



PORT METRO
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HABITAT ENHANCEMENT PROGRAM: NEW BRIGHTON PARK SHORELINE HABITAT RESTORATION PROJECT

Project Description

Submitted to:

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List of Acronyms

| | |
|-----------|---|
| AIA | Archaeological Impact Assessment |
| AOA | Archaeological Overview Assessment |
| CEMP | Construction Environmental Management Plan |
| COV | City of Vancouver |
| CPR | Canadian Pacific Railway |
| DFO | Fisheries and Oceans Canada |
| P1/P2 ESA | Phase 1 and Phase 2 Environmental Site Assessment |
| EVPL | East Vancouver Port Lands |
| GSA | Geographic Service Area |
| M&N | Moffatt & Nichol |
| PCMP | Post-Construction Monitoring Plan |
| PMV | Port Metro Vancouver |
| PER | PMV Project and Environmental Review |
| PSI | Preliminary Site Investigation |
| QEP | Qualified Environmental Professional |
| SSA | Supplemental Site Assessment |
| TMP | Traffic Management Plan |
| VEC | Valued Ecosystem Component |
| VBPR | Vancouver Board of Parks and Recreation |
| VSC | Valued Social Component |

List of Abbreviations

| | |
|---------------|---|
| Hemmera | Hemmera Envirochem Inc. |
| Inlailawatash | Inlailawatash Natural and Cultural Resources |
| Stantec | Stantec Consulting Ltd. |
| The Project | New Brighton Park Shoreline Habitat Restoration Project |
| The Site | New Brighton Park Shoreline Habitat Restoration Site |

1.0 INTRODUCTION

The Habitat Enhancement Program is a Port Metro Vancouver (PMV) initiative focused on creating and enhancing fish and wildlife habitat. The program is a proactive measure intended to provide a balance between a healthy environment and future development projects that may be required for port operations.

The proposed New Brighton Park Shoreline Habitat Restoration Project (the Project), located on the south side of Burrard Inlet in the City of Vancouver (COV), British Columbia, is being advanced as a potential project under PMV's Habitat Enhancement Program. The Project is being developed in partnership with the Vancouver Board of Parks and Recreation (VBPR) to explore the restoration of habitat on the eastern end of New Brighton Park (the Site). Project planning is being undertaken in accordance with the 2012 working agreement between PMV and Fisheries and Oceans Canada (DFO) entitled "Working Agreement Concerning Procedures for Development and Operation of the Port Metro Vancouver Habitat Bank". This agreement acknowledges the mutual benefits of a habitat bank to both parties, while also providing guidelines for the establishment of habitat enhancement sites. Habitat enhancement sites under this program are developed in agreement between both parties. DFO has confirmed that the Project would conform with the Fisheries Productivity Investment Policy as a habitat development and/or restoration project that may be deposited into PMV's Habitat Bank (see **Section 13.0** below for more information).

The Project is currently in the preliminary design stage. It is anticipated that the Project will include the creation of a tidal wetland area with a salt marsh component, enhancement of riparian habitat and a possible streamside connection to Renfrew Creek at the southern end of the park. Park features to maintain access to the shoreline and improve environmental education opportunities are also anticipated to be a part of the final design. The Project could result in the creation of approximately 2.0 ha of enhanced habitat features for the benefit of fish and wildlife. A preliminary design is presented in the Level 2 (30%) design drawing and landscape overlay included in **Attachment 1**. The design will be refined during the detailed design phase of the Project targeted for spring 2016.

This Project was originally submitted under PMV's Project and Environmental Review (PER) process for review in July 2015. However, as the PER process was updated in summer 2015, the July application was considered a preliminary submission. PMV PER has completed its preliminary project review in fall 2015 and issued a checklist to PMV's Habitat Enhancement Program outlining application submission requirements to fulfill a complete application. As a result of the preliminary review process, the Project was classified as a Category C project.

This updated Project Description has been prepared as an attachment to a completed "Project Permit Application Form for Category C & D Reviews" which is being submitted to PMV's Planning and Development Department to facilitate a project review process. A table of key Project milestones relating to the Project has been included in **Attachment 2**. Additional Project information to address deliverables as outlined in the checklist are included as

attachments to this report. Further details, and Project updates to supplement this application will be provided as the design, consultation and engagement processes advance in 2016.

2.0 PROPONENT INFORMATION

PMV and VBPR are working together to explore and advance this proposed habitat restoration Project. PMV's team, including Hemmera Envirochem Inc. (Hemmera) and Moffatt & Nichol (M&N), comprises environmental, engineering, engagement, and consultation specialists who are working to manage and undertake activities associated with the identification, design, permitting, construction, and monitoring of the Project. Key contacts for the Project have been provided in **Table 1**.

Table 1 Key Contacts For the Project:

| Name | Position | Company | Contact Information |
|-------------------|--|---------|--|
| Charlotte Olson | Project Manager, Habitat Enhancement Program | PMV | Phone: 604-665-9526 Email: Charlotte.Olson@portmetrovancover.com |
| Jemma Scoble | Aboriginal Consultation and Engagement Advisor | PMV | Phone: 604-665-9562 Email: Jemma.Scoble@portmetrovancover.com |
| Carolyn Parenteau | Project Communications Advisor | PMV | Phone: 604-665-9071 Email: Carolyn.Parenteau@portmetrovancover.com |
| Jim Roberts | Permitting Manager | Hemmera | Address: 18 th Floor, 4730 Kingsway, Burnaby, BC, V5H 0C6 Phone: 604-669-0424 (Ext. 229) Email: jroberts@hemmera.com |
| Mike Tranmer | Design Lead | M&N | Address: 301-777 West Broadway, Vancouver, BC, V5Z 4J7 Phone: 604-707-9004 Email: mtranmer@moffattnichol.com |
| Nick Page | Biologist | VBPR | Address: 2099 Beach Avenue, Vancouver, BC, V6G 1Z4 Phone: 604-257-8458 Email: Nick.Page@vancouver.ca |

3.0 RATIONALE

The Site is located along Burrard Inlet in the “Fraser Estuary, Boundary Bay, Burrard Inlet, Fraser and North Arms” Geographic Service Area (GSA). Burrard Inlet is an important migratory and rearing area for fish, including ecologically and economically important salmonids. Estuarine habitats in Burrard Inlet are important high quality habitat for wildlife, in particular juvenile marine fish species and migrating birds. Designated as an internationally recognized Important Bird Area, Burrard Inlet and its surrounding shoreline are located in a major migratory bird corridor, providing essential habitat for significant concentrations of birds including waterbirds and birds of prey (Haggarty 2001, Hemmera 2015).

Within Burrard Inlet, the Site is located along the Inner Harbour (i.e. between First and Second Narrows), which is a heavily industrialized area with limited amounts of unaltered fish and wildlife habitats. It has been estimated that approximately 80% of the Inner Harbour shoreline has been altered due to human development (Haggarty 2001, Stantec 2009). In a baseline assessment of shoreline change in the Burrard Inlet, undertaken on behalf of the Burrard Inlet Environmental Action Program, tidal flats and estuarine habitats were determined to be largely absent in the Inner Harbour (Stantec 2009).

The proposed Site is one of a number of locations in this GSA that PMV has identified where existing habitat can be enhanced to increase productivity or where degraded areas can be restored to benefit fish and wildlife species. To address the loss of valuable habitat in the Inner Harbour, the Project will be designed to restore and provide high quality habitat for species including juvenile salmon and other fish, resident and migrating birds, invertebrates and other wildlife that use Burrard Inlet. Final site selection for the Project was based on various factors, including: need; habitat productivity; site location; feasibility and cost; sustainable habitat creation; ownership and tenure; and consideration towards Aboriginal groups and communities. The design team for the Project includes appropriately qualified engineers, coastal geomorphologists and Qualified Environmental Professionals (QEPs).

3.1 HABITAT BANKING

The Site has been identified for inclusion in the PMV Habitat Bank. Creation of this habitat in advance of anticipated impacts from future development projects can provide a significant benefit to fish and wildlife, primarily by reducing or eliminating the temporal impacts that are typically associated with habitat offsetting. Successful achievement of biological objectives at a habitat enhancement site can also be verified prior to the final review of development projects for which the habitat credits may be used. Thus, rather than presenting regulators with values that are estimates based on conceptual offsetting plans, this approach will invoke confidence in the value and the viability of the habitat proposed for the offsetting of future development projects.

4.0 PROJECT LOCATION

The Site is located on the east end of New Brighton Park in the City of Vancouver. The Site is part of the Hastings-Sunrise district located on the south shore of Burrard Inlet, in the Inner Harbour, west of the Second Narrows/Ironworkers Memorial Bridge and adjacent to the Cascadia Grain Terminal (east) and Hastings Park (south) (**Figure 1** and **Figure 2**). The coordinates of the centre of the Site are approximately 49°17'24" N latitude and 123°02'08" W longitude.

The majority of the Site is located on federal land and waterlot (owned by PMV), which is managed by and leased to the City of Vancouver under Lease No. VAN048-04394 F-001. As the Site is used for public recreational purposes, this land is managed by the VBPR under the City of Vancouver. A property drawing has been included in **Attachment 3**.

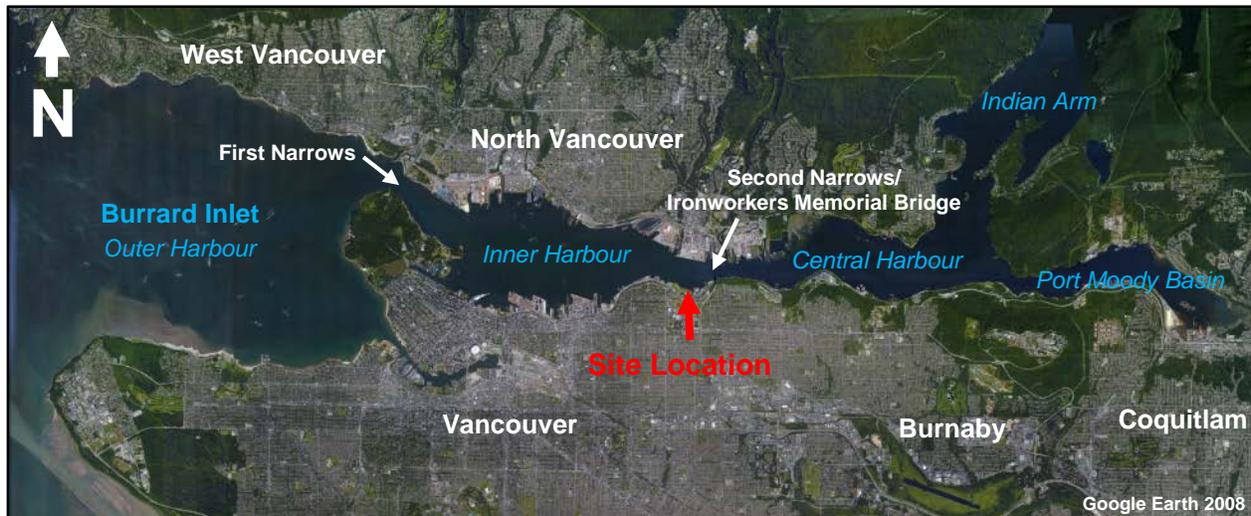


Figure 1 Site location (regional setting)

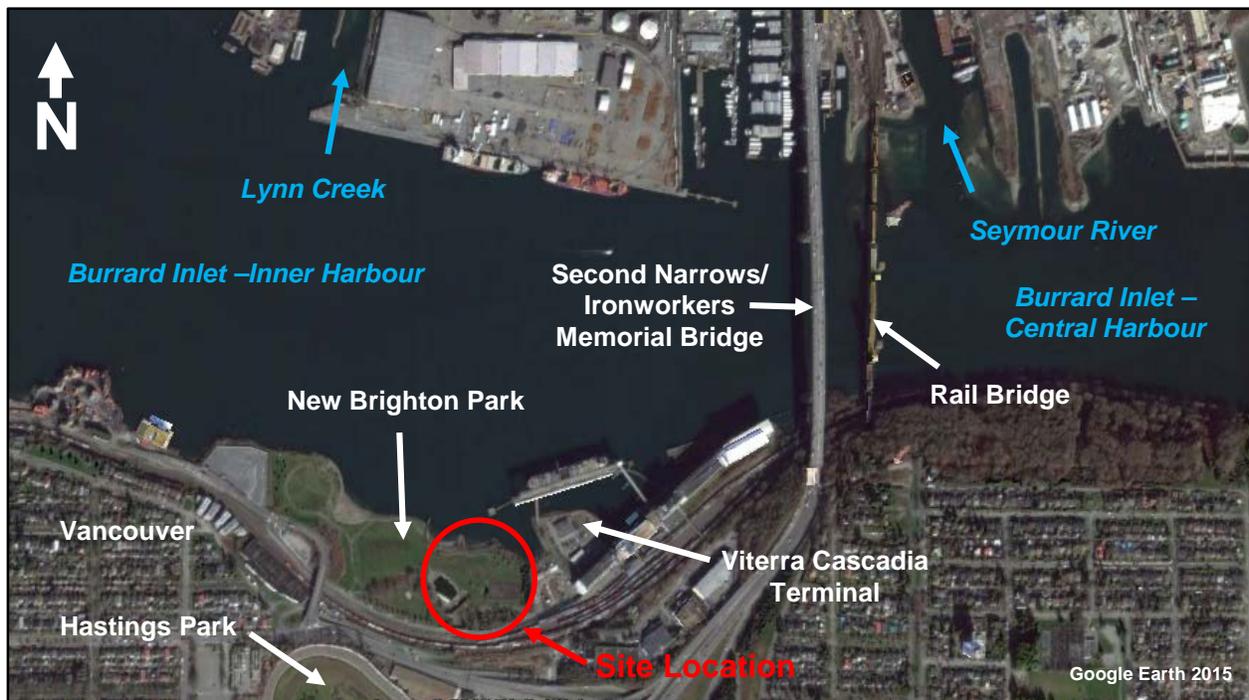


Figure 2 Site location (local setting)

5.0 SITE HISTORY

A review of relevant reports, databases and historical data, including aerial photographs (**Attachment 4; Appendix A**), was carried out to gain knowledge on the history of the Site and surrounding areas.

The Site is located within the asserted traditional territories of seven Coast Salish communities (see **Section 14.0** for more information). Coast Salish communities extensively used Burrard Inlet for resource procurement and other cultural activity. Shallow protected bays, such as the Site's location prior to infilling in the mid-1900s, were often associated with Aboriginal clam gardens and fish traps (**Attachment 6**).

Following European settlement, New Brighton Park, previously known as Hastings Townsite, was surveyed into lots by British Royal Engineers in 1863. This was the location of the first post office, customs office, and Canadian Pacific Railway office established in the City of Vancouver. The New Brighton Hotel, located where Cascadia Grain Terminal and New Brighton Park now exist, opened in 1865 and offered a floating wharf and steamer excursions (PMV 2007). Historical uses of the Site prior to its development into a municipal park also included lumber-related industries and shingle manufacturing (Keystone Environmental Ltd. 1997a, b).

A saltwater pool was constructed in the park in 1934 and New Brighton Park was officially named in 1936 (Steele 1988). An aerial photograph review indicates that the middle and northern ends of the Site were filled at various stages during the mid-1900s, which

contributed to a loss of fish habitat. It appears that infilling of the shoreline ceased around the early 1970's (**Attachment 4; Appendix A**). However, wave-related erosion along the eastern portion of the park prompted the initiation of shoreline stabilization works in 2006 and 2007. The project included the stabilization of the backshore with large boulder armouring, bioengineered banks and the re-working of rip rap groynes (Raincoast Applied Ecology 2006; 2007). Marine riparian habitat was also enhanced as part of the project.

Daylighting of Renfrew Creek from Sanctuary Pond in Hastings Park to a constructed tidal wetland in New Brighton Park, was proposed as part of City of Vancouver's Hastings Park/Pacific National Exhibition Master Plan (PFS 2011). In 2013, a portion of Renfrew Creek was daylighted and Creekway Park was established.

6.0 CURRENT SITE CONDITIONS

Information on the current site conditions is summarized in the Ecological Conditions Report for the Project (**Attachment 4**), which is based on the results of a dive assessment in April 2015, site assessments conducted in May 2015 and a literature review. The Ecological Conditions Report provides an assessment of species and habitats that will be affected by Project activities such as infilling, vegetation removal, and shoreline modification as well as a species-at-risk and invasive species assessment. A summary of the current site conditions is provided below and depicted in **Figure 3**.



Figure 3 Biophysical map of the Site (Hemmera 2015).

The upland portion of the Site is relatively flat and vegetated with grass and the occasional landscaped tree interspersed with gravel pathways (**Photo 1**). The majority of the upland area on the east side of New Brighton Park is currently used as a dog off-leash area with tennis courts on the southeast end of the Site. An access road to New Brighton Pool extends from New Brighton Road. A daylighted section of Renfrew Creek is located along the southern edge of New Brighton Road and was part of the City of Vancouver Creekway Park project delivered in 2013. The stream channel follows a steep gradient to a corrugated steel half arch culvert that discharges into a storm drain on the north side of the New Brighton Road overpass. From this location the stream is culverted through the Site and discharges to an intertidal beach in Burrard Inlet. Due to prior shoreline stabilization and marine riparian enhancement, the shoreline of the proposed enhancement area consists primarily of large boulders and elevated dunegrass benches (**Photo 2**).

SCUBA survey results along the foreshore of New Brighton Park, indicate that the deeper subtidal zone (5 to 9 m in depth) on the west end of the park is characterized by coarse sediments (cobble to gravel) while the shallower portions are characterized by rip rap. The eastern foreshore of the park is shallower and characterized by a coarse sediment beach (sand, gravel, cobble, and shell debris).



Source: GL Williams 2015

Photo 1 Upland habitat at New Brighton Park looking east



Source: GL Williams 2015

Photo 2 Rock groynes separating scalloped intertidal beaches with varying substrates and boulder banks looking east

6.1 LAND USE AND NAVIGATION SETTING

The Site is located on the east side of New Brighton Park, a popular public park with an outdoor swimming pool, picnic sites, playgrounds, a fishing pier, a dog off-leash area, tennis courts and open green spaces. The Site encompasses the dog off-leash area and four tennis courts on the eastern end of the park.

Although the Site is bounded to the south by New Brighton Road and Canadian Pacific Railway (CPR) tracks, the Site can be accessed under the road and the rail overpasses. The East Vancouver Port Lands (EVPL), an active and intensifying industrial area, is located directly east and west of the Site. Port and marine businesses in the EVPL include agricultural facilities (such as the Cascadia Grain Terminal located immediately east of the Site) and other service facilities (PMV 2007). The Cascadia Grain Terminal, operated by Viterria Inc. handles wheat, durum, canola barley, rye, oats and by-products and has prominent grain elevators used to load cargo onto ships. Surrounding EVPL is Burrardview, an established neighbourhood consisting predominantly of single family residential dwellings as well as some multi-family homes.

Creekway Park is located immediately south of New Brighton Park and the CPR tracks and includes a recently daylighted section of Renfrew Creek that was converted from a parking lot in 2013. Creekway Park is located within the larger Hastings Park complex. Hastings Park, the second largest park in the City of Vancouver, includes open park spaces containing Sanctuary Pond (on the south end of the park), gardens, playgrounds, sports fields,

entertainment venues and an amusement park (Playland). The Hastings Park/Pacific National Exhibition Master Plan (PFS 2011) includes plans to connect the daylighted sections of Renfrew Creek starting at Sanctuary Pond to Burrard Inlet via New Brighton Park and to provide a pedestrian and bicycle connection between Hastings Park and New Brighton Park.

The Site is located along the shores of the Inner Harbour of Burrard Inlet. The Inner Harbour, located between First and Second Narrows, is a highly modified shoreline used mostly for port-industrial activities although some of the shoreline is used for commercial and residential purposes (Haggarty 2001). The Site is located just west of Second Narrows where water speeds increase as the inlet is constricted. Due to the strong currents, swimming is prohibited in this area. Most of the navigational activity adjacent to New Brighton Park is related to freighters loading and discharging cargo to other areas in Burrard Inlet. Other traffic adjacent to the Site includes tour, harbour vessels (tugboats), and recreational boats. The use of personal watercrafts is also prohibited in this area due to risks associated with commercial marine traffic and the narrow channels.

6.2 UTILITIES

All known utilities at the Site are depicted in the utilities drawing included with the property drawing in **Attachment 3**. There are no utilities on PMV land with the exception of the Hastings Park wood stave storm water pipe on the west side of the proposed salt marsh area. Following engagement with the City of Vancouver Engineering department, the proposed excavation for the Project (salt marsh area) has been moved to the east to avoid all impacts to the wood stave pipe as shown in **Attachment 1**. In addition, there is expected to be no changes to fire hydrants, the habitat Project will not involve paving, and there are no “service connections” on PMV lands.

Additional input from the City of Vancouver Engineering department and engagement with PMV Engineering department is anticipated as the project moves to the detailed design stage in spring 2016. At that time, the Project team can provide additional detail on the Renfrew Creek connection/culvert currently shown under the New Brighton Pool access road connecting to the salt marsh, see **Attachment 1**. This creek connection is not considered a service utility, but rather an extension of the Creekway Park water feature (located on City of Vancouver lands to the south of the Project area).

7.0 HABITAT VALUES

The following section provides a short summary of the fish and wildlife values within and surrounding the Site. A more detailed description of the fish and wildlife values at the Site can be found in the Existing Ecological Conditions Report (**Attachment 4**).

The upland portions of the Site consists of an urban park with a maintained lawn which provides few fish and wildlife habitat opportunities. Along the shoreline, a band (3-5 m) of

native riparian shrubs, trees and a few narrow dunegrass benches are present. The low intertidal and shallow subtidal habitats sustain a diverse array of algal species, including kelps.

While the amount of high quality fish habitat is limited by urbanization and industrialization, Burrard Inlet is known to host a diversity of fish species. Juvenile salmon are abundant in nearshore habitats from early spring to fall, particularly chum (*Oncorhynchus keta*), chinook (*O. tshawytscha*) and, every second year, pink salmon (*O. gorbuscha*) (Haggarty, 2001). Juvenile coho (*O. kisutch*), sockeye (*O. nerka*), steelhead (*O. mykiss*) and cutthroat trout (*O. clarki*) are also present, in lower abundances (Haggarty 2001). Adult salmon are known to spawn in rivers on the north shore of Burrard Inlet, including Seymour River (which supports a salmon hatchery and provides the main local source of freshwater to the Inner Harbour) and Lynn Creek, both of which discharge approximately 1 km from the Site. Historically, Renfrew Creek, a salmon-bearing stream, flowed south of Hastings Park to the shoreline of Burrard Inlet (FREMP 2015).

Burrard Inlet is also an important migratory bird corridor, providing essential habitat for significant concentrations of waterfowl and other bird species. Burrard Inlet also provides habitat for marine mammals such as harbour seals (*Phoca vitulina*) and a wide variety of invertebrate species.

8.0 ENVIRONMENTAL SITE ASSESSMENTS

A Stage 1 and a Stage 2 Preliminary Site Investigation was previously undertaken by Keystone Environmental Ltd. (Keystone) along the eastern portion of New Brighton Park in May 1997. The Preliminary Site Investigation encompassed the Project area and was completed on behalf of the City of Vancouver.

To further assess and provide an update on environmental conditions at the Site, a limited Phase 1 and Phase 2 Environmental Site Assessment (P1/P2 ESA) was undertaken by Hemmera, on behalf of PMV, for the eastern portion of New Brighton Park in spring/summer 2015. Based on the results of the P1/P2 ESA, elevated concentrations of metals in soil and elevated concentrations of petroleum hydrocarbons in groundwater exceeding Federal and Provincial standards were identified on the Site and a Supplemental Site Assessment (SSA) was recommended to further delineate the contaminated soil and groundwater within the Project area. The P1/P2 ESA was reviewed by PMV and was re-issued in August 2015.

The SSA was undertaken between September and December 2015. Soil contamination was again identified at the Site during the SSA, with elevated concentrations of metals exceeding Federal guidelines, and light extractable petroleum hydrocarbons in soil exceeding Provincial standards. The contamination in the soil exceeding Federal guidelines and Provincial standards was delineated both vertically and horizontally within the footprint of the proposed habitat enhancement feature. Contamination of groundwater exceeding Federal guidelines was delineated horizontally within the proposed habitat enhancement feature and in the northwest portion of the site.

The results of the P1/P2 ESA and SSA will be used to inform the Soil and Groundwater Management Plan (SGMP) to be submitted to PMV for review in 2016. The SGMP is expected to address items such as soil excavation and stockpile management, proposed plans for soil re-use/placement on-site and disposal off-site, mitigation measures, and overall groundwater infiltration control and management in the context of construction, as applicable. It is anticipated that the majority of material excavated as part of the Project will be retained on-site in the park. Details on the excavation volumes and locations will be provided to PMV in the SGMP (early 2016) and during the detailed design phase of the Project, anticipated in spring 2016. The P1/P2 ESA (August 2015) and SSA (December 2015) can be found in **Attachment 5**.

9.0 ARCHAEOLOGY

An Archaeological Overview Assessment (AOA) and an Archaeological Impact Assessment (AIA) were undertaken in 2012 and 2013 as part of PMV's South Shore Corridor Project. The assessment area encompassed New Brighton Park. These AIA and AOA reports were reviewed by Stantec Consulting Ltd. (Stantec) on behalf of PMV. The reports provided a fairly comprehensive overview of the archaeological potential at New Brighton Park. Although the review by Stantec indicated a low potential for archaeological remains in the foreshore area of the park due to the building out of the shoreline, site-specific archaeological monitoring was recommended for the Project.

Site-specific archaeological monitoring was conducted concurrently with environmental/geotechnical drilling at the Site in May 2015 by Stantec and during environmental drilling at the Site in September 2015 by Inlailawatash Natural and Culture Resources (Inlailawatash). No archaeological materials were identified during either monitoring event. As there is the potential for the remains of intertidal artifacts and features to be present in the intact marine sediments below the imported fill, archaeological monitoring is recommended for any future ground disturbance below 2.0 m (Inlailawatash 2015). Additional information can be found in the Archaeological Monitoring Reports (**Attachment 6**).

10.0 PROPOSED WORKS

10.1 GENERAL DESCRIPTION

The proposed Project is currently in the preliminary design stage and may include the restoration and enhancement of approximately 2.0 ha of intertidal, instream and riparian habitat. A preliminary design of the Project is presented in **Attachment 1**. The habitat design "Crescent Marsh" (Moffatt and Nichol Drawing No. 34-348-EN-7071) includes a salt marsh with two openings to Burrard Inlet at the northwest corner and northeast corner of the marsh. Input received from Aboriginal groups, stakeholders and the public during the preliminary design consultation period for the Project (**Section 15.0**), will be used for the development of the detailed design for the Project, currently targeted for spring 2016.

Other components of the Project could potentially include the use of strategic plantings and fencing in backshore areas to protect the habitat restoration area from humans and dogs; bat roosting and bird nesting features (including a potential raptor nesting feature for bald eagles or osprey); and interpretive signage and salt marsh viewing areas along the western edge of the salt marsh. A proposed landscape overlay of the Project for the “Crescent Marsh” habitat design, which depicts proposed fence structures for dog-off leash areas as well as planting and habitat enhancement areas, is presented in **Attachment 1** (Sharp and Diamond Drawing No. L2). Please note that detailed designs for the proposed dog off-leash fencing and park features is expected in spring 2016, the landscape overlay drawing in **Attachment 1** is only provided for conceptual understanding at this time for PER review.

Construction would be undertaken using heavy equipment, working within existing upland park areas. It is anticipated that excavated materials (consisting of approximately 20,000 m³ of soil and sand material) could be retained on-site within the upland pending the development of the detailed design and Soil and Groundwater Management Plan. The majority of the excavated material is currently planned to be placed in a berm feature on the east side of the salt marsh (**Attachment 1**). Of the ~20,000 m³ of excavated material, approximately 5,000 m³ is proposed to be placed on the far west edge of New Brighton Park (on PMV lands), while an undetermined volume may have to be removed off-site due to soil quality. Updated excavation volumes (SGMP detail) will be provided to PMV PER in 2016, as the detailed design is developed.

The majority of the works could be completed in the dry, however final channel/lagoon connections would require some in-water work. Any work with the potential to impact fish/fish habitat, should be undertaken during the applicable least risk work windows (see **Section 11.1**). No marine infrastructure or buildings are proposed within the Project footprint or on PMV’s property. In addition, there are no current plans for additional lighting at the Project site; however, this will be confirmed with the City of Vancouver and VBPR during the development of the detailed design in 2016.

The Project would need to be implemented with oversight by an Environmental Monitor (i.e. a QEP). The development of a Construction Environmental Management Plan (CEMP) including spill prevention and emergency response procedures by the contractor would also be required to provide detailed mitigation measures to be applied during construction operations. This CEMP will be submitted to PMV for review and approval prior to construction.

A description of detailed construction activities including the proposed construction period, hours and method of construction, as well as a description of the staging activities and areas, will be provided closer to the commencement of proposed construction in 2016.

10.2 PLANTING

The Site would be vegetated and seeded following construction. Riparian vegetation would be planted above the Higher High Water Mean Tide (HHWMT El. +2.0 m geodetic) in adjacent

upland areas. Plantings would include suitable marsh plants, dunegrass and nursery stock native shrubs (e.g. Pacific crabapple (*Malus fusca*), Nootka rose (*Rosa nutkana*), hardhack (*Spiraea douglasii*), willow (*Salix* sp.), and red osier dogwood (*Cornus sericea*)) and trees (e.g. black cottonwood (*Populus tichocarpa*), red alder (*Alnus rubra*), Sitka spruce (*Picea sitchensis*) and shore pine (*Pinus contorta*)). A preliminary landscape plan showing proposed planting locations has been included in the landscape overlay included in **Attachment 1**. Detailed planting specifications will follow during the detailed design phase of the Project, anticipated in spring 2016.

10.3 POST-CONSTRUCTION

During the post-construction phase, the Project would be subject to the terms and conditions of the working agreement between PMV and DFO as well as any applicable permits, agreements (i.e. COV/VBPR), and approvals.

In order to assess the achievement of biological objectives at the Site, a formal monitoring program would be implemented after planting, towards the end of the first growing season. Post-construction monitoring would be undertaken in accordance with the Post-Construction Monitoring Plan (PCMP) for PMV's Habitat Enhancement Program. The PCMP is a working document between PMV and DFO and was last updated in March 2015. It outlines protocols for assessing various habitat types. Initial inspections would be expected to include an assessment of physical site stability and vegetation establishment. Based on successful establishment of similar habitat compensation sites within the Lower Mainland, PMV anticipates that the Site would become fully functioning habitat within approximately five years following construction.

The application of sound design criteria, proper oversight and supervision during both construction and post-construction monitoring are all expected to contribute towards Project success. In the unlikely event that the Project objectives are not achieved and the Site is not functioning as intended, follow-up measures may be required. Remedial measures may, for instance, include additional marsh vegetation transplanting.

Following completion of the monitoring program, PMV would ensure that future works or undertakings do not adversely disturb this habitat and that all reasonable steps are taken to ensure that the Site is not disturbed. The restored marsh would also be afforded protection by DFO, in accordance with the appropriate provisions of the federal *Fisheries Act*.

11.0 SCHEDULE

The Project is currently in the preliminary design stage and schedule details have not yet been finalized. Construction of the Project could commence as early as August 2016, subject to VBPR and PMV approval, land tenure arrangements, appropriate environmental windows for fish and birds, and following input from stakeholders, Aboriginal consultation, and public engagement. Construction is anticipated to be two to three months in duration with planting

being undertaken during the spring/fall growing season following construction. PMV's PER lead will be provided with updates related to the Project schedule throughout 2016.

11.1 LEAST RISK WORK WINDOWS

The least risk work window for Burrard Inlet is from August 16th to February 28th. Adherence to this timing window is proposed for any high risk in-water Project activities to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.

The bird breeding period is generally considered to be between March 15th and August 15th in this part of southwestern British Columbia, although the actual start and end dates of this window may vary depending on annual conditions. Limiting construction works to the least risk work window of August 16th to March 14th can mitigate potential impacts to breeding birds. However, construction can occur outside of the applicable least risk work window if there is a low risk of adverse effects on nesting birds or if bird nest surveys by a QEP indicate that there are no active nests present within the potential zone of impact. Alternatively, protective buffers can be established to reduce disturbance and may be implemented as determined necessary by a QEP.

12.0 EFFECTS ASSESSMENT OVERVIEW

Valued ecosystem components (VECs) or valued social components (VSCs) that could potentially be adversely affected by the proposed works include:

- Soils and sediments;
- Surface water and water bodies;
- Aquatic species and habitat;
- Vegetation;
- Wildlife and habitat;
- Invasive species;
- Current land use;
- Archaeology;
- Navigation and water use;
- Noise;
- Air Quality; and
- Safety.

An Assisted Assessment of Serious Harm was undertaken by QEPs at Hemmera on behalf of PMV for the Project (**Attachment 7**). Based on the available information, Hemmera concluded that the proposed Project would not result in Serious Harm to fish that contribute to a commercial, recreational or Aboriginal fisheries, or to any fish that support such a fisheries, and that a Section 35(2)(b) Authorization is not required for this Project.

Table 2 below summarizes proposed measures to mitigate adverse effects on each of these key VECs/VSCs. With these mitigation measures and application of appropriate best management practices, residual adverse effects are not likely to result from the Project. A site-specific CEMP will be created to guide environmental management during implementation of the Project. Standard mitigation measures will be addressed in this CEMP, including (but not limited to) application of the appropriate least risk work window for high risk activities, implementing environmental monitoring requirements, erosion and sediment control measures, and spill prevention planning.

Table 2 Summary of Potential Effects and Mitigation Measures

| VEC/VSC | Description and Potential Effects | Mitigation Measures* |
|---------------------------------|--|--|
| Soil, sediments and groundwater | <ul style="list-style-type: none"> • The Project will result in the excavation and exposure of upland soils (predominantly historic fill) to achieve a lower, tidal ground elevation. Due to some uncertainty about the origin of these soils, there exists a potential for spreading contaminants, if not managed appropriately. • There is some potential for dust generation, in association with excavation and temporary stockpiling during construction. | <ul style="list-style-type: none"> • A P1/P2 ESA and SSA were undertaken to determine soil and groundwater quality for material proposed for excavation (see Attachment 5). Prior to construction, a Soil and Groundwater Management Plan will need to be developed in consultation with PMV's Contaminated Sites Specialist/PER team. • Construction will be undertaken with appropriate mitigation and monitoring in place in accordance with the CEMP to ensure that any potential construction-related effects are minimized. |
| Surface water and water bodies | <ul style="list-style-type: none"> • There is potential for water quality impacts to occur during works (e.g. during tidal connection). • There is potential for spills or equipment leaks to occur during construction which could have an adverse effect on benthic biota or fish. | <ul style="list-style-type: none"> • Works will be undertaken in accordance with the CEMP which will include mitigation measures such as environmental monitoring requirements, appropriate application of the least risk work window, erosion and sediment control measures, and spill prevention planning. |

| VEC/VSC | Description and Potential Effects | Mitigation Measures* |
|------------------------------------|--|--|
| <p>Aquatic species and habitat</p> | <ul style="list-style-type: none"> The majority of the Site consists of a historically filled upland providing low aquatic habitat value. However along the shoreline there is a band of riparian vegetation which provides some aquatic habitat value. In addition, there are aquatic habitat values within the existing subtidal area. There is a potential risk of either direct (e.g. injury or mortality) or indirect (e.g. water quality) impacts on aquatic species and/or fish habitat during in-water construction. | <ul style="list-style-type: none"> The Project will replace lower value fish and aquatic habitat with higher quality habitat (such as marsh, intertidal channels, dune grass and riparian trees and shrubs), which will benefit a broader range of species (see Attachment 7) Any potential high risk in-water activities will be undertaken during the applicable least risk work window (as appropriate). The CEMP will address specific aquatic species and fish habitat mitigation measures associated with the Project. |
| <p>Vegetation</p> | <ul style="list-style-type: none"> The upland portion of the Site consists of a maintained lawn with a few scattered trees and a thin band of native riparian shrubs, trees and a few narrow dunegrass benches. Excavation will likely result in the minor loss of some native vegetation. | <ul style="list-style-type: none"> Upon completion of construction, appropriate native upland, riparian and intertidal vegetation will be planted for the enhancement of fish and wildlife habitat. There will be an overall “net gain” in the vegetation values at the Site. |
| <p>Wildlife and habitat</p> | <ul style="list-style-type: none"> The Site does provide some wildlife habitat values, including bird habitat. Due to the presence of some trees and shrubs, there is some potential for impacts on nesting birds during construction. | <ul style="list-style-type: none"> If works are conducted during the bird breeding period (typically between March 15th and August 15th), a pre-clearing nest survey must be conducted to determine if there are any active nests present. Mitigation measures to protect any active nests will then be implemented. Overall, the Project will replace existing (lower values) wildlife habitat with higher value habitat. |

| VEC/VSC | Description and Potential Effects | Mitigation Measures* |
|------------------|--|--|
| Invasive Species | <ul style="list-style-type: none"> Disturbance associated with construction activities could foster the spread of invasive species. | <ul style="list-style-type: none"> Work will primarily occur in previously disturbed areas. Following construction, native plant species will be established at the Site. Post-construction monitoring will occur to assess establishment and survival of planted vegetation in accordance with the PCMP. Any identified deficiencies and/or invasive species concerns will be addressed through appropriate management measures. |
| Current Land Use | <ul style="list-style-type: none"> The Site is currently used as a recreational area in New Brighton Park and is most notably used as a dog off-leash area. The Project will reduce open green space for use by the public and the tennis courts will need to be removed. The City of Vancouver previously released the “Hastings Park/Pacific National Exhibition Master Plan” in 2010 which proposed to connect daylighted sections of Renfrew Creek, starting at Sanctuary Pond, to Burrard Inlet via New Brighton Park (via the Site). | <ul style="list-style-type: none"> The Project goals are consistent with City of Vancouver’s Hastings Park/Pacific National Exhibition Master Plan. PMV’s Project partner VBPR is accountable to determine mitigation for current park uses such as dog off-leash areas and tennis court use. The Project’s Stakeholder Advisory Group, as well as community and First Nations consultation and engagement will continue to provide important input into project development. The detailed design features are expected to include park features to maintain recreational access to the shoreline and improve environmental education opportunities (as appropriate). The Project would result in the creation and enhancement of fish and wildlife habitat which can be enjoyed by the public. |

| VEC/VSC | Description and Potential Effects | Mitigation Measures* |
|--------------------------|---|--|
| Archaeology | <ul style="list-style-type: none"> Construction activities could impact archaeological values at the Site. | <ul style="list-style-type: none"> An AOA and AIA for the area was previously conducted in 2012/2013. No archaeological materials were identified during site-specific archaeological monitoring conducted in May 2015 and November 2015. The monitoring reports are available in Attachment 6. Archaeological monitoring will be considered for any ground disturbance below 2.0 m and appropriate management measures (e.g. chance find protocols) will be in place during Project construction. |
| Navigation and Water Use | <ul style="list-style-type: none"> The upland portion of the Site is not located within the Burrard Inlet and it is not anticipated that the Project will affect navigation. | <ul style="list-style-type: none"> The Project will be reviewed by PMV's Operations department and it will comply with requirements of the <i>Navigation Protection Act</i> to minimize any potential impacts on boat traffic during the construction phase. |
| Traffic | <ul style="list-style-type: none"> During construction, an increase in local traffic may result due to construction vehicles. | <ul style="list-style-type: none"> A Traffic Management Plan (TMP) will be provided prior to construction which will include information on material transport (to and from the site including volume, machinery, staging, number of trips etc.), staging for construction vehicles and traffic flagging as appropriate for the Project. The TMP will aim to ensure unimpeded access / exit for public vehicles and tenants (i.e. Cascadia grain terminal). The Project is not anticipated to alter existing access points (e.g., roadways, driveways, parking etc.) to New Brighton Park – including Commissioner Street. |

| VEC/VSC | Description and Potential Effects | Mitigation Measures* |
|-------------|--|--|
| Noise | <ul style="list-style-type: none"> Noise could disrupt recreational users at New Brighton Park and surrounding residences and industrial operations. | <ul style="list-style-type: none"> Noise mitigation measures, will be developed, and the public will be engaged and notified during the process. Construction activities will be planned in accordance with applicable municipal noise bylaws (as relevant). |
| Air Quality | <ul style="list-style-type: none"> Construction activities are unlikely to impact air quality, however the use of heavy machinery and excavation activities may result in temporary impacts to air quality to the immediate surrounding area. | <ul style="list-style-type: none"> Site-specific mitigation measures will be outlined in the CEMP and will include measures such as reducing all unnecessary idling and covering of stockpiles where appropriate Diesel equipment is expected to comply with PMV Non-Road Diesel Emissions Program requirement as relevant. |
| Safety | <ul style="list-style-type: none"> Construction activities undertaken with heavy equipment represent some health and safety risk to the public and to construction workers. | <ul style="list-style-type: none"> An Occupational Health and Safety Plan will be developed, which will include measures that comply with WorkSafe BC standards, to ensure safe work and to avoid any impacts to workers (or adjacent land users). Throughout Project construction all emergency and fire access routes surrounding the Project site will be considered and maintained (open). The main emergency/access route to the New Brighton pool is primarily on COV property. Appropriate signage/markers will be placed on the Site during construction to notify the public of the works and construction boundaries. |

13.0 REGULATORY CONSIDERATIONS

The Project will meet all applicable regulatory requirements and obtain necessary permits and approvals prior to the initiation of Project works. The key agencies that have been engaged in the Project and provided updates regarding the Habitat Enhancement Program are listed below:

- Fisheries and Oceans Canada
- Transport Canada – Navigable Waters Protection Program
- Environment Canada – Disposal at Sea Program
- Environment Canada – Canadian Wildlife Service
- Port Metro Vancouver – Environmental Programs Department
- Port Metro Vancouver – Real Estate and Legal Departments
- Port Metro Vancouver – Operations Department
- Port Metro Vancouver – Planning Department

In May 2015, DFO reviewed the Project information and confirmed that the Project would conform with the Fisheries Productivity Investment Policy as a habitat development and/or restoration project that may be deposited into a habitat bank. A more detailed summary of the Project-related regulatory engagement that has been conducted to-date is included in the “Regulatory Considerations” section of the Key Milestones Table in **Attachment 2**.

14.0 ABORIGINAL CONSULTATION

The primary objective of PMV’s Aboriginal consultation and engagement program for the Project is to support positive, productive, and lasting relationships between PMV and Aboriginal peoples and to ensure that all applicable legal, regulatory, and policy requirements are effectively addressed. PMV’s Aboriginal Consultation approach is based upon the Government of Canada’s Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (2011). PMV’s consultation and engagement for the Project aims to identify and address Project-related impacts, to design and implement appropriate mitigation measures, and to explore opportunities for Aboriginal groups’ involvement in the Project such as participation in field studies and/or employment, training and contracting. PMV may consider additional benefits and Project-related opportunities that may be extended to potentially impacted communities as a means of accommodating any unresolved impacts.

PMV will consult, or where appropriate, notify, the following Aboriginal groups for the Project:

- Tsleil-Waututh Nation
- Squamish Nation
- Musqueam Indian Band
- Sto:lo Nation
- Cowichan Tribes

- Lake Cowichan First Nation
- Penelakut Tribe
- Halalt First Nation
- Stz'uminus First Nation
- Lyackson First Nation

PMV is consulting with the Musqueam, Squamish and Tsleil-Waututh Nations regarding the NBP Project. As part of the ongoing consultation for the Project, the three Nations are actively providing input through a First Nations Technical Review Committee.

An Aboriginal Consultation Log/Summary Report will be submitted to PMV for review in 2016.

15.0 COMMUNICATION AND ENGAGEMENT

A Public Engagement Plan (**Attachment 8**) has been developed to provide guidance for how PMV and VPBR expect to undertake public and stakeholder consultation and engagement activities with respect to the proposed Project.

As part of 2015 consultation and engagement, PMV and VPBR have undertaken the following activities:

Pre-Engagement: In spring 2015, PMV and VPBR began engagement with Aboriginal groups and key stakeholders, including the EVPL Committee and a Stakeholder Advisory Group (SAG), to introduce the proposed Project, provide information about field studies, and discuss further opportunities for engagement.

Phase 1: Conceptual Design Public Consultation: The first phase of public consultation, the Conceptual Design Public Consultation, held from August 26 to September 9, 2015, provided an opportunity for community members, stakeholders and the public to receive information and provide feedback about features of the proposed Project and general park usage. While a separate, but parallel, consultation process with Aboriginal groups has also been undertaken by PMV and the VBPR, local Aboriginal groups were invited to provide feedback through this public and stakeholder engagement process. There were 285 participant interactions during the first phase of public consultation. Generally, participants expressed support for, and interest in, the Project, particularly related to recreational access, wildlife, and educational features. Many participants indicated the importance of the dog off-leash area, and of keeping dogs separate from the habitat restoration area. The summary report from the conceptual design public consultation is available online at: <http://vancouver.ca/files/cov/new-brighton-park-shoreline-habitat-restoration-project-sep-2015-public-consultation-summary-report.pdf>. Input from the Conceptual Design Public Consultation was considered in the design refinements included in the second phase of public consultation, the Preliminary Design Public Consultation.

Phase 2: Preliminary Design Public Consultation: The second phase of consultation, Preliminary Design Public Consultation, was held from November 2 to November 18, 2015 to provide information about the proposed project and gather feedback from communities,

stakeholders and the public about preliminary design options for the proposed project. Due to an issue with the online feedback form, the consultation period was extended until November 18, to ensure that everyone who wanted to participate could do so. While a separate, but parallel, consultation process with Aboriginal groups has also been undertaken by PMV and the VBPR, local Aboriginal groups were invited to provide feedback through this public and stakeholder engagement process. The summary report from the preliminary design public consultation is available online at: <http://vancouver.ca/files/cov/new-brighton-park-shoreline-habitat-restoration-project-dec-2015-preliminary-design-public-consultation-summary-report.pdf>.

The Project team is currently preparing a Consideration Memo, showing how input from all above phases of public consultation (completed in 2015) is to be considered in refining project designs. The Consideration Memo is expected to be publicly available in early 2016.

To meet PMV Project and Environmental Review (PER) requirements, an additional four-week public consultation period in the spring 2016 is planned during the detailed design phase of the Project. In addition to the consultation, the Project team will meet again with the SAG (multi-stakeholder committee) as well as the EVPL. The PER team will be provided all 2016 consultation materials in advance for review (per requirements).

PMV and VPBR will continue to use a variety of notification methods to ensure that stakeholders and the general public are aware of opportunities to provide input and participate in the process.

Public notification may include:

- Ads in community newspapers;
- Email distribution to Habitat Enhancement Program list of subscribers;
- Website updates;
- Mail distribution to nearby residents; and;
- Notices posted at New Brighton Park.

PMV and VBPR are undertaking a coordinated approach to communications, and have the following common objectives for the Project:

- Providing clear information about the Project and Project-related activities;
- Creating and enhancing awareness in the community of PMV and VPBR's support of habitat enhancement and the City's 2010 Hastings Park/ PNE Master Plan; and,
- Communicating the potential benefits afforded to the local environment from the Project.

Community stakeholders for the Project include:

- Stakeholder Advisory Group (SAG)
 - A Stakeholder Advisory Group has been established in 2015, and members of the public and individuals from stakeholder groups such as British Columbia Institute

of Technology's Rivers Institute, Hastings Park Conservancy and Burrardview Community Association are members.

- East Vancouver Port Lands and Liaison Committee (EVPL)
 - PMV engaged the existing EVPL Committee on May 26, 2015 during the conceptual design process and on December 8, 2015 during the preliminary design process. Following development of the detailed design, anticipated in spring 2016, PMV will engage with the EVPL Committee for further input on the Project. PMV will continue to inform members of Project developments and opportunities as the Project progresses.
- Aboriginal Groups
 - Consultation with Aboriginal groups is being undertaken by PMV and is guided by a separate Aboriginal Consultation Plan (**Section 14.0**).
- General Public
 - PMV and VBPR will coordinate opportunities for public participation at different stages throughout the design and development process.

PMV and VBPR will engage and consult with key stakeholder groups, Aboriginal groups and the general public throughout the various the stages of Project development and will share information via www.portmetrovancover.com, program email updates and VBPR's website.

Prior to construction scheduled in 2016, a Construction Communications Plan will be drafted that will provide a brief description of the proposed Project, background construction considerations and challenges, engagement objectives, key audience and stakeholders, key messages and contact information and notification activities prior to construction.

16.0 REFERENCES

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ATTACHMENT 1

**Level 2 (30%) Design Drawing and
Landscape Overlay
(October 2015)**

ATTACHMENT 2
Key Milestones Table

ATTACHMENT 3
Property Boundaries (3a) and Utilities
Drawing (3b)

ATTACHMENT 4
Existing Ecological Conditions Report

ATTACHMENT 5

**Phase 1 & 2 Environmental Site Assessment
Report (5a) and Supplemental Site
Assessment Report (5b)**

ATTACHMENT 6

Archaeological Monitoring Reports

Stantec (6a) and Inlailawatash (6b)

ATTACHMENT 7

Assisted Assessment of Serious Harm

ATTACHMENT 8
Public Engagement Plan