical Environment

Description of Interaction: Project activities will interact with the terrestrial biophysical environment during site mobilization and the start of construction activities on site (i.e., disconnecting all services) as these are the first activities to occur on site. The nearest wildlife sensitive receivers would be nesting birds. As determined during Hemmera's site visit in July 2016, suitable habitat on Site is very limited.

No critical habitat for species at risk is known to be present at the Site.

Potential Effects: Potential effects to the terrestrial biophysical environment from Project construction activities include:

- Potential disturbance to nesting migratory songbirds in vegetation to be removed during site preparation, if clearing is done during the nesting window (March 15 to August 15).

2.1.3 Contaminated and Hazardous Materials

Description of Interaction: Contaminated soil and groundwater and hazardous materials (e.g., diesel, gasoline, propane, various lubricants, stored chemicals) are anticipated to be encountered/used during construction. These materials will require proper handling and management during Project construction.

Potential Effects: Potential effects due to improper on-Site storage and/or off-Site transport and disposal of contaminated soil and groundwater during construction activities include:

- Creating new contaminated sites.
- Adversely affecting surface water quality, ground water quality, air quality, fish and other aquatic biota, wildlife and habitat, and the public and workers due to the specific properties of each contaminant (e.g., corrosivity, toxicity, reactivity, and/or flammability).
- Creating fugitive dust, which may expose workers and the public to particulate matter, possibly containing lead.
- Contaminated groundwater management during excavation for ramp.

Potential Effects: Potential effects due to poor management (i.e., spills) of hazardous materials include:

- Creating new contaminated sites.
- Adversely affecting surface water quality, soil and ground water quality, air quality, fish and other aquatic biota, wildlife and habitat, and the public and workers due to the specific properties of each contaminant (e.g., corrosivity, toxicity, reactivity, and/or flammability).

2.1.4 Archaeological Resources

Description of Interaction: Earthworks activities have the potential for chance encounters with archaeological resources. A search of The RAAD search included archeological sites, legacy archeological sites, historic places and legacy historic places. Based on a search of the RAAD database, no archeological sites or areas of mapped archaeological potential were located within approximately 700 m of the Site in all directions. Further, given the fill history of the site, such encounters are most likely to be archaeological resources out of stratigraphic context.

Potential Effects: Potential effects to archaeological or historic resources due to earthworks planned for utility installation and installation of a new wharf ramp include:

- Chance finds of isolated archaeological or historic artifacts.

2.1.5 Air Quality

Description of Interaction: All Project construction activities have the potential for short-term localized interactions with air quality due to equipment emissions and dust generation.

Potential Effects: Potential effects to air quality from construction activities include:

- Light and heavy equipment emissions (e.g., particulate matter, volatile organic compounds, carbon monoxide, nitrogen oxides, and sulphur dioxide) may affect air quality in the vicinity of the site.
- Fugitive dust emissions from site preparation and earthworks may affect air quality in the vicinity of the site.

2.1.6 Noise

Description of Interaction: All Project construction activities occur on site could generate noise through use of equipment. The noisiest activities that are likely to occur include use of jack hammers, use of piling equipment and tugs.

Potential Effects: Potential noise effects due to Project construction activities include:

- Use of light and heavy equipment may affect noise levels for local residents and park users in the vicinity of the site.

Since construction work will be completed only during daytime hours, adverse Project noise effects (e.g., nighttime sleep disruption) are not anticipated.

2.1.7 Traffic

Description of Interaction: Construction-related traffic (e.g., deliveries of heavy equipment and material to site as well as construction worker vehicles) will enter and exit the site via Commissioner Street. In addition, several wide loads will be required for delivery of modular building components to the Site.

Potential Effects: Potential effects to traffic from Project construction activities include:

- Slight increase in local traffic during site mobilization, demobilization, and delivery of heavy equipment and wide loads to the Project site.

2.2 PROPOSED MITIGATION FOR POTENTIAL CONSTRUCTION EFFECTS

Specific measures proposed to mitigate Project-related effects identified in **Section 2.1** are provided in the Construction Environmental Management Plan (CEMP). The key CEMP sections that related to key areas of study and effects identified are provided in **Table 2**.

Table 2 Project-related Construction Activities and Proposed Mitigation

Key Area of Study	CEMP Section
Terrestrial Biophysical Environment	• 5.7 Vegetation and Wildlife Management • 6.12 Sensitive Habitat Features and Species
Aquatic Biophysical Environment	• 6.8.2 Aquatic Resources • 6.6 Erosion and Sediment Control • 6.9 Concrete Works and Grouting • 6.10 Marine Works • 6.12 Sensitive Habitat Features and Species
Hazardous and Contaminated Materials	• 6.7 Contaminated Soil and Groundwater • 7.3 Spill Response Plan • 8.0 Fuel Management Plan • 9.0 Waste Management
Air Quality	• 6.4 Air Quality and Noise Control • 6.5 Machinery and Equipment
Noise	• 6.3 Site Access and Mobilization • 6.4 Air Quality and Noise Control
Traffic	• 6.3 Site Access and Mobilization

3.0 CLOSURE

This Report has been prepared in accordance with Professional Services Agreement between Hemmera Envirochem Inc. (Hemmera) and Western Canada Marine Response Corporation (WCMRC or "Client"), dated March 21st, 2016 (Contract). This Report has been prepared by Hemmera, based on information reviewed and fieldwork conducted by Hemmera, for sole benefit and use by WCMRC and Vancouver Fraser Port Authority. In performing this work, Hemmera has relied in good faith on information provided by others, and has assumed that the information provided by those individuals is both complete and accurate. This Report has been prepared in accordance with current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the Report was produced. The conclusions and recommendations contained in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

We have appreciated the opportunity of working with you on this project and trust that this report is satisfactory to your requirements. Please feel free to contact the undersigned regarding any questions or further information that you may require.

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