

APPENDIX



ENVIRONMENTAL OVERVIEW REPORT



VANCOUVER FRASER PORT AUTHORITY

FRASER SURREY PORT LANDS – TRANSPORTATION IMPROVEMENTS FISHERIES, WILDLIFE AND VEGETATION ENVIRONMENTAL OVERVIEW REPORT



WSP CANADA INC.
840 HOWE STREET, SUITE 1000
VANCOUVER, BRITISH COLUMBIA
V6Z 2M1 CANADA

TEL: 604-631-9694
WSP.COM

WSP PROJECT NO.

20M-00758-00

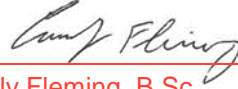


SIGNATURES

PREPARED BY



Sandra Baker, M.Sc., R.P.Bio.
Senior Biologist / Permitting Specialist



Carly Fleming, B.Sc.
Environmental Technician

REVIEWED BY



Michael Taylor, BLA, MRM
Team Lead – Ecology and Environmental Impact Assessments

PREPARED FOR:

Fraser Surrey Port Authority

WSP prepared this report solely for the use of the intended recipient, Fraser Surrey Port Authority, in accordance with the professional services agreement. The intended recipient is solely responsible for the disclosure of any information contained in this report. The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report. This limitations statement is considered an integral part of this report.

The original of this digital file will be conserved by WSP for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP, its integrity cannot be assured. As such, WSP does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

TABLE OF CONTENTS

1	INTRODUCTION.....	4
1.1	Project Description	4
1.2	Objectives	4
2	METHODOLOGY.....	4
2.1	Study Area.....	4
2.2	Desktop Review	5
3	EXISTING CONDITIONS	6
3.1	Fish and Fish Habitat	6
3.2	Vegetation	8
3.2.1	Rare/Sensitive Vegetation and Ecological Communities	8
3.2.2	Invasive Plant Species.....	10
3.3	Wildlife.....	10
3.3.1	Rare/Sensitive Wildlife and Associated Wildlife Habitat	10
3.3.2	Important Bird Areas	11
4	POTENTIAL PROJECT INTERACTIONS	12
4.1	Potential Effects	12
4.2	Permits and Approvals	12
4.3	Mitigation Measures.....	13
5	RECOMMENDATIONS	14
6	REFERENCES.....	15

TABLES

Table 1	Fish Species Presence.....	6
Table 2	Vegetation Species Considered “at Risk” under Provincial and / or Federal Legislation that may Inhabit the Project Study Area	9



Table 3	Project Activities and Potential Effects	12
Table 4	Potential Permits and Approvals	13
Table 5	Protection Plans that may be Required.....	14

APPENDICES

A	Figures
---	---------

1 INTRODUCTION

1.1 Project Description

A component of the Greater Vancouver Gateway 2030 Program, the Fraser Surrey Port Lands (FSPLs) – Transportation Improvements Project (the “Project”), includes an options confirmation review and preliminary engineering design of new or upgraded transportation infrastructure.

The primary purpose of the Project, located within the City of Surrey FSPLs, is to improve the road network and ease congestion in the general area by: creating a main transportation corridor; upgrading associated intersections and signage (road and rail); and constructing a staging area and additional turn bays to manage traffic flows.

1.2 Objectives

The objectives of the environmental overview report are to conduct a fisheries, wildlife and vegetation desktop information review to identify additional field work, research and / regulatory information required to support preparation of the detailed environmental assessment report for the options analysis and the final Project’s Options Confirmation Report. The following tasks are included in this report:

- Summarize results of the desktop information review;
- Identify potential timing window constraints;
- Assess potential project effects on identified environmental resources;
- Identify potential permits and approvals required;
- Describe example mitigation measures; and
- Provide recommendations regarding additional information required for the detailed environmental assessment report.

In support of the Options Confirmation Report a field survey will need to be conducted following the review of specific options with a focus on the potential effects the proposed Project may have on environmentally sensitive receptors identified during the desktop information review. A high-level review of potential Project effects is included for incorporation into the preliminary options analysis in this report.

2 METHODOLOGY

2.1 Study Area

The Project study area for the fisheries, wildlife and vegetation desktop information review was defined as the area directly affected by the Project (Project footprint) plus a 100 m buffer (Project area), to ensure potential Project activities associated with construction and operations were included in the review (Figure 1). The fisheries assessment also includes the Fraser River, providing a high-level summary of potential

interactions. The wildlife and vegetation review included a summary of the rare and sensitive species and their potential habitat identified adjacent to the 100 m buffer for general information where present.

2.2 Desktop Review

The desktop information review included researching available data from the following websites:

- iMapBC (DataBC, 2020) <https://www2.gov.bc.ca/gov/content/data/geographic-data-services/web-based-mapping/imapbc>;
- TRIM mapping at 1:20,000 scale (Geo BC 2020) <https://pub.data.gov.bc.ca/datasets/177864/pdf/092G/092G016.pdf>;
- Biogeoclimatic Ecosystem Classification (BEC) Web (BC Ministry of Forests and Range, 2020) <https://www.for.gov.bc.ca/hre/becweb/resources/maps/FieldMaps.html>;
- Conservation Data Centre (Government of BC 2020) <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre>
- Habitat Wizard (Government of BC 2020) <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/ecosystems/habitatwizard>
- Aquatic Species at Risk Map (Fisheries and Oceans Canada [DFO] 2020) <https://www.dfo-mpo.gc.ca/species-especies/sara-lep/map-carte/index-eng.html>
- E-Flora (E-Flora BC, 2020) <https://ibis.geog.ubc.ca/biodiversity/eflora/>;
- Georgia Basin Habitat Atlas (Community Mapping Network, 2020) <http://cmnmaps.ca/GBHA/>;
- Important Bird Areas Canada (Bird Studies Canada, 2020) https://www.ibacanada.org/explore_how.jsp?lang=en
- Provincial Priority Invasive Plant List (Province of British Columbia 2020) <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/priority-species/priority-plants/plants-table>
- [PlanSurrey - City of Surrey Official Community Plan \(OCP\) \(City of Surrey, 2014\)](#)
- Metro Vancouver Sensitive Ecosystem Inventory (Metro Vancouver, 2020) <https://gis.metrovancouver.org/maps/sei>; and
- Species-specific COSEWIC and SARA documents:
 - Committee on the Status of Endangered Wildlife in Canada Status Reports (COSEWIC, 2020) <http://www.cosewic.ca/index.php/en-ca/>;
 - *Species at Risk Act* reports (SARA, 2020) <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>;

3 EXISTING CONDITIONS

3.1 Fish and Fish Habitat

The fisheries information collected through literature review was compiled to document known or potential of fish species presence and their distribution within the rivers, canals and ditches in the Project area. A review of the publicly available data and mapping shows that the Project area is currently industrial. There are two fish-bearing canals and a roadside ditch overlapped by the Project footprint. The Fraser River is located approximately 350m northwest of the Project site and WSP understands that the proposed Project will not directly affect the foreshore or marine environment. All the watercourses within the FSPLs ultimately flow into the Fraser River.

According to the DFO Aquatic Species at Risk Map, no fish species at risk were identified overlapping with the Project area and no Critical Habitat has been identified by DFO. The DFO Aquatic Species at Risk Map indicated that the nearest federally designated Critical Habitat for the provincially Red listed Northern Abalone (*Haliotis kamtschatkana*) is located in Gundersen Slough, more than 300 m southwest of the Project site (Fisheries and Oceans Canada 2007) (Figure 2). The north end of Gundersen Slough is located approximately 25m south of the project site. No critical habitat is shown on the BC CDC iMap.

Table 1 below provides a summary of all fish species recorded within the Project footprint, 100 m buffer and neighbouring Fraser River.

Table 1 Fish Species Presence

Common Name	Scientific Name	BC Listing	COSEWIC/ SARA	Date Observed	Project Footprint	Project Area (100 m Buffer)	Fraser River
Pink salmon	<i>Oncorhynchus gorbuscha</i>	Yellow	-	2009	Yes	No	No
Coho salmon	<i>Oncorhynchus kisutch</i>	Yellow	-	2011	Yes	Yes	Yes
Lamprey	<i>Entosphenus tridentatus</i>	Yellow		2007	Yes	Yes	Yes
Cutthroat trout	<i>Oncorhynchus clarkii</i>	Yellow	-	2015	Yes	Yes	Yes
Coastal Cutthroat trout	<i>Oncorhynchus clarkii clarkii</i>	Blue	-	2012	Yes	Yes	No
Prickly sculpin	<i>Cottus asper</i>	Yellow	-	1995	Yes	Yes	Yes
Threespine stickleback	<i>Gasterosteus aculeatus</i>	Yellow	-	2011	Yes	Yes	Yes
Fathead minnow	<i>Pimephales promelas</i>	Exotic	-	2009	Yes	Yes	Yes
Rainbow trout	<i>Oncorhynchus mykiss</i>	Yellow	-	2015	No	Yes	Yes
Peamouth chub	<i>Mylocheilus caurinus</i>	Yellow	-	1998	No	No	Yes

Common Name	Scientific Name	BC Listing	COSEWIC/SARA	Date Observed	Project Footprint	Project Area (100 m Buffer)	Fraser River
Brown catfish (Brown bullhead)	<i>Ameiurus nebulosus</i>	Exotic	-	1998	No	No	Yes
White sturgeon (Lower Fraser River Population)	<i>Acipenser transmontanus</i> pop. 4	Red	Threatened (2012)	2004	No	No	Yes
Northern pikeminnow	<i>Ptychocheilus</i>	Yellow	-	1998	No	No	Yes
Redside shinner	<i>Richardsonius balteatus</i>	Yellow	-	2009	No	No	Yes
Northern Abalone	<i>Haliotis kamtschatkana</i>	Red	Endangered (2009)	-	No	No	Yes

Manson Canal (Stream Order 2, Magnitude 3) runs through the north portion of the Project footprint, perpendicular to Timberland Road, south of Pine Road and discharges into the Fraser River. Recorded fish species include Lamprey, Pink salmon, Prickly sculpin, Chub, Threespine stickleback, Stickleback, Fathead minnow, Coastal cutthroat trout, Coho salmon, Cutthroat Trout and Sucker (*Catostomus sp.*) (Figure 3). The Coastal Cutthroat Trout is provincially Blue-listed. No Critical Habitat has been mapped on Manson Canal. According to the City of Surrey COSMOS Map, Manson Canal is classified as Fish Class A, inhabited by fish year-round or potentially year-round. Class A is considered 'streams' as defined by the Provincial *Water Sustainability Act* and Riparian Areas Protection Regulation and fish habitat as defined by the *Federal Fisheries Act*.

Colliers Canal (Stream Order 2, Magnitude 2) runs on the east boundary of the Project site (Figure 3), parallel to Highway 17. Colliers Canal confluences with Manson Canal at the north end of the Project footprint which then discharges into the Fraser River. Stickleback and Cutthroat Trout have been observed in Colliers Canal. According to the City of Surrey COSMOS Map, Colliers Canal is also classified as Fish Class A, which means that the creek is inhabited by salmonids year-round or potentially inhabited year-round.

The Timberland Road Ditch, located in the west portion of the Project footprint, does not have publicly available data for fish presence/distribution; however, it is classified as Fish Class B by the City of Surrey, which indicates that it provides food / nutrient value to downstream fish habitat. No fish potential present at any time of the year but Class B watercourses are defined as "stream" both provincially and federally.

Gundersen Slough is located approximately 25 m southwest of the Project area. Fish species recorded include Threespine Stickleback, Cutthroat Trout, Coastal Cutthroat Trout, Coho Salmon and Rainbow Trout. ECOCAT reports note that Peamouth chub, Carp, Brown catfish (Brown bullhead), Threespine stickleback, Coho salmon, Northern pikeminnow and Redside shiner were observed in various drainage ditches north of the Project area. A culverted construction line network connection (stream order 1, stream magnitude 1) runs underneath the south portion of the Project area and discharges into the Fraser River. Fish species observed upstream include Coho salmon, Cutthroat trout, Stickleback, Threespine stickleback, Rainbow trout and Lamprey.

The Fraser River is located approximately 350 m west of the Project footprint. Fish species recorded in this area include Threespine stickleback, Cutthroat trout, Coho salmon, Rainbow trout, Stickleback, Lamprey, Sucker, Fathead Minnow, Carp, Prickly Sculpin and Chub species. According to the CDC, White Sturgeon are present in this area of the Fraser River; the last observation date was 2004. The White Sturgeon Lower Fraser River Population are provincially Red listed and are classified as Threatened by COSEWIC.

The fish bearing creeks within the Project area are located within the City of Surrey's Sensitive Ecosystems Development Permit Area - Streams. A Streamside 50 m buffer area is required from the shoreline of the Fraser River, Manson Canal, Colliers Canal and the Timberland Road Ditch (Figure 4). Colliers Canal and Manson Canal are in a Green Infrastructure Area and have a Green Infrastructure 50m buffer area.

3.2 Vegetation

The general environment for the FSPL is predominately anthropogenically effected resulting in small, sporadic, disturbed areas colonized by a variety of native, early succession and invasive vegetation species. The Project area, which is predominately covered by roads, rail and industrial buildings, is located within the Coastal Western Hemlock Very Dry Maritime Biogeoclimatic subzone (CWHxm). The drier subzones are found only in the central and southern portion of the CWH zone in the rain shadows of the Olympic Mountains, Vancouver Island Ranges, and Coast Mountains (including Metro Vancouver).

3.2.1 Rare/Sensitive Vegetation and Ecological Communities

A Sensitive Ecosystem Inventory (SEI) was conducted for Metro Vancouver based largely on 2009 aerial photography (Metro Vancouver, 2020). The SEI identifies and maps ecologically significant and relatively unmodified Sensitive Ecosystems, including wetlands, older forests and woodlands using provincial standards. No SEIs, parks, protected recreation or conservation areas were identified with the Project area by Metro Vancouver however as mentioned the City of Surrey has identified portions of the Project Area as Sensitive Ecosystem Development Permit Areas (Figure 4).

A summary of the rare / sensitive plant species, as documented by the BC Ministry of Sustainable Resource Management, is provided in Table 2 below and shown in Figure 2. There are rare ecological communities identified for the CWHxm. Sixteen communities have been identified within the CWHxm subzone in Surrey; 3 within the Flood ecosystem group, 12 within the coniferous forest ecosystem group and 1 within the grassland ecosystem group. Due to the anthropogenic disturbances within the Project footprint it is unlikely that any are present. However, a field program will need to confirm whether any rare/sensitive vegetation and or ecological communities are present.

Table 2 Vegetation Species Considered “at Risk” under Provincial and / or Federal Legislation that may Inhabit the Project Study Area

English Name	Scientific Name	Provincial Status	SARA / COSEWIC	Last Date Observed	Project Footprint	Project Area (100 m Buffer)
Streambank lupine	<i>Lupinus rivularis</i>	S1 (Red)	Schedule 1 / E (Nov 2002)	July 2013	Yes	Yes
Two-edged water-starwort	<i>Callitriche heterophylla</i> var. <i>heterophylla</i>	SU	Not applicable	Sept 10 1989	No	Yes
Vancouver Island beggarticks	<i>Bidens amplissima</i>	S3 (Blue)	Schedule 1 / SC (Nov 2001)	Sept 6 1988	Yes	Yes
Provincial Status: Red: Includes any indigenous species or subspecies that have- or are candidates for- Extirpated, Endangered, or Threatened status in British Columbia. Not all Red-listed taxa will necessarily become formally designated. Blue: Includes any indigenous species or subspecies considered to be of Special Concern (formerly Vulnerable) in British Columbia. Blue-listed taxa are at risk, but are not Extirpated, Endangered or Threatened. S1=Critically imperiled: S3=Special concern, vulnerable to extirpation or extinction; and SU=Unrankable. SARA (<i>Species at Risk Act</i>) ranking: The date that the rank was last reviewed is presented in parentheses. E = ENDANGERED: A species facing imminent extirpation or extinction. SC = SPECIAL CONCERN: A species of special concern because of characteristics that make it is particularly sensitive to human activities or natural events.						

Two clusters of Streambank lupine are overlapped by the Project footprint along Timberland / Robson Roads and the associated rail lines. A third population of Streambank lupine, located at the southern end of the Project, is not directly affected but falls within the Project area (100 m buffer). A federally designated 50 m Critical Habitat buffer applies to these Streambank lupine areas. The Recovery Strategy for the Streambank Lupine (Environment Canada 2016) describes the current status of the species, protection measures implemented and supporting information for working in areas where it is present.

Existing Permit no. SARA-PYR-2019-0480 authorizes the Vancouver Fraser Port Authority to harm and kill individuals (seed, seedlings and mature plants) of Streambank Lupine during the clearing of habitat identified as Critical Habitat, for the expansion of railway lines at Site 2b and during habitat enhancement activities at Site 2a (Government of Canada, 2019). Site 2a appears to overlap with the Project area and site (Streambank Lupin Recovery Team, 2014). As part of the SARA permit application, the Vancouver Fraser Port Authority proposed to offset any disturbance at Site 2b by enhancing the nearby sub-population of streambank lupine identified in Site 2a, located south of Site 2b near Alaska Way. The enhancement works in Site 2a are approved under the SARA permit. The permit includes enhancement and monitoring activities at Site 2a over a 5-year period and includes the removal of competing vegetation and appropriate maintenance activities to encourage seed germination and seedling establishment (eg. watering and fine-scale vegetation maintenance).

A single small clump of two-edged water-starwort was observed submerged at high tide along the muddy shore of Mason Canal on September 10, 1989. Not directly overlapped by Project as it is located ~ 90 m north of Project’s northern limits.

No Vancouver Island beggarticks were observed on September 12, 2008, despite extensive surveys of ditches southwest of Grace Rd. and Fraser Way, on the east side of Bridge Road and along the railway up to 200 m east of previously reported location. The CDC data search indicated that this species was last observed (and samples collected) on September 6, 1988 (Figure 2).

3.2.2 Invasive Plant Species

Several invasive plant species inhabit the FSPLs (DataBC 2020). Blueweed (*Echium vulgare*) labelled as BW on Figure 2, is the most common invasive plant species located within the Project footprint. Blueweed is categorized as regional containment / control which means the management objective is to prevent further expansion into new areas within the region through establishment of containment lines. Two other invasive plant species, Japanese knotweed (*Fallopia japonica*) and Scotch broom (*Cytisus scoparius*), fall just outside of the 100 m buffer.

3.3 Wildlife

3.3.1 Rare/Sensitive Wildlife and Associated Wildlife Habitat

Following a review of the Site characteristics, historical observations and available information sources, it appears that there is minimal potential for rare/sensitive wildlife species to use the Project area. However, the Project overlaps the northern limits of a secured CDC mapped area, identified as Object ID: 38160 (Figure 2), and a request was set to the CDC to clarify if the proposed Project needs to address potential effects on the masked species. The results of this information request will be provided as soon as a reply is received.

Due to the proximity of the Fraser River there is the potential for various bird species to visit the Project area. It is highly unlikely that rare or sensitive bird species inhabited the Project footprint and 100 m buffer due to limited habitat and on-going disturbance. The Provincial *Wildlife Act* provides protection for the eggs and active nests of all birds during breeding season. Section 34 of the *Act* states "A person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys:

- (a) a bird or its egg;
- (b) the nest of eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl; or
- (c) the nest of a bird not referred to in paragraph(b) when the nest is occupied by a bird or its egg."

By default, protection of nests includes the protection of the trees containing them. Subsections 34(a) and (c) have generally been interpreted to protect the active nests of all birds during breeding season, which can begin in February and continue through August 15. The nests of the six birds listed in subsection (b) of the Provincial *Wildlife Act* are protected regardless of the time of year, or whether or not they are active. At the Federal level the *Migratory Birds Convention Act* (1994) provides similar protection for all migratory birds, during the breeding season in the Lower Mainland which is approximately March 1 to August 31 (Birds Canada, 2020).

The City of Surrey has an inventory of vegetation communities and their habitat suitability ranking for wildlife based on the habitat type of the mapped polygon (Figure 5). The ecological value was identified as very high, moderate high, moderate, low and very low. The higher end of the rankings was found on the more natural environments including creeks and their riparian areas, and forested parks. The lower valued habitat occurred in rights-of-way and open space parks. The higher ranked habitat suitability polygons occur in the southern portion of the Project area however most of it is located outside the Project footprint.

The City in cooperation with the BC Nature Wildlife Tree Stewardship program maintains a database of bald eagle nests. An eagle nest tree is noted south of the Project area near the Alex Fraser Bridge on the south bank of the Fraser and another on the south bank of the Fraser River across the northern end of Annacis Island.

3.3.2 Important Bird Areas

The Boundary Bay - Roberts Bank - Sturgeon Bank (Fraser River Estuary) Important Bird Area (IBA BC017) is a large interconnected mix of marine, estuarine, freshwater and agricultural habitats that includes the waters of Sturgeon Bank, between the north and south arms of the Fraser River, and Roberts Bank, south of the south arm of the Fraser River. This IBA is rated as follows: globally significant for Congregatory Species, Waterfowl Concentrations, Colonial Waterbirds/Seabird Concentrations, Shorebird Concentrations; continentally Significant for Congregatory Species; and Nationally Significant for Threatened Species, Congregatory Species, Wading Bird Concentrations. Threats to IBA BC017 associated with the Project would be limited to direct and indirect effects on the aquatic environment associated with construction activities and improved / increased traffic.

4 POTENTIAL PROJECT INTERACTIONS

4.1 Potential Effects

High-level potential project interactions are summarized in Table 3 below and may include:

- Direct effects to vegetation including several rare / sensitive species;
- Direct and indirect effects to birds;
- Direct and indirect effects to fish and fish habitat; and
- Direct and indirect effects to water quality.

Table 3 Project Activities and Potential Effects

Project Activities	Potential Effect
<ul style="list-style-type: none"> – Widening / realignment of existing roads – construction of new roads 	<ul style="list-style-type: none"> – disturbance / removal of terrestrial vegetation, shrubs and trees – direct mortality, physical injury or behavioral change to birds due to habitat disturbance or removal of nests – direct / indirect effects to listed rare / sensitive vegetation specie
<ul style="list-style-type: none"> – Riparian area and instream works 	<ul style="list-style-type: none"> – decrease in water quality due to sedimentation or mobilization of historical soil contamination – disturbance / loss of riparian area or instream freshwater habitat – direct mortality, physical injury or behavioral change to fish due to instream works

The environmental assessment will provide a more detailed assessment of project interactions, effects and mitigation however there does appear to be an opportunity to improve the general environment disturbed within the Project footprint by removing invasive plant species and revegetating with native vegetation appropriate for the area.

4.2 Permits and Approvals

A high-level summary of permits and approvals that may be required, in addition to the Vancouver Fraser Port Authority Project Environmental Review, is provided below in Table 4. In general, project activities within riparian and instream environments would require additional permitting, mitigation and monitoring effort.

Table 4 Potential Permits and Approvals

Project Activity	Potential Permits and Approvals	Timing Constraints and Considerations
<ul style="list-style-type: none"> - Widening / realignment of existing roads - Construction of new roads 	<ul style="list-style-type: none"> - Vancouver Fraser Port Authority Project Environmental Review - Permit Authorizing an Activity Affecting Listed Wildlife Species Regulations under section 73 of the <i>Species at Risk Act</i> (for Streambank Lupine) - City of Surrey – Permit required for Project activities within Sensitive Ecosystems Development Permit Areas (i.e. Streamside Areas and Green Infrastructure Areas) - City of Surrey – Erosion & Sediment Control (ESC) Permit for construction projects that have a disturbed area equal to or greater than 2,000 m 	<ul style="list-style-type: none"> - Breeding bird window for Lower Mainland in compliance with BC <i>Wildlife Act</i> and <i>Migratory Birds Convention Act</i> - Detailed field surveys for environmental assessment of rare / sensitive vegetation species identified as potentially located with Project footprint / area (100 m buffer) - SARA permit 90-day time limit from the date of notification that the application is complete to issue the approval
<ul style="list-style-type: none"> - Riparian area / instream works 	<ul style="list-style-type: none"> - DFO Request for Review, potentially a Letter of Authorization under paragraph 35(2) of the <i>Fisheries Act</i> - Fish Salvage Permit - BC <i>Water Sustainability Act</i> notification - City of Surrey Sensitive Ecosystems Development Permit – Streams and Green Infrastructure - City of Surrey Hazard Lands Development Permit – Flood Prone Areas - <i>Canadian Navigable Waters Act</i> Notification / Permit may be required depending on proposed changes to any water crossings. 	<ul style="list-style-type: none"> - DFO - 60-day time limit to review an application to determine whether the required information has been submitted, and a 90-day time limit from the date of notification that the application is complete to issue the authorization (additional time would be required if Habitat Offsetting is required) - The reduced risk work window for the South Coast ranges between the end of May and end of October depending on the fish species present (BC Ministry of Environment 2006) - The target time for issuing a fish salvage permit is 30 days however processing time may be considerably longer if there is a required consultation process - <i>Water Sustainability Act</i> notification estimated to be 140 days however this can be longer in the Lower Mainland

4.3 Mitigation Measures

Depending on the final Project design, mitigation will be required that protects the environment and satisfies permit and approval requirements. Mitigation measures will need to address the potential effects of all stages of the construction, as well as on-going operations. A Construction Environmental Management Plan (CEMP) and various other environmental protection plans will need to be developed, the level of detail for which will be determined following confirmation of final Project design. Table 5 provides a summary of example Protection Plans that may be required.

Table 5 Protection Plans that may be Required

Project Activity	Environmental Protection Plans that may be Required
<ul style="list-style-type: none"> - Widening / realignment of existing roads - Construction of new roads 	<ul style="list-style-type: none"> - CEMP which includes best management practices for construction activities and specifically outlines protection measures for rare / sensitive species (terrestrial and aquatic environments as required) - Spill Response Plan for construction - Contractor Environmental Protection Plan (EPP) - Updated Environmental Management Plan for operations
<ul style="list-style-type: none"> - Riparian area and instream works 	<ul style="list-style-type: none"> - Fish Salvage Plan if required for instream works - Riparian Habitat Restoration Plan if required

5 RECOMMENDATIONS

The desktop information review provides a high-level summary of publicly available fisheries, vegetation and wildlife environmental data for the Project area. Following the selection of one or more transportation route options a detailed baseline survey will be required to evaluate potential Project interactions and confirm regulatory approvals and permits. The proximity of federally designated Critical Habitat for Streambank lupine to the proposed Project will require additional research and discussions with the appropriate regulators. Discussions with regulators should clarify if the current FSPA SARA permit will apply to the proposed Project. In the event that the Project footprint directly affects riparian habitat or involves instream works it is recommended that regulatory consultation commence as soon as possible as required approvals and permits may take months and possibly up to a year to receive.

An environmental effects assessment will be required in order to identify project interactions and complete the necessary reporting and associated regulatory approval and permit applications. Project specific mitigation measures will be required to eliminate or reduce effects to the environment. Mitigation and monitoring requirements will be directed by regulatory approvals and permits.

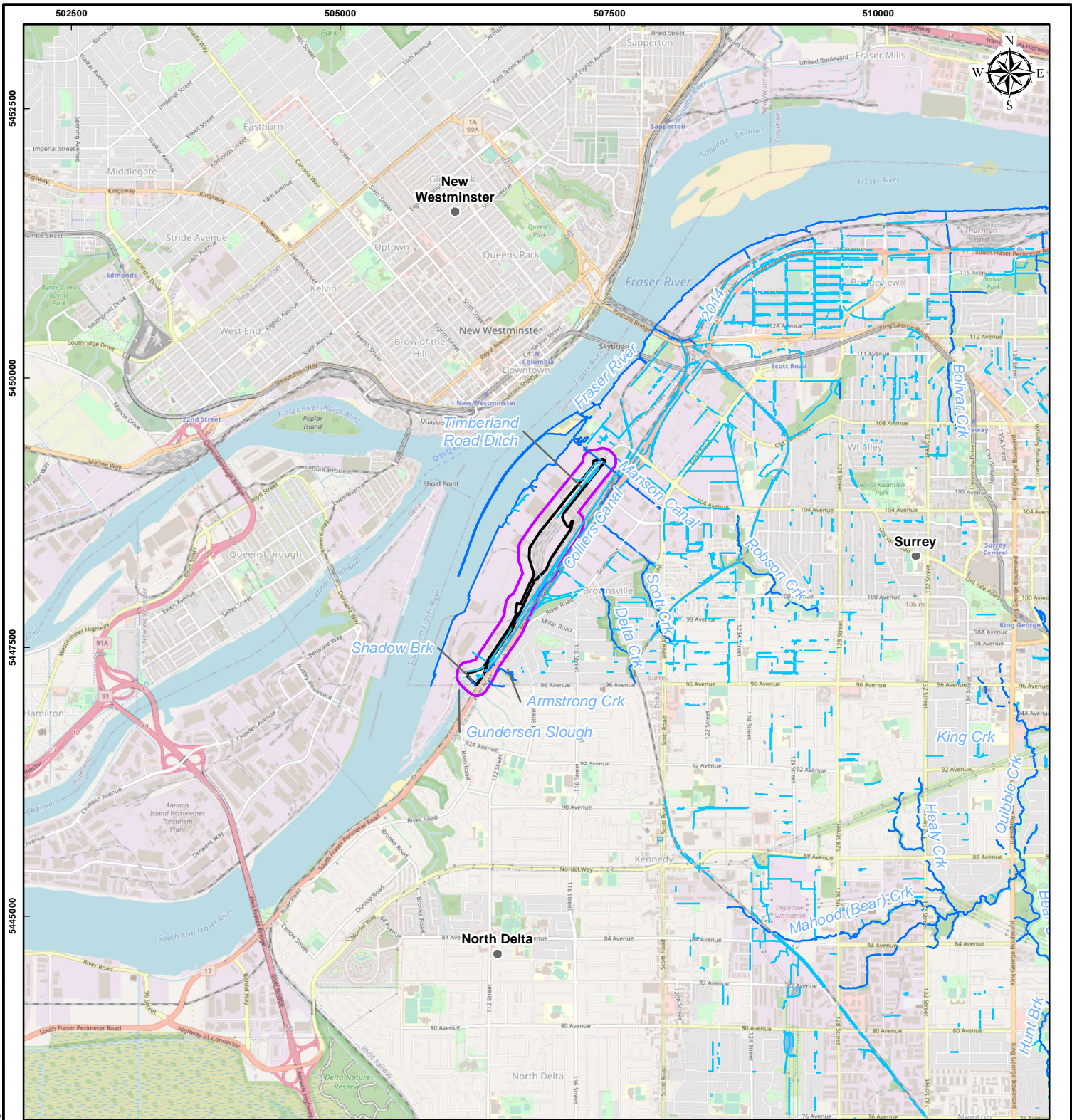
6 REFERENCES

- BC Ministry of Environment. March 2006. Guidelines for Reduced Risk Instream Work Windows Ministry of Environment, Lower Mainland Region. Available at: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows> Accessed June 2020.
- Streambank Lupine Recovery Team. 2014. Recovery Plan for Streambank Lupine (*Lupinus rivularis*) in British Columbia. Report prepared for the British Columbia Ministry of Environment. Available at: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/streambank-lupine-2017/part-2.html#_fig02 Accessed June 2020.
- Bird Studies Canada. 2019. Important Bird and Biodiversity Areas of Canada, Site ID: BC017 Available at: <https://www.ibacanada.ca/maps/sites/BC017.pdf> and <https://www.ibacanada.ca/site.jsp?siteID=BC017> Accessed June 2020.
- Birds Canada. 2020. Nesting Query Calendar. Available at: <https://www.birdscanada.org/apps/rnest/index.jsp> Accessed June 2020.
- Environment Canada. 2016. Recovery Strategy for the Streambank Lupine (*Lupinus rivularis*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. 13 pp. + Annex. Available at: https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/plans/rs_streambank_lupine_e_proposed.pdf Accessed June 2020.
- Fisheries and Oceans Canada. 2007. Recovery Strategy for the Northern Abalone (*Haliotis kamtschatkana*) in Canada. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Vancouver. vi + 31 pp. Available at: https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/plans/rs_Northern_Abalone_0907_e.pdf Accessed June 2020.
- Government of Canada. 2019. Explanation for issuing permit (SARA-PYR-2019-0480) pursuant to the provisions of section 73 of SARA - Streambank Lupine Available at: <https://species-registry.canada.ca/index-en.html#/permits/895-3> Accessed June 2020.

APPENDIX

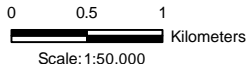
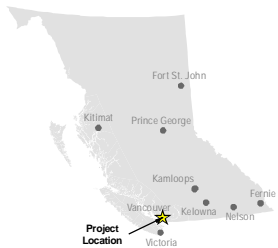


FIGURES



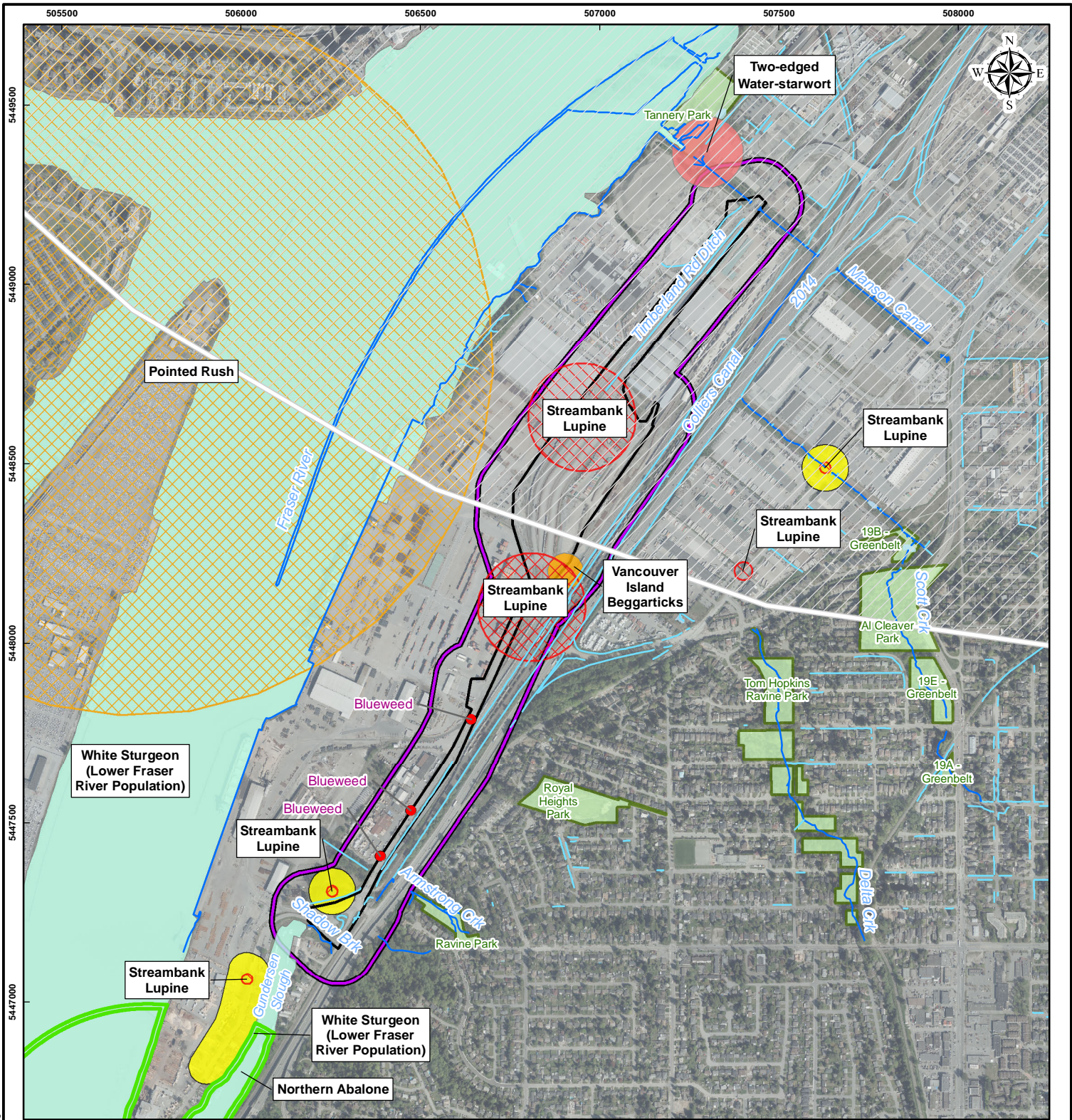
Legend

- Populated Place
- Ditch
- Creek and River
- Waterbody
- ▨ Wetlands
- ▭ Project Area (100m buffer)
- ▭ Study Area



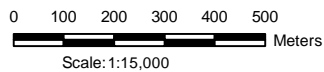
References:
 Data BC - BC Catalogue
 Open Government License
 (<http://www.data.gov.bc.ca/>)
 NRCAN Geotris
 Open Government License
 (<http://geotris.cgdi.gc.ca/>)

CLIENT: Vancouver Fraser Port Authority	
PROJECT: Fraser Surrey Port Lands - Transportation Improvements Preliminary Design Services	
TITLE: <h1>Project Location Map</h1>	
DATE: June 11, 2020	PROJECT NO: 20M-00758-00
Figure 1	
GIS FILE: 01-01-001_Overview.mxd	
COORDINATE SYSTEM: NAD 1983 UTM Zone 10N	ANALYST: MY
	REVIEWED: SB



Legend

- Populated Place
- IAPP Invasive Plant (Blueweed)
- Ditch
- Creek and River
- ▭ Project Area (100m)
- ▭ Study
- ▭ Parks
- ▭ Streambank Lupine Critical Habitat
- ▭ Waterbody
- ▭ Wetlands
- ▭ CDC Masked Sensitive
- CDC Non Sensitive
- ▨ Pointed Rush
- ▨ Streambank Lupine
- ▨ Two-edged Water-starwort
- ▨ Vancouver Island Beggarticks
- ▨ White Sturgeon (Lower Fraser River Population)
- ▨ DFO Aquatic Species at Risk Distribution 2019
- ▨ Northern Abalone



References:
 Data BC - BC Catalogue
 Open Government License
 (http://www.data.gov.bc.ca/)
 NRCAN Geogatis
 Open Government License
 (http://geogatis.cgdi.gc.ca/)

CLIENT: **PORT of vancouver** Vancouver Fraser Port Authority

PROJECT: **Fraser Surrey Port Lands - Transportation Improvements Preliminary Design Services**

TITLE: **Rare / Sensitive Species, Critical Habitat and Invasive Species**

DATE: June 11, 2020 PROJECT NO: 20M-00758-00 **Figure 2**

GIS FILE: 01-01-004_Enviro_Feature.mxd
 COORDINATE SYSTEM: NAD 1983 UTM Zone 10N
 ANALYST: MY REVIEWED: SB



Y:\GIS\Projects\2020\20M-00758-00_VFPA_Transportation\Mapping\01_general\01_overview\01-01-004_Enviro_Feature.mxd

505500 506000 506500 507000 507500 508000

Species Code	Species Name
AO	All Salmon
CAS	Prickly Sculpin
CBC	Chub (General)
CC	Sculpin (General)
CCT	Coastal Cutthroat Trout
CO	Coho Salmon
CP	Carp
CT	Cutthroat Trout
FM	Fathead Minnow
L	Lamprey (General)
PK	Pink Salmon
RB	Rainbow Trout
RSC	Redside Shiner
SB	Stickleback (General)
SP	Fish Unidentified Species
SU	Sucker (General)
TSB	Threespine Stickleback

CAS, CBC, CCT,
CO, CP, CT, FM,
RB, SB, SU, TSB

RSC, TSB
FM, TSB
FM, TSB
TSB

CAS, CBC, CO,
CT, SU, TSB

CAS, CO,
CT, TSB

CO, CT, PK,
SB, TSB

CO, CT, CT,
L, SP, TSB

CO, TSB
CT, SB
AO, CC, CO,
CT, FM, L,
SP, TSB

CCT, TSB

CO, CT, L,
RB, SB, TSB

CT, SB

CT, SB

CT, SB

CT, SB

CT

19B -
Greenbelt

19E -
Greenbelt

19A -
Greenbelt

TSB

TSB

CT

CCT, CO

CT

CT

5448500

5449000

5448500

5448000

5447500

5447000



Fraser River

Timberland Rd/Ditch

Colliers Canal

Scott Crk

Al Cleaver Park

Tom Hopkins Ravine Park

Royal Heights Park

Armstrong Crk

Ravine Park

Gunderson Slough

Notes: Fish Classification

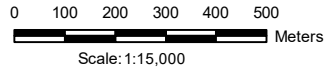
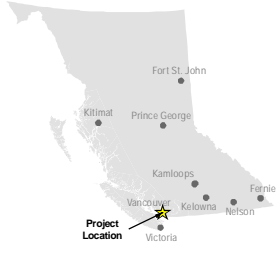
Class A: Inhabited by fish year-round or potentially inhabited by fish year round. Considered 'streams' as defined by the Provincial Water Sustainability Act and Riparian Areas Protection Regulation. Considered fish habitat as defined by the Federal Fisheries Act

Class A(O): Inhabited by fish primarily during the over-wintering period or potentially inhabited by fish during the over-wintering period with access enhancement. Considered a 'stream' as defined by the Provincial Water Sustainability Act and Riparian Areas Protection Regulation. Considered fish habitat as defined by the Federal Fisheries Act

Class B: Provides food/nutrient value to downstream fish habitat. No fish potential present at any time of the year. Considered a 'stream' as defined by the Provincial Water Sustainability Act and Riparian Areas Protection Regulation. Considered fish habitat by the defined by the Federal Fisheries Act

Class C: A water feature that is not considered a 'stream' as defined by the Provincial Water Sustainability Act and Riparian Areas Protection Regulation. Not considered fish habitat as defined by the Federal Fisheries Act. No fish potential present at any time of the year.

- Legend**
- Populated Place
 - FISS Point
 - ▭ Project Area (100m buffer)
 - ▭ Parks
 - ▭ Study Area
 - Watercourse (Fish Classification)
 - A
 - - - AO
 - B
 - C
 - Unknown



References:
Data BC - BC Catalogue
Open Government License
(<http://www.data.gov.bc.ca/>)
NRCAN Geogratis
Open Government License
(<http://geogratis.gc.ca/>)

CLIENT: **PORT of vancouver** Vancouver Fraser Port Authority

PROJECT: **Fraser Surrey Port Lands - Transportation Improvements Preliminary Design Services**

TITLE: **Provincial and Federal Watercourse Fish Classification and Fish Species Occurrences**

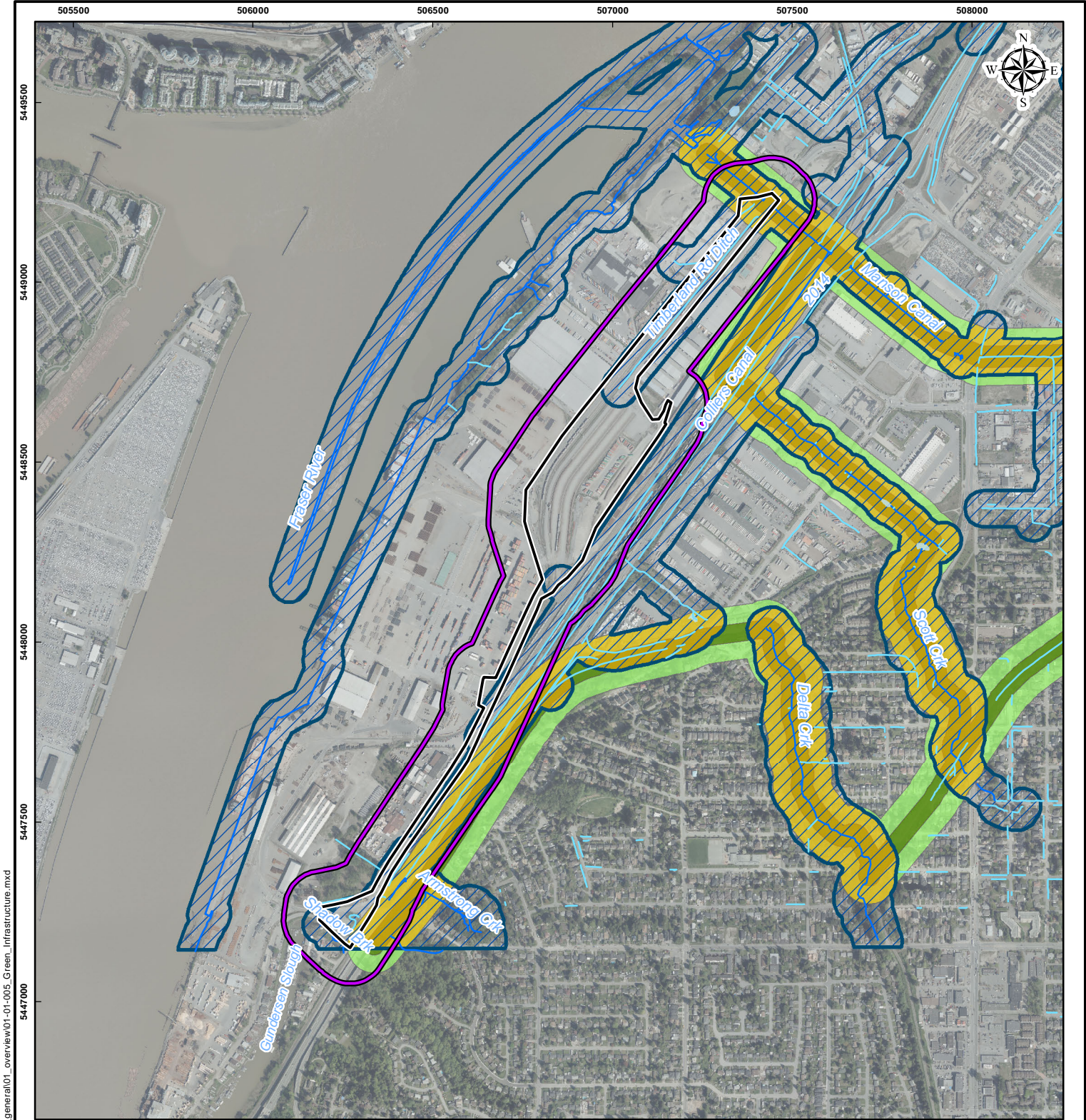
DATE: June 11, 2020 PROJECT NO: 20M-00758-00 **Figure 3**

GIS FILE: 01-01-002_Watercourse.mxd

COORDINATE SYSTEM: NAD 1983 UTM Zone 10N

ANALYST: MY REVIEWED: SB

Y:\GIS\Projects\2020\20M-00758-00_VFPA_TransportationMapping\01_general\01_overview\01-01-002_Watercourse.mxd

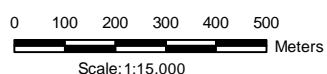


Y:\GIS\Projects\2020\20M-00758-00_VFPA_Transportation\Mapping\01_general\01_overview\01-01-005_Green_Infrastructure.mxd

Legend

- Populated Place
- Ditch
- Creek and River
- Waterbody
- Wetlands
- Parks
- Project Area (100m buffer)
- Study Area
- Green Infrastructure Network Corridors

- Sensitive Ecosystems Development Permit Area
- Streamside Areas
 - Green Infrastructure Areas
 - Streamside and Green Infrastructure intersect



References:
 Data BC - BC Catalogue
 Open Government License
 (<http://www.data.gov.bc.ca/>)
 NRCAN Geogatis
 Open Government License
 (<http://geogatis.cgdi.gc.ca/>)

CLIENT: Vancouver Fraser Port Authority			
PROJECT: Fraser Surrey Port Lands - Transportation Improvements Preliminary Design Services			
TITLE: <h2 style="text-align: center;">City of Surrey Sensitive Ecosystems Development Permit Areas</h2>			
DATE: June 11, 2020	PROJECT NO: 20M-00758-00	Figure 4	
GIS FILE: 01-01-005_Green_Infrastructure.mxd		ANALYST: MY	REVIEWED: SB
COORDINATE SYSTEM: NAD 1983 UTM Zone 10N			

