File #: 2111-40118-00

TECHNICAL MEMO

To	From
Sat Oberoi, Design Build Manager Ledcor Group	Emilia Cronin, Environmental Specialist Langley Branch
Re	**Date**
Portside Blundell Road Improvements Biophysical Overview Assessment	May 30, 2022

1. Introduction

1.1. BACKGROUND

The Portside Overpass / Blundell Widening Project (the Project) is part of the Portside Blundell Road Improvements (PBRI), a package of road and rail infrastructure upgrades that are part of the wider Greater Vancouver Gateway (GVG) program currently being delivered by Vancouver Fraser Port Authority (VFPA). VFPA is seeking to upgrade the transportation corridor adjacent to the marine terminals on the lower Fraser River in Richmond, BC (Figure 1), to improve travel safety and efficiency near the existing railway crossing. The initial phase of this work extends from No. 8 Road west towards the No. 7 Canal and includes both Portside and Blundell Road. Planned improvements include railway upgrades and road improvements, and installation of road-railway grade separations.

Specifically, the first phase of this work will include:

- Widening of Blundell Road from two lanes to four lanes, between No. 7 Canal and No. 8 Road;
- Installation of an overpass connecting Blundell Road to Portside Road;
- Decommissioning the existing at-grade crossing at No. 8 Road; and
- Addition of a multi-use pathway (MUP) along the south side of Portside Road.

Construction works are planned to commence in early 2023. Future works will include construction of a bridge over a City of Richmond-owned canal (No. 7 Canal) to connect to undeveloped industrial land on the west side of the

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Figure 1: Contextual Portside & Blundell Road Improvements

Location: Blundell Road at Number 8 Road

0 300 Meters

Scale 1:7,500

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INSET

LEGEND

- Legal lots
- Site survey
- Road design
- Overpass design

Environmental values

- Riparian values
- Tree and nest inventory

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canal. This future work will be reviewed separately under PER No. 19-210, as the Portside Road Extension No. 7 Canal Bridge.

A baseline review of biophysical resources was previously completed for this project (Hatfield, 2020), outlining the vegetation, wildlife, and fish habitat present within the project area (Appendix A). This report will seek to build upon that review to provide further detail regarding species at risk, bird nest presence, and invasive species, and to provide management recommendations for key vegetation and wildlife features present.

1.2. APPLICABLE LEGISLATION

The project footprint is situated primarily on lands owned by the federal government, with the exception of the privately-owned CN Rail right-of-way. As such, the following environmental legislation must be considered in review of the project area.

1.2.1. Fisheries Act

The Federal *Fisheries Act* (Canada 1985) and supporting policies aim to protect and manage all fish and fish habitats by providing protection against the death of fish, other than by fishing, and the harmful alteration, disruption, or destruction of their habitat. The *Fisheries Act* regulates activities that affect fish or fish habitat including permanent alteration or destruction of habitat and deposition of deleterious substances into fish-bearing waters.

1.2.2. Species at Risk Act

Federal lands are subject to the protection of species listed under Schedule 1 of the Species at Risk Act (*SARA*) as extirpated, endangered, or threatened (Canada 2002). It is an offence to kill, harm, harass, capture, or take an individual, and that species has legal protection related to the species' residence and critical habitat as specified in *SARA*.

An understanding of potential habitat for *SARA*-protected species in and around the site requires consideration. Adherence to this Act can typically be achieved by implementing BMPs during construction.

1.2.1. Migratory Birds Convention Act

The Migratory Birds Convention Act (MBCA) (Canada 1994) prohibits the disturbance, destruction, or possession of migratory birds, their nests, or eggs. Migratory bird habitat is protected under the MBCA which prohibits the deposit of oil, oily waters, or other substances harmful to migratory birds in any areas that they frequent.

2. Assessment Methods

For the purposes of this overview, the project study area reviewed by the field assessment is considered to be areas within 20m of the project footprint. Additionally, prior to a field assessment, desktop review was completed to document occurrences of significant natural features within 100m of the project footprint.

An on-site review of the study area was completed on May 25, 2022, to visually assess the status of on-site water bodies, species-at-risk, nesting birds, and invasive species. The nesting birds assessment was non-intrusive, relying on observation of singing birds, alarm calls, distraction displays, and nests.

3. Biophysical Survey

As previously noted (Hatfield, 2020), the Project Area lies within the historic Fraser River floodplain, as evidenced by alluvial soils. This area is now protected by a system of dikes for flood control, and sands dredged from the Fraser River have also been deposited within the project footprint. The Project Area is 5.0 m to 6.0 m above sea level and consists of relatively level topography.

3.1. FISH HABITAT

The Project Area does not contain any watercourses providing fish habitat or potentially supporting fish populations. The ditches along Blundell Road, Portside Road, the north section of the overpass, and the CN rail tracks are ephemeral and were dry at the time of survey. No evidence of flow, such as flattened vegetation, was observed. The nearest fish habitat to the project is the No. 7 Canal, a watercourse with 15 m riparian setbacks pursuant to the City of Richmond's Riparian Management Area setback, located west of the project footprint (Figure 1). A prior survey confirmed fish presence within this ditch, however, no salmonids were noted (SNC Lavalin, 2018). The No. 7 Canal connects to the Fraser River approximately 350 m south of the project.

3.2. VEGETATION

The Project Area is within the Coastal Douglas-fir biogeoclimatic zone, within the moist maritime subzone (CDFmm), which has climatic trends of warm, sunny summers and mild, wet winters (Green & Klinka, 1994). Areas within 100m of the project are highly developed or altered landscapes. Within the industrial areas characterizing the project footprint, vegetation is present in narrow corridors adjacent to the road and railway edges, either in landscaped areas associated with adjacent commercial properties, or in disturbed, low-nutrient soils, where non-native herbaceous species primarily dominate. Limited native species were observed within the Project Area. Native species are found in the riparian areas along the No. 7 Canal, west of the project footprint, however, there is no interaction anticipated with the riparian area with respect to road widening and MUP construction.

3.2.1.Species at Risk

The following SARA-protected plants have documented occurrences within approximately 3 km of the project site (Table 1). These species were not observed during the site assessment. Of these species, only streambank lupine has potential habitat within the project footprint, and a population of streambank lupine was consistently observed adjacent to the CN rail tracks east of the project site, from 2007 to 2013.

Table 1. *Rare plant occurrences previously documented within 3 km of the Portside Blundell project (BC CDC 2022).*

Common Name	Scientific Name	Preferred Habitat	SARA Designation[1]	BC Status[2]
Streambank lupine	*Lupinus rivularis*	Disturbed sandy-gravelly sites	E	Red
Vancouver Island beggarticks	*Bidens amplissima*	Moist to wet ditches, streambanks, pond edges, and tidal areas	SC	Blue
Henderson's checker-mallow	*Sidalcea hendersonii*	Wet meadows, estuaries and tidal flats	N/A	Blue

[1]**BC Status: Red-listed** = at risk of being lost: extirpated, endangered, or threatened species; **Blue** = species of special concern; **Yellow** = Species apparently secure and least at risk.

[2]**SARA Designation**: **SC** = special concern; **E** = endangered; **T** = threatened

3.2.2. Invasive Species Assessment

Several provincially-regulated noxious weeds were common within the project footprint. Spotted knapweed (*Centaurea stoebe* ssp. *micranthos*) is present at a low density throughout the non-landscaped vegetated portions of the Project Area, and Scotch broom (*Cytisus scoparius*) patches are also scattered throughout these areas. Additionally, yellow flag iris (*Iris pseudacorus*) is present within the study area, outside of the project footprint. Patches of yellow flag iris are common on the lower banks of the No. 7 Canal, as well as along the roadside ditch running north-south between Blundell and Portside Road.

Other weed species were observed which are not provincially regulated. Himalayan blackberry (*Rubus armeniacus*) and cutleaf evergreen blackberry (*Rubus lacinatus*) were both observed at low density within vegetated portions the Project Area, and common tansy (*Tanacetum vulgare*) was rare.

3.3. WILDLIFE

3.3.1. Birds

Immature trees and occasional shrubs have been installed adjacent to the commercial properties within the project footprint, and trees line both edges of the west portion of Blundell Road, all of No. 8 road, and the south side of Portside Road (Figure 1). These areas provide potential nesting sites for bird species. The gravel and sandy shoulders adjacent to the roads and railways within the site are potential ground nesting habitat. Nesting activity was not observed within the Project Area at the time of survey, however, nests may be established here in future.

Species confirmed during the site assessment include house finch (*Haemorhous mexicanus*), red-tailed hawk (*Buteo jamaicensis*), northwestern crow (*Corvus caurinus*), American robin (*Turdus migratorius*), and the non-native European starling (*Sturnus vulgaris*). Additionally, outside of the project footprint at the west end of Portside Road, several swallows were active. It is unconfirmed which swallow species these are, but it is likely that they are roosting and possibly nesting nearby. Barn swallows (*Hirundo rustica*) have been observed as recently as 2009 within 1 km of the project footprint, and these are listed as threatened under SARA and as blue-listed provincially.

3.3.2. Other Wildlife

As previously noted (Hatfield, 2020) wildlife potentially present within the footprint include mammals adapted to anthropogenic areas and potentially transient bats or coyotes (*Canis latrans*) from the adjacent forested riparian areas. The landscaped areas provide potential small mammal habitat. Aside from the bird species observed, other wildlife was not observed within the Project Area. The dry road edges provide potential habitat for Garter snakes (*Thamnophis* sp.) during the growing season (April to October), and hibernation was unlikely within the study area due to a lack of microsites. The ditches within the Project Area do not appear to be wetted for sufficient duration to support breeding or summer use by amphibians.

3.3.3. Species at Risk

The following species at risk were previously identified (Hatfield, 2020) to be a potential concern within the Project Area (Table 2). Of these, Pacific water shrew (*Sorex bendirii*), southern red-backed vole (*Myodes gapperi* spp. *occidentalis*), and barn swallow have documented occurrences within 3 km of the project site. These species were not observed during the site assessment, however, unidentified swallows were observed north of Portside Road at its western limit. Further, suitable or critical habitat was not observed within the project footprint.

Table 2. *Species at Risk occurrences previously documented within 3 km of the Portside Blundell project (BC CDC 2022).*

Common Name	Scientific Name	SARA Designation[1]	BC Status[2]
Oregon Forestsnail	*Allogona townsendiana*	E	Red
Pacific water shrew	*Sorex bendirii*	E	Red
Southern red-backed vole	*Myodes gapperi* spp. *occidentalis*	n/a	Red
Western painted turtle	*Chrysemys picta*	E	Red
Red Legged Frog	*Rana aurora*	SC	Blue
Great Blue Heron	*Ardea herodias fannini*	SC	Blue
Barn Swallow	*Hirundo rustica*	T	Blue

[1]**BC Status: Red-listed** = at risk of being lost: extirpated, endangered, or threatened species; **Blue** = species of special concern; **Yellow** = Species apparently secure and least at risk.

[2]**SARA Designation**: **SC** = special concern; **E** = endangered; **T** = threatened

4. Measures and Standards to Avoid or Mitigate Potential Effects

4.1. FISH PROTECTION

No fish species are found within 20m of the project footprint. As such, fish habitat protection measures will be limited to erosion and sediment control (ESC) best practice as outlined below.

4.1.1. Erosion and Sediment Control

Clearing and grubbing within the project footprint increase the potential for sediment laden runoff to enter into stormwater systems and ultimately into the adjacent No. 7 Canal and Fraser River. As such use of construction staging and ESC best practice is crucial to manage erosive soil surfaces and to prevent runoff of sediment laden water from the Project. The Contractor will ensure that ESC measures are implemented prior to starting any construction-related activity. The efficacy of ESC plans shall be evaluated in the field during construction on an ongoing basis by the Contractors environmental monitor, and adjustments made to ensure regulatory compliance. Any modifications to the ESC Plans must be accepted by both the monitor and by the Owner or their designate. Recommendations will be compared against the National Guide to Erosion and Sediment Control on Roadway Projects (Transportation Association of Canada 2005), and Standards and Best Practices for Instream Works (BC MWLAP 2004).

4.1.1.1. Recommended Best Practices for ESC

- Complete ground disturbance activities during favourable weather and drier conditions where possible, to minimize erosion and runoff.
- Retain existing vegetation and ground cover where possible.
- Complete works as soon as possible once started.
- Install sediment control measures prior to starting any works that may result in sediment mobilization.
- Minimize water runoff from Project Site.
- Protect storm water catch basins potentially influenced by construction or truck hauling activities with protective inserts maintained in clean condition.
- Locate material stockpiles away from storm sewer inlets.
- Protect and stabilize exposed soil areas at the end of each workday.
- Limit the area of disturbance to the immediate area of construction.
- Inspect and maintain sediment control measures as works progress to ensure functionality.
- Cover and stabilize exposed materials with polyethylene-sheeting, including stockpiles and bare erodible surfaces.
- Keep all paved road surfaces in clean condition, by sweeping regularly and at the end of each day.
- Additional monitoring of ESC measures will be required following a significant rainfall event which is defined as 25 mm in a 24-hour period.

4.2. VEGETATION PROTECTION

Areas impacted by the Project are primarily anthropogenic landscapes, however, bylaw-sized trees are present as documented in Figure 1. An arborist assessment is recommended to document tree impacts and to outline mitigation measures to ensure tree protection where possible. General guidelines to limit the impact to vegetated regions of the site during construction are to minimize clearing and grubbing activities where possible to within areas required to complete construction, to delineate the work area using a physical barrier (e.g., snow fencing), to confine clearing and grubbing to the Project construction footprint, and to reseed disturbed areas with a site-appropriate revegetation seed mix, to limit future runoff potential.

4.2.1. Rare Plants Species

Given the habitat requirements of streambank lupine and the nearby population, a pre-construction review of the CN portion of the project construction footprint is required to be completed by a qualified professional during the flowering season. Additionally, seasonally wetted ditches are to be reviewed for Vancouver Island beggarticks. Any encountered rare plants are to be salvaged, under applicable permit, and removed to appropriate habitat outside of the development footprint. Additionally, seeds of encountered plants are to be gathered and replanting efforts are to be undertaken at an appropriate site. If feasible, retain soils excavated from Site and manage as potential seedbank for streambank lupine if the species is found. Deas Island regional park provides nearby protected habitat that may accommodate relocation and replanting efforts, pending co-ordination with the MetroVancouver West Area office.

Onsite workers are to be informed of the potential presence of this critically endangered lupine species and trained in basic recognition. Storage and dumping areas are to be visually assessed prior to use. Workers are to report sightings to the environmental monitor, who must notify the owner in advance of impact. Locations of plants are to be documented prior to removal. If any plants remain on site, use of chemical herbicides is to be avoided in nearby areas.

4.2.2. Invasive Species Management Plan

The noxious weeds present at the site are able to spread rapidly through production of abundant seeds per plant. Scotch broom, which is common at within the project area, also alters the adjacent soil chemistry to reduce the growth of native plants in adjacent areas. Due care should be taken to protect the Site and surrounding area from the introduction of invasive plants during construction. Within several weeks prior to the onset of construction, all broom and knapweed are to be cut to ground prior to flowering, minimizing soil disturbance. Young plants may be pulled. This cut or pulled plant material is to be removed offsite and disposed of at an appropriate facility, per MetroVancouver BMPs. Additionally, a site review is recommended prior to construction to ensure Japanese knotweed (*Reynoutria japonica*) has not established within the project area. Knotweed is a provincially noxious weed with the ability to impact project infrastructure and is easily spread offsite.

The nature and abundance of the noxious weeds present suggests a significant seed bank within the disturbed soils on site. Soil is to remain on site if possible. During construction, vehicles are to be pressure washed prior to transport off-site from areas of contaminated soils. Additionally, during construction activities the following best practices are to be adhered to:

- Gravel or other fill brought to the site is to be free of invasive plant species, invasive plant seeds, or rhizomatous plant parts. Avoid using fill from known external sites of invasive plant infestation.
- All equipment brought on site is thoroughly cleaned (e.g., remove dirt from other work sites that has accumulated on the tracks, undercarriage, tires) prior to arrival and departure.
- Bare soils are to be stabilized such that establishment of invasive species is prevented. If vegetative cover is used to stabilize bare soils, the use of only locally appropriate native species is recommended.

- Clothing and footwear are to be checked for seeds or plant matter and, if materials are detected, remove and segregate as to not infest the area.
- Established roads/tracks are to be used where possible to prevent access to potentially weed infested areas.

A follow-up treatment of invasive species is recommended for areas within the project footprint, for a minimum of three years following construction. Treatment of invasive species will support establishment of native species within the newly disturbed areas. Scotch broom, spotted knapweed, and the non-native blackberry species foliage is recommended to be treated with glyphosate twice per growing season, with a minimum of 6 weeks between treatments. The first treatment is to be completed in May or early June, prior to flowering. Treatment is to be completed by a certified pesticide applicator and must follow best practice.

4.3. WILDLIFE PROTECTION

The lack of habitat features within the project footprint suggest that a salvage is not necessary prior to the onset of project works. A zero-tolerance policy regarding the feeding of wildlife will be implemented to reduce interactions or conflicts. All domestic and food waste is to be securely stored in an appropriate bin (to minimize odours and limit accessibility) until safe disposal is possible at an approved waste disposal site. Any wildlife is not to be harassed. If necessary, steel plates will be placed over any excavations to be left open overnight. If any wildlife becomes trapped in an excavation despite the presence of the plates, work will be delayed until the wildlife can be captured and safely relocated to a suitable location outside the work site. Wildlife handling and removal will require a call to the Conservation Officers Service (Provincial) at 1-800-663-7867, or a local animal protection society (for dogs and other domesticated animals) such as the Surrey Animal Resource Center at 604-574-6622 or other qualified wildlife professional

4.3.1. Bird Nest Survey

Vegetation clearing and loud noises (such as operating heavy equipment) have the potential to disturb breeding or migratory birds, raptors, or other wildlife. To mitigate potential effects to wildlife and achieve compliance with the BC *Wildlife Act* and the federal MBCA, the following timelines are to be considered:

- The general bird-breeding season is March 1st August 31st of any year.
- The raptor-breeding window spans January 1st to August 31st (MOE 2013).
- Nests of eagles, peregrine falcons, gyrfalcons, ospreys, herons, and burrowing owls are always protected (Section 34 *Wildlife Act*).

If construction activities are completed within the above timelines, a survey of nests is required within the Project Area, to limit disturbance to breeding birds and their nesting activities. Prior to any works, including ground disturbance, a QEP shall perform the survey to identify active bird or protected nests within and adjacent to Project areas requiring the removal of trees or vegetation. Treed and landscape areas within the project footprint are identified on Figure 1. Particular effort is recommended to seek Great Blue Heron and barn swallow. Unidentified swallow activity was noted at the west end of Portside Road.

If an active bird or protected nest is found within a designated area, a nest management plan may be prepared by the QEP for works in the vicinity of the nest, providing protection of the nest through buffers and/or by instituting appropriate exclusion windows for Project activities. If an active nest is found on the

periphery of a designated area, active monitoring of the nest / breeding bird / raptor may be warranted to determine levels of distress and compliance with applicable statutes.

CLOSING

This report has been prepared with information available at the time of writing. Should any questions arise, please do not hesitate to contact the undersigned.

Yours truly,

Emilia Cronin

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5. Photographs

Photograph 1. *View south across Blundell Road. Scotch broom within the CN Rail verge is identified in yellow. The sandy edge of Portside Road is visible in the background.*

Photograph 2. *View west along the north side of Blundell Road, illustrating the herbaceous species present. Many of these species are non-native. The ephemeral ditch is identified in blue.*

Photograph 3. *View west of the treed edges of Blundell Road. Many of these trees are bylaw sized. No nests were observed at the time of survey.*

Photograph 4. *View west of the landscaped edges of Blundell Road. No wildlife were noted.*

Photograph 5. *View east along the south side of Portside Road, illustrating the condition of the landscaped vegetation.*

Photograph 6. *View west along the south side of Portside Road, illustrating sparse vegetation in this disturbed area.*

Photograph 7. *View west along the ditch and berm at the north side of the Impact Auto Auctions parking lot. No signs of flow were observed. Blackberry is common in this area.*

Photograph 8. *View east along the ditch and berm at the north side of the Impact Auto Auctions parking lot. No signs of flow were observed. Blackberry and Scotch broom are apparent.*

Photograph 9. *View south along the ditch east of the No. 7 Canal. This riparian area is outside of the project construction footprint, but is likely connected via stormwater drainage.*

Photograph 10. *View south along the No. 7 Canal. This riparian area is outside of the project construction footprint, but is likely connected via stormwater drainage.*

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Construction Cost Estimates. This construction cost estimate has been prepared using the design and technical information currently available, and without the benefit of (Survey? Geotechnical? Environmental? Other?) information. Furthermore, McElhanney cannot predict the competitive environment, weather or other unforeseen conditions that will prevail at the time that contractors will prepare their bids. The cost estimate is therefore subject to factors over which McElhanney has no control, and McElhanney does not guarantee or warranty the accuracy of such estimate.

This construction cost estimate [and construction schedule] has [have] been prepared using the design and technical information currently available, and without the benefit of [Survey,] [Geotechnical,] [Environmental,] [Other – specify] information. Furthermore, McElhanney cannot predict the competitive environment, weather or other unforeseen conditions that will prevail at the time that contractors will prepare their bids. The cost estimate [and construction schedule]) is [are] therefore subject to factors over which McElhanney has no control, and McElhanney does not guarantee or warrant the accuracy of such estimate[s]

Cost Estimates and Construction Schedules. This construction cost estimate and construction schedule have been prepared using the design and technical information currently available, and without the benefit of (Survey? Geotechnical? Environmental? Other?) information. Furthermore, McElhanney cannot predict the competitive environment, weather or other unforeseen conditions that will prevail at the time that contractors will prepare their bids. The cost estimate and construction schedule are therefore subject to factors over which McElhanney has no control, and McElhanney does not guarantee or warrant the accuracy of such estimate or schedule.

APPENDIX A

Biological Resources Baseline Report,
Hatfield, 2020

BIOLOGICAL RESOURCES BASELINE REPORT FOR BLUNDELL WIDENING AND PORTSIDE OVERPASS PROJECT

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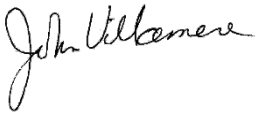
AMENDMENT RECORD

This report has been issued and amended as follows:

Issue	Description	Date	Approved by	
1	First version of Biological Resources Baseline Report for Blundell Widening and Portside Overpass Project	20201007		
			Garth Taylor Project Director	John Villamere Project Manager

1.0 INTRODUCTION

As part of the Gateway 2030 Program transportation strategy, the Vancouver Fraser Port Authority (VFPA) is partnering with Canadian railway operators to increase transportation efficiency to marine terminals in the Lower Fraser River by implementing railway upgrades, road-railway grade separations and other road improvements. The Portside Blundell Road Improvements (PBRI) Project in Richmond, BC, is part of this initiative. Environmental baseline conditions for two PBRI Project components, i.e., Portside Overpass and Blundell Widening (the Project), are described in this document as an initial step in the strategy to identify potential environmental constraints and determine mitigation needs.

1.1 THE PROJECT COMPONENTS

The two components of the Project are as follows:

- The Widening of Blundell Road from two lanes to four lanes from immediately west of York Road to No. 8 Road; and
- Establishing a grade separated crossing of the CN rail line at the intersection of Portside Road, Blundell Road and No. 8 Road. This component also includes the addition of a multi-use pathway (MUP) along Portside Road westward from the grade separated crossing.

Environmental studies for a third component of the PBRI Project, the Portside Road Crossing of the No. 7 Road Canal, have been initiated by others and are not included in this report.

1.2 PROJECT LOCATION AND STUDY AREA

The Project is located on VFPA land and City of Richmond road right-of-way along Blundell Road, Portside Road, and No. 8 Road. The proposed Blundell Widening extends from near No. 8 Road to 250 m east of the No. 7 Road Canal near York Road. The planned works for Portside Overpass involve an area of approximately 150 m in all directions from the current rail crossing on Portside Road. Overall, the Project is located approximately 600 m north of the Fraser River (Figure 1).

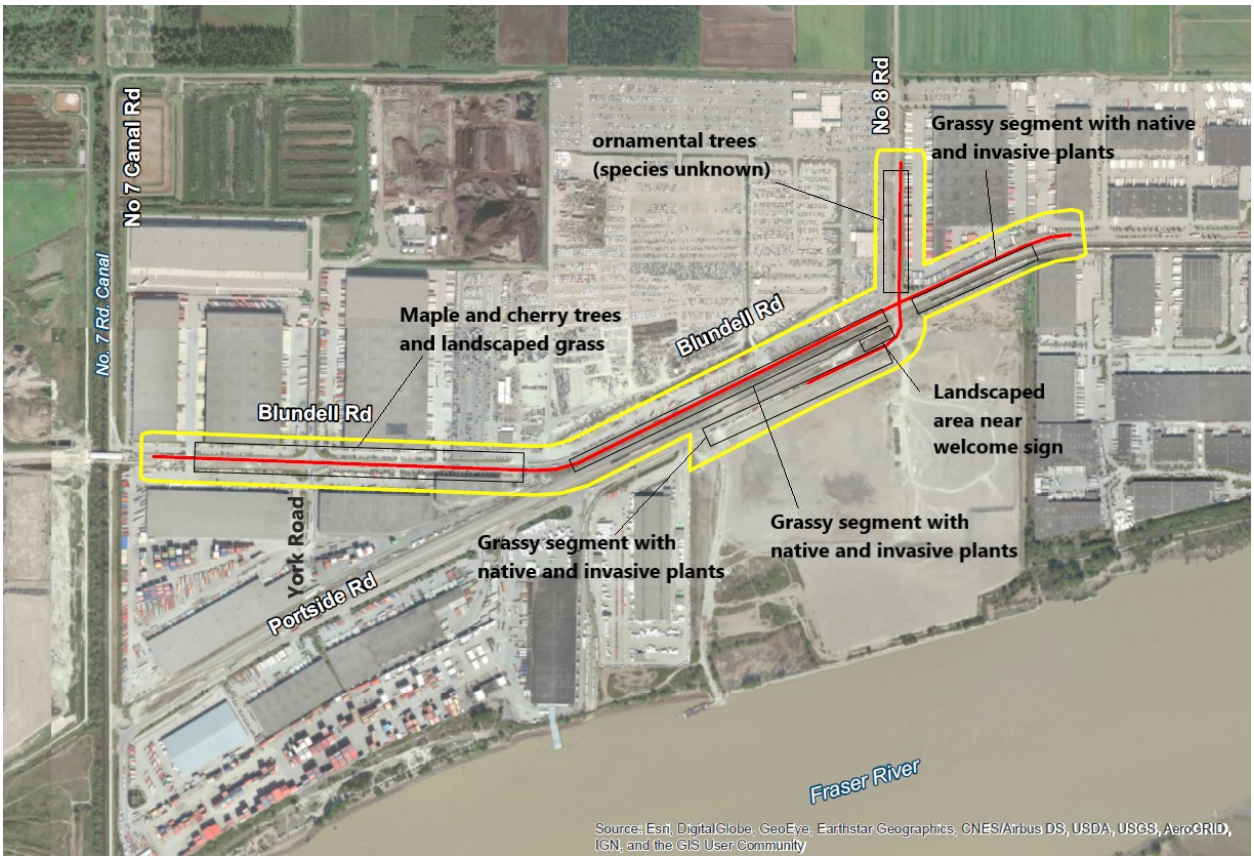
The local study area (LSA) includes roadside verges and extends as much as 50 m beyond the Project footprint in order to capture the full extent of aquatic resources, vegetation and urban wildlife living or nesting in and adjacent to the Project (approximate boundaries of the LSA are defined by yellow lines in Figure 1).

The regional study area (RSA) extends 500 m from the Project footprint and was established to provide context on desktop and field environmental findings for the LSA. The main environmental feature in the RSA is the No. 7 Road Canal.

2.0 METHODOLOGY

During a site visit with members of Indigenous Groups on August 31, 2020, aquatic resources, vegetation, wildlife, and wildlife habitat features observed within the LSA were documented. More specifically, land cover/habitats were described while travelling on foot through the LSA. Incidental wildlife observations were noted. A desktop review preceded the field visit to familiarize the Hatfield wildlife biologist with species, habitats, and areas that may be of potential management concern to regulatory agencies. A follow-up visit to the site was subsequently undertaken to elaborate on findings and obtain photographs for inclusion in this report.

Figure 1 Location of Portside-Blundell Project Study Areas.



3.0 OBSERVATIONS

The Project is located in the moist maritime subzone of the Coastal Douglas-fir (CDFmm) biogeoclimatic zone, and is characterized by warm, sunny summers and mild, wet winters (Egan 1999). In an undeveloped area, dominant CDFmm species include Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), western redcedar (*Thuja plicata*), and bigleaf maple (*Acer macrophyllum*). Indicator shrubs and herbs include salmonberry (*Rubus spectabilis*), Indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), and sword fern (*Polystichum munitum*).

The Project is located in the flood plain of the Fraser River in an area that is now protected by dikes for flood control. Soils in the LSA are alluvial deposits from Fraser River flood events that occurred before protective dikes were installed. Dredged material (sands) from the Fraser River have also been deposited on the LSA lands. Topographically, the LSA lands are relatively level ranging from 5.0 m to 6.0 m above sea level.

There are no federally designated critical habitats for species at risk in the RSA or provincial management areas in or near the Project. The nearest municipally designated environmental sensitive areas, which represent local, potential species pools, are greater than 750 m to the north. There is a 15 m riparian set back along No. 7 Road Canal, which supports some wildlife and serves as a local travel corridor for wider ranging species. A search of the BC Conservation Data Centre (BC CDC) yielded no plant community or species at risk occurrences in the RSA. Species at risk in the City of Richmond are listed in Sections 3.1 and 3.2.

3.1 VEGETATION

3.1.1 General Plant Assemblage

3.1.1.1 Blundell Widening

Extensive commercial and industrial development has limited the presence of significant stands of native trees and shrubs in the Blundell Road portion of the LSA (Photos 1 to 4). Road verges consisted of landscaped grasses with interspersed patches of shrubs and trees. More specifically, there were approximately 50 ornamental maple (*Acer sp.*) and cherry (*Prunus sp.*) trees along 550 m of the western portion of Blundell Road within the LSA. These were between 5 m and 8 m tall, with average diameters-at-breast-height (DBH) of 8 cm. East of the ornamental maple trees, Blundell Road contained a few patches of native vegetation including Canada goldenrod (*Solidago canadensis*) and black cottonwood (*Populus trichocarpa*) saplings (2 m in height, >2 cm DBH) as well as patches of invasive species (discussed in Section 4.1.1.1). Two hybrid cedar trees (*Cedrus sp.*) were located at the intersection of York Road and Blundell Road, which were approximately 10 m tall and 10 cm in DBH.

It is estimated that approximately 30% of the LSA was undeveloped with some vegetation present. Riparian vegetation was limited to the mowed borders of roadside ditches in the eastern two thirds of the Blundell Widening LSA. These drainage ditches contain water during extended rainy periods (the western third of the LSA consists of curb and gutter roadways).

Photo 1 **Blundell Road looking east, road widening expected to occur to right of existing road**

Photo 2 **Blundell Road looking east, showing ornamental cherry trees to the left**

Photo 3 Blundell Road looking east, showing invasive plant species

Photo 4 Blundell Road looking west, showing ornamental maples to the right

3.1.1.2 Portside Overpass

The Portside Overpass component of the LSA consisted of landscaped areas with ornamental species, and grassy segments interspersed with some native and invasive plants (Photos 5 to 12). The manicured grounds at the port entrance occupied an area of approximately 450 m^2 and included a patch of planted Pacific ninebark (*Physocarpus capitatus*), two patches of nootka rose (*Rosa nutkana*), and the following non-native species: willows (*Salix sp.*), aloe (*Aloe sp.*), mountain pine (*Pinus mugo*), and orpine (*Hylotelephium telephium*). There is evidence of mowing, but the area appears to be irregularly maintained.

Twenty-six ornamental and non-native trees (unknown species) lined the west and east sides of No. 8 Road, to a distance of 150 m north of the proposed overpass location (Photo 10). The trees were 5 m to 8 m tall and approximately 10 cm in DBH. Five 10 m-tall hybrid cedar trees were present at the north east corner of Blundell Road and No. 8 Road. Two black cottonwood trees were present south of the CN trail tracks at this location, both approximately 10 m tall and 10 to 12 cm in DBH. Black cottonwood saplings were scattered throughout the Portside Overpass portion of the LSA, as were grassy areas with interspersed patches of Canada goldenrod.

Vegetation covered < 1 ha of the Portside Overpass component of the study area. There were no riparian areas within 50 m of the LSA other than the grassy/weedy verges of the ephemeral ditches in the eastern portion of the LSA. The western third of the LSA contained curb and gutter roadways.

Photo 5 Intersection at Portside Road and No. 8 Road, looking northwest

Photo 6 Intersection at Portside Road and No. 8 Road, looking west and showing hybrid cedars

Photo 7 Blundell Road/Portside Road intersection, looking northeast from landscaped area at Port entrance

Photo 8 Landscaped area near Port entrance on Portside Road, showing willow trees and nootka rose bushes

Photo 9 Aloe species seen in landscaped area at Port entrance

Photo 10 Unknown tree species along No. 8 Road north of Blundell Road

Photo 11 Black cottonwood tree south of proposed overpass

Photo 12 English ivy growing on fence along No. 8 Road

3.1.2 Invasive Species

The western half of the Blundell Road portion of the study area contained Himalayan blackberry (*Rubus armeniacus)* patches, particularly on the south side of the road. The grassy segments further east on Blundell Road contained Himalayan blackberry (*Rubus armeniacus*) patches and scattered Scotch broom (*Cytisus scoparius*) plants. Another prevalent invasive plant species observed in the Portside Overpass portion of the LSA was common tansy (*Tanacetum vulgare*). English ivy (*Hedera helix*) was observed lining a fence at No. 8 Road (Photo 12).

3.1.3 Rare Plants

No formal search for rare plants was conducted during the site visit. Table 1 lists some species at risk that are in the Richmond area according to the BC CDC. All of these species require moist forest, wet ditches/streams or meadows, floodplain habitat, or shallow water (e-Flora 2020). In the absence of moist forest or meadow, only the streamside inhabiting species have some, limited potential to occur in the Project LSA including Vancouver Island beggarticks and the streamside lupine.

Table 1 Rare plants documented in the City of Richmond (BC CDC 2016).

Common Name	Scientific Name	Species at Risk Act	BC Status[1]
Tall bugbane	*Actaeae elata var. elata*	E	Red
Phantom orchid	*Cephalanthera austiniae*	T	Red
Streambank lupine	*Lupinus rivularis*	E	Red
Vancouver Island beggarticks	*Bidens amplissima*	SC	Blue
Henderson's checker-mallow	*Sidalcea hendersonii*	N/A	Blue
American sweet-flag	*Acorus americanus*	N/A	Blue
Roell's brotherella	*Brotherella roellii*	E	Red

[1] BC List: Red = species that are extirpated, endangered, or threatened; Blue = species that are of special concern; Yellow = Species that are apparently secure and not at risk of extinction.

[2] Species at Risk Act: SC = special concern; E = endangered; T = threatened

3.2 WILDLIFE AND WILDLIFE HABITAT

3.2.1 Overview

3.2.1.1 Blundell Widening

Ornamental trees, shrubs and grasses in the Blundell Road portion of the LSA represent potential nesting habitat for human-tolerant birds including American robin (*Turdus migratorius*), white-crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), and northwestern crow (*Corvus caurinus*). No nests were noted during the field visit.

Mammals that may have adapted to the Project's anthropogenic environment include racoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), voles and small rodents, as well as the alien eastern grey squirrel (*Sciurus carolinensis*). There were no snags or wildlife trees with the potential to accommodate permanent

roosts. Bats may pass through the area if and when foraging along the Fraser River. There is some potential for coyote (*Canis latrans*) to occur in the LSA as a transient, during travel between remnant forest patches.

Garter snakes (*Thamnophis sp.)* may forage in the vegetated road verges during the growing season (April to October) but there appeared to be no potential for individuals to hibernate in the study area given the absence of microhabitat complexity (i.e., subterranean refugia). Lack of permanent or semi-permanent water (i.e., wetlands with a hydroperiod lengthy enough to support larval development to metamorphosis) and moist, terrestrial microhabitat precludes amphibian species from living, breeding, or moving through the Blundell Road portion of the LSA.

3.2.1.2 Portside Overpass

Ornamental and native shrubs and trees in the Portside Overpass portion of the LSA can provide nesting habitat for bird species, including the landscaped area at the port entrance. Local patches of gravel and cobble represent potential habitat for ground nesting species such as killdeer (*Charadriidae vociferus*) and spotted sandpiper (*Actitis macularius*). The LSA did not contain trees large enough to support the nests of raptors such as bald eagle (*Haliaeetus leucocephalus*) and red-tailed hawk (*Buteo jamaicensis*). No nests were observed during the field visit.

The landscaped area at the port entrance has the potential to represent living habitat for small mammal species including voles, terrestrial shrews (*Sorex sp*.), rodents, or moles (*Talpa sp*.). There were no snags or wildlife trees with the potential to accommodate permanent roosts, although nearby buildings may be used to that purpose. Bats may pass through the LSA if and when foraging along the Fraser River. Larger wildlife that may travel through the industrialized study area include northern racoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and the alien eastern grey squirrel (*Sciurus carolinensis*).

There is low potential for garter snakes (*Thamnophis sp.)* to wander into the Portside Overpass portion of the LSA in search of food during the growing season due to the limited vegetation edge habitat and lack of water features. The absence of subterranean refugia precludes any potential for overwintering by this species group. Similar to the Blundell Widening area, the area near the Portside Overpass lacked suitable waterbodies and moist, terrestrial habitats for amphibians, including security cover and a potential for thermoregulation in summer, without which this species group is unable to survive.

3.2.2 Species at Risk

Of the wildlife species with potential to occur in the City of Richmond (Table 2, as noted by the BC CDC), the lack of wetlands and deciduous/mixed forest precludes all but the great blue heron, and barn swallow as discussed below:

- Great blue heron may fly through the Project LSA during travels to and from the Fraser River or other nearby water features. No great blue heron nests were observed in the ornamental trees.
- Barn swallow may potentially nest in local buildings and fly through the Project LSA when foraging along the Fraser River and the No. 7 Road Canal.

Although the Pacific water shrew's range overlaps the Project area, no foraging or nesting habitat was noted in the LSA for this species. The ephemeral ditches in the eastern portion of the LSA lacked cover, were bordered by industry, and were isolated from the nearest potential habitat for this species at No. 7

Road Canal by more than 200 m of pavement and exposed surfaces. Other than the No. 7 Road Canal, the nearest forest patches which could potentially sustain a population of Pacific water shrew are more than 800 m north.

The red-legged frog is unlikely to be present in No. 7 Road Canal based on surveys by Sartori (2016). The presence of invasive green frog (*Lithobates clamitans*) and bullfrog (*Rana catesbeiana*) is extensive in the City of Richmond. In the LSA, there was a lack of living habitat (i.e., moist areas with cover objects) for the red-legged frog, which is terrestrial during the summer, fall, and winter (i.e., beyond the breeding season).

Table 2 Species at Risk documented in the City of Richmond (BC CDC 2016).

Common Name	Scientific Name	Species at Risk Act	BC Status[1]
Oregon Forestsnail	*Allogona townsendiana*	E	Red
Pacific Water Shrew	*Sorex bendirii*	E	Red
Western Painted Turtle	*Chrysemys picta*	E	Red
Red Legged Frog	*Rana aurora*	SC	Blue
Great Blue Heron	*Ardea herodias fannini*	SC	Blue
Barn Swallow	*Hirundo rustica*	T	Blue

[1] BC List: Red = species that are extirpated, endangered, or threatened; Blue = species that are of special concern; Yellow = Species that are apparently secure and not at risk of extinction.

[2] Species at Risk Act: SC = special concern; E = endangered; T = threatened

3.3 FISH AND FISH HABITAT

No watercourses providing fish habitat or that could potentially support fish populations were observed in the Project LSA. Ditches along Blundell Road, Portside Road, and the CN rail tracks (Photos 13 to 15) are highly ephemeral (i.e., only hold water during rain events during the rainy winter months). These ditches most likely drain westward toward the No. 7 Road Canal which is approximately 400 m west of the Blundell Road / York Road intersection. No. 7 Road Canal flows north to south discharging to the Fraser River and is 5 to 8 m wide. In 2018, electrofishing surveys by SNC Lavalin yielded five fish species in No. 7 Road Canal; three-spine stickleback (*Gsterosteus aculeatus*), pumpkinseed (*Lepomis gibbosus*), fathead minnow (*Pimephales promelas*), carp (*Cyprinus spp*.), and brassy minnow (*Hybognathus hankinsoni*) (SNC Lavalin 2018). Only pumpkinseed were found in the canal in an earlier study (Sartori 2016). Findings from more recent studies of the No. 7 Road Canal were not available for inclusion in this report.

Photo 13 Ditch along the CN rail tracks, showing Himalayan blackberry

Photo 14 Ditch along the CN rail tracks, showing Scotch broom

Photo 15 Ditch connecting to culvert along Portside Road

4.0 DISCUSSION

The Portside Blundell Project area is heavily developed. There are no natural plant communities. The small, vegetated fragments that remain border transportation corridors and industrial development and constitute mowed lawn, disturbed ditches bordered predominantly by invasive species, rows of ornamental trees, and one small, manicured patch of mainly non-native trees and shrubs at the entrance to Portside Road. Two rare plant species have a low potential for occurring along the roadside ditches. With the exception of urban bird species and common small mammals, wildlife is expected to be transient in the Project area. There are no fish-bearing watercourses in the Portside Blundell Project area. Mitigation to minimize the risk of Project effects on the identified environmental values are described below.

4.1 VEGETATION

The risk of mortality to rare plants can be avoided by completing a pre-construction rare plant survey during the flowering season for Vancouver Island beggarticks and streamside lupine, so that any unlikely occurrences can be relocated outside of the development footprint. Invasive plant species should be documented and geo-referenced to further inform vegetation mitigation. During site preparation, the following mitigation measures are recommended to minimize harm to vegetation:

- To comply with the *Weed Control Act*, complete an invasive species management plan for the proper removal and disposal of invasive plants during the clearing and grubbing stage. Information on invasive species management is available from the Province of BC (2020b) and/or Invasive Species Council of BC (2020);
- Wash all machinery prior to mobilizing to site to minimize the spread of invasive species, and only clean fill materials and topsoil should be used;
- Seed exposed areas to reduce the risk of invasive species colonization;
- Re-vegetate temporarily disturbed areas with an assemblage of native species as soon as possible to prevent the establishment of invasive species and provide suitable habitat for small wildlife species; and
- Implement a vegetation monitoring program during the first two years following construction to determine whether supplemental planting is required.

It is anticipated that construction phase impacts on vegetation can be mitigated by adhering to the mitigation measures outlined above, and through the implementation of the following vegetation best management practices (BMPs) for seeding, vegetation control, and invasive species management:

- Roadside invasive species management strategies and best practices, available on the Government of BC's driving and transportation website https://www2.gov.bc.ca/gov/content/transportation/transportation-environment/invasive-species-roadside;
- Invasive Species Council of BC (ISC) Tips Factsheets; and
- Develop with Care (DWC) Guidelines (MOE 2014).

4.2 WILDLIFE

The risk of mortality to nesting birds can be minimized by avoiding clearing during spring and summer. In the event that some clearing will be required during the migratory bird breeding season, which extends from mid-March to mid-August in open habitats of the Lower Mainland according to Environment and Climate Change Canada nesting data (ECCC 2018), pre-clearing surveys should be completed to established protective setbacks around active nest sites until the young have fledged or the nest has been abandoned.

Other mitigation measures that may benefit wildlife during construction include containing and properly disposing of materials that could be harmful to wildlife or impair wildlife habitat (e.g., hazardous substances and food waste).

Applicable BMPs for urban wildlife are outlined in Section 5.6 South Coast Region of the Develop with Care (DWC) Guidelines (MOE 2014).

4.3 FISH

The roadside and rail ditches are highly ephemeral. There are no watercourses or drainages in the LSA that are expected to support fish populations. As an additional safeguard, a fish salvage could be undertaken prior to construction if works are to take place in winter months when roadside ditches contain water.

5.0 REFERENCES

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