VANCOUVER FRASER PORT AUTHORITY
WSP PROJECT NUMBER: 20M -00758-00

FRASER SURREY PORT LAND – TRANSPORTATION IMPROVEMENTS

VEGETATION PLAN

MAY 14, 2021

CONFIDENTIAL

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VEGETATION PLAN

VANCOUVER FRASER PORT AUTHORITY

REPORT

PROJECT NO.: 20M-00758-00
CLIENT REF:#20-0173
DATE: MAY 14, 2021

WSP
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May 14, 2021

Confidential

Vancouver Fraser Port Authority
Senior Construction Project Specialist
100 The Point, 999 Canada Place
Vancouver, B.C.
V6C 3T4

Attention: Vinil Reddy, M.Sc., MBA, PMP, P.Eng., ENV SP

Dear Madam/Sir:

Subject: Fraser Surrey Ports Land Transportation Improvement – Vegetation Plan Report
Client ref.:

WSP is please to submit our Vegetation Plan Report for your review and consideration. The Vegetation Plan Report presents the preliminary survey and assessment of vegetation, for the proposed activities for the construction and operations of the Fraser Surrey Port Lands Transportation Improvement Project.

We look forward to working with you on this Project to ensure successful and compliant delivery of services.

Yours sincerely,

R. Smedley

Rosalyn Smedley, M.Sc., R.P.Bio
Biologist

WSP ref.: 20M-00758-00

SIGNATURES

PREPARED BY

Rosalyn Smedley, M.Sc., R.P.Bio
Biologist

14 May 2021
Date

Susan Blundell, M.Sc., R.P.Bio
Plant Ecologist

14 May 2021
Date

APPROVED[1] BY

Michael Taylor, BLA, MRM
Team Lead, Ecology & EIA

14 May 2021
Date

[1] Approval of this document is an administrative function indicating readiness for release and does not impart legal liability on to the Approver for any technical content contained herein. Technical accuracy and fit-for-purpose of this content is obtained through the review process. The Approver shall ensure the applicable review process has occurred prior to signing the document.

CONTRIBUTORS

WSP

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Plant Ecologist	Susan Blundell, M.Sc. R.P.Bio.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND AND RATIONALE

As a component of the Greater Vancouver Gateway 2030 Program, the Fraser Surrey Port Lands (FSPL) – Transportation Improvements Project (FSPL – TI) (the "Project"), includes an options confirmation review and preliminary engineering design of new or upgraded transportation infrastructure within the City of Surrey FSPL. The primary purpose of the Project is to improve the road network within FSPL and ease congestion in the general area.

1.2 PROPOSED WORKS

The three main components of the FSPL-TI project include:

1. At- Grade Railway Crossing Updates.
2. New Roadway Connection for Timberland Road South to Robson Road: Re-alignment of the Robson Road-Timberland Road North corridor with the introduction of the Timberland Road South as the main access road within FSPL will enable most road users to avoid conflicts with at-grade rail crossing along the existing Timberland Road North. Road widening along Timberland Rd South, including a new signalized intersection at Timberland Wye is proposed as part of this Project. The project will also provide the long-term rail footprint in the area for trains servicing the planned future terminals. With majority of truck traffic being directed to the new road alignment, this eases up traffic flow on the existing Timberland Road. Changing the inbound container truck movements by providing a dedicated truck auxiliary lane, complete with Vehicle Access Control System (VACS) gates will manage inbound truck traffic into DP Word Fraser Surrey (DPWFS) container gate and streamline traffic flow.
3. Pavement Rehabilitation and Pavement Markings along Robson Road: Rehabilitation of Robson Rd to address pavement and drainage issues which contributes to the overall operation of the road corridor and maintenance costs at FSPL. Enhancement of pavement markings along Robson Rd will allow for better lane usage.

1.3 OBJECTIVES

The objectives of the vegetation plan are to identify the existing trees and vegetation at the project site, the types of vegetation that will be removed and the proposed mitigation plan for vegetation that is removed. This Vegetation Plan contains the following:

- List of plant species and abundance, biodiversity, species richness;
- Invasive species types and abundance;
- Type of vegetation removal including any trees to be removed;
- Tree protection plan;
- Species to be replanted and their location for replanting;
- Landscaping and or fencing required; and,

- Riparian vegetation to be removed and proposed ratio of replacement planting and adaptive management, monitoring and control plan.

Detailed project description and methodology for desktop review and field site visit are available in the Biophysical Survey and Assessment Report. The Biophysical Report also provides a full description of project effects and proposed mitigation measures. This document provides a summary of that information as it pertains to the Vegetation Plan. Invasive species monitoring and management areas is provided in a separate document.

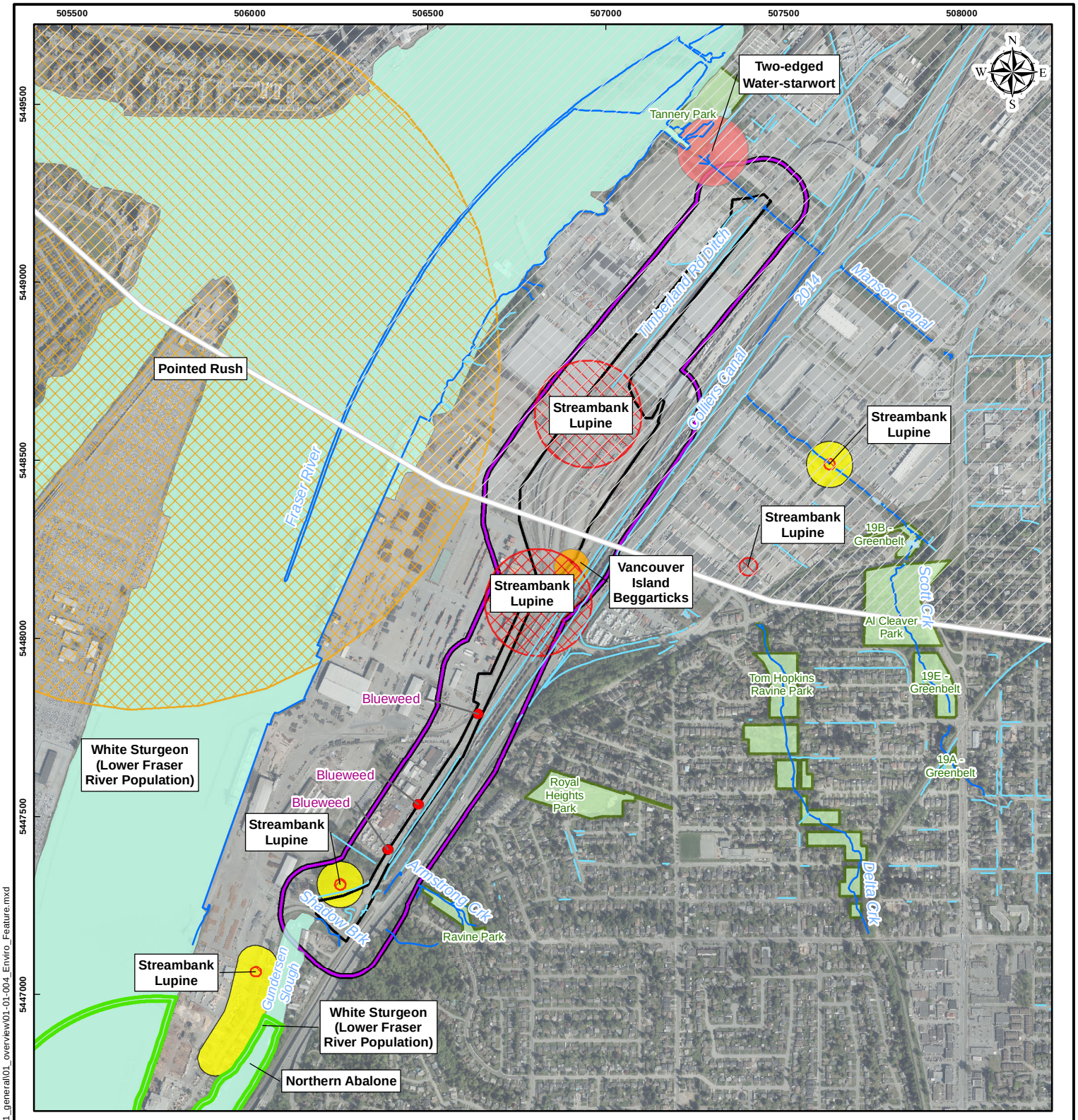
2 EXISTING CONDITIONS

2.1 DESKTOP REVIEW

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 (CWHxm1). 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).

2.1.1.1 *RARE/SENSITVE VEGETATION AND ECOLOGICAL COMMUNITIES*

A summary of the rare plant species, as documented by the BC Ministry of Sustainable Resource Management, is provided in Table 1 below and shown in Figure 1. There are rare ecological communities identified for the CWHxm1. Sixteen communities have been identified within the CWHxm1 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; this was confirmed during the field survey.



Legend

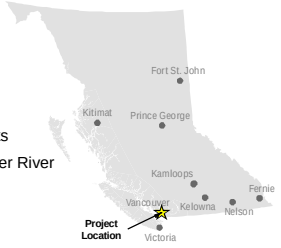
- Populated Place
- IAPP Invasive Plant (Blueweed)
- Ditch
- Creek and River
- Project Area (100m
- Study
- Parks
- Streambank Lupine Critical Habitat
- Waterbody
- Wetlands
- CDC Masked Sensitive

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



0 100 200 300 400 500 Meters

Scale: 1:15,000

References:
Data BC - BC Catalogue
Open Government License
(http://www.data.gov.bc.ca/)
NRCAN Geogratis
Open Government License
(http://geogratis.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:	PROJECT NO:	
June 11, 2020	20M-00758-00	**Figure 1**

GIS FILE: 01-01-004_Enviro_Feature.mxd

COORDINATE SYSTEM:	ANALYST:	REVIEWED:
NAD 1983 UTM Zone 10N	MY	SB

wsp

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Table 1 - 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	*Lupinus rivularis*	S1 (Red)	Schedule 1 / E (Nov 2002)	July 2013	Yes	Yes
Two-edged water-starwort	*Callitriche heterophylla var. heterophylla*	SU	Not applicable	Sept 10 1989	No	Yes
Vancouver Island beggarticks	*Bidens amplissima*	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 (*Species at Risk Act*) 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. No occurrences of Streambank lupine were observed during the April 2021 field survey.

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 1). No occurrences of Vancouver Island beggarticks were observed during the April 2021 field survey.

2.1.1.2 *INVASIVE PLANT SPECIES*

Several invasive plant species inhabit the FSPL (DataBC 2020). According to available secondary data blueweed (*Echium vulgare*) Figure 1, 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.

2.1.2 SITE VISIT

A preliminary site visit was conducted on December 16, 2020. Based on the timing of the site visit it was determined that a follow-up site visit in the spring would be necessary in order to develop a comprehensive inventory of plant species present within the Project footprint. A second field visit was completed on April 20, 2021. The site visit focussed on identifying tree and vegetation cover, the presence of rare plants or plant communities and the presence and distribution of invasive plants. Table 2 provides a summary of vegetation that was observed during the December and April site visits.

Table 2 - Summary of Vegetation Species Encountered during the 2020 Surveys

Common Name	Scientific Name	Type[1]	Site #1	Site #1a	Site #2	Site #3	Site #4	Site #5	Site #6	Site #7	Site #8	Site #9	Site #10	Site #11
alfalfa	*Medicago sativa*	2								✓				✓
arbutus	*Arbutus menziesii*	1		✓										
bigleaf maple	*Acer macrophyllum*	1				✓								
bittercress	*Cardamine sp.*	2		✓								✓		
black cottonwood	*Populus trichocarpa*	1		✓	✓			✓		✓		✓	✓	✓
blueweed	*Echium vulgare*	2,3							✓	✓				
bull thistle	*Cirsium vulgare*	2,3										✓		
butterfly bush	*Buddleia davidii*	2,3												
canada bluegrass	*Poa canadensis*	1			✓		✓		✓	✓				
Canada goldenrod	*Solidago canadensis*	1		✓	✓		✓	✓		✓	✓			✓
changing forget-me-not	*Myosotis discolor*	2										✓		
cleavers	*Galium aparine*	1										✓		
common burdock	*Arctium minus*	2,3										✓		
common cattail	*Typha latifolia*	1				✓			✓	✓		✓	✓	
common groundsel	*Senecio vulgaris*	2,3		✓								✓		
common horsetail	*Equisetum arvense*	1				✓	✓		✓	✓	✓	✓	✓	✓
common juniper	*Juniperus communis*	1				✓								
common mullein	*Verbascum thapsus*	2												✓
common rush	*Juncus effusus*	1						✓		✓		✓		
common snowberry	*Symphoricarpos albus*	1						✓						
creeping buttercup	*Ranunculus repens*	1			✓				✓			✓		
dandelion	*Taraxacum officinale*	2								✓	✓	✓		
early winter cress	*Barbarea verna*	2,3		✓										
english plantain	*Plantago lanceolata*	2								✓		✓		✓
evening primrose	*Oenothera biennis*	2		✓				✓		✓				✓
fireweed	*Epilobium angustifolium*	1					✓		✓	✓		✓		
hardhack	*Spiraea douglasii*	1						✓	✓					
hawkweed	*Hieracium sp.*	2									✓			
hedge bindweed	*Calystegia sepium*	2,3										✓		
hedge mustard	*Sisymbrium officinale*	2								✓		✓		

Common Name	Scientific Name	Type[1]	Site #1	Site #1a	Site #2	Site #3	Site #4	Site #5	Site #6	Site #7	Site #8	Site #9	Site #10	Site #11
herb-Robert	*Geranium robertianum*	2									✓			
Himalayan blackberry	*Rubus armeniacus*	2,3	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
hoary rock moss	***Racomitrium** lanuginosum*	1	✓	✓										
Hooker's willow	*Salix hookeriana*	1				✓		✓		✓		✓		
japanese knotweed	*Reynoutria japonica*	2,3				✓								
lady fern	*Athyrium filix-femina*	1				✓								
Nootka rose	*Rosa nutkana*	1				✓								
Pacific willow	*Salix lucida*	1								✓				
purple loosestrife	*Lythrum salicaria*	2,3						✓	✓	✓				
red alder	*Alnus rubra*	1	✓			✓						✓	✓	
red-osier dogwood	*Cornus sericea*	1			✓	✓						✓		
reed canarygrass	*Phalaris arundinacea*	2,3			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
rhododendron	*Rhododendron macrophyllum*	1				✓								
salmonberry	*Rubus spectabilis*	1				✓								
Scotch broom	*Cytisus scoparius*	2,3								✓			✓	✓
Scouler's willow	*Salix scouleriana*	1								✓				
scouring rush	*Equisetum hyemale affine*	1				✓				✓				
sheep sorrel	*Rumex acetosella*	2								✓				
silver birch	*Betula pubescens*	2		✓										
slough sedge	*Carex obnupta*	1								✓		✓		
smooth cat's ear	*Hypochaeris glabra*	2,3	✓	✓								✓		
spiny sow-thistle	*Sonchus asper*	2,3								✓	✓			
spotted touch-me-not	*Impatiens capensis*	2										✓		
st johns wort	*Hypericum perforatum*	2,3	✓	✓						✓	✓	✓		✓
stork's bill	*Erodium cicutarium*	2									✓			
tansy	*Tanacetum vulgare*	2,3	✓		✓	✓				✓		✓	✓	✓
tansy ragwort	*Jacobaea vulgaris*	2,3									✓	✓	✓	
western white clematis	*Clematis ligusticifolia*	1									✓			
wild carrot	*Daucus carota*	2												✓
wintercress	*Barbarea vulgaris*	2,3									✓			

Note: 1= native, 2= introduced, 3 = invasive. Check mark indicates presence.

3 POTENTIAL VEGETATION REMOVAL

3.1 PROJECT INTERACTIONS AND VEGETATION REMOVAL

Removal of riparian vegetation may occur due to road expansion and ditch infilling along South Timberland Road, and Timberland Wye Intersection. Machinery will be required to remove vegetation, excavate for new stormwater pipes and then infilling of ditches. Riparian vegetation is composed mostly of invasive species including Himalayan blackberry, reed canary grass and Scotch Broom. To limit effects, ditches will only be infilled to accommodate the functional safety of the new road but will continue to function in part or in whole. Because not all of the ditch infill and riparian vegetation removal can be avoided there will be residual effects from these construction activities including the loss of approximately 3,266 m^2 of riparian habitat (Table 3). In addition, approximately 1,746 m^2 of terrestrial vegetation will be removed for the new Timberland Road South extension (Table 3). A Replanting Plan and offsetting or compensation for the loss of riparian vegetation is likely required.

Table 3 - Summary of Potential Interactions and the Amount of Vegetation to be Removed

Section of Road	Area of Construction Impact	Type of Vegetation that may be Removed.	
		Terrestrial	Riparian
New South Timberland Road	2046 m^2	1,746 m^2	N/A
Expansion of South Timberland Road West Ditch	3046 m^2	N/A	3,046 m^2
Timberland Wye (North Ditch)	314 m^2	N/A	220 m^2

Additional mitigation measures include but are not limited to:

- Refer to Invasive Species Assessment Report for details regarding handling and disposing of invasive species encountered during construction and operations;
- Limit areas of vegetation clearing and delineated areas with flags or fencing;
- Avoid clearing or grubbing near watercourses;
- Conserve low growing vegetation (grasses).

4 TREE PROTECTION PLAN

The Tree Protection Plan should include the following:

- Marking trees or flagging/fencing areas that are to be protected during the construction phase of the project, this includes the Root Protection Zone (RPZ) (DBH x 12);
- Install ‘Tree Protection’ signs;
- Take all measures necessary to prevent the activities such as storage of materials or equipment, stockpiling of soil or excavated materials, burning, excavation or trenching or cutting of roots or branches within the tree protection areas;
- Restrict vehicle traffic to designated access routes and travel lanes to avoid soil compaction and vegetation disturbances; and,
- Avoid alterations to existing hydrological patterns to minimize impact on vegetation.

5 REPLANTING AND OFFSET PLANS

A final version of the Vegetation Plan including a planting plan will be developed once the Project Design Phase is 90% complete and the amount of vegetation for removal can be finalized. Planting should be scheduled for spring or fall. The placement of mulch will be beneficial as it will reduce the establishment of weeds, retain moisture during periods of hot, dry weather and protect from extreme periods of cold weather. Metro Vancouver has an Urban Tree list of over 300 species for a Changing Climate. General guidelines and treatments could include:

- Replanting or seeding with native species according to the BEC zone using guaranteed nursery stock;
- Recommendations for improving the soil condition;
- Recommendations for reducing soil erosion;
- Salvaging and relocating existing native plants;
- Preparing a management/monitoring plan for protecting and watering newly seeded areas or new plants; and
- Preparing a maintenance plan for pruning.

Due to the loss of riparian vegetation from ditch infilling, these areas will have to be offset either onsite or at another location. A *Fisheries Act* Authorization as well as an Authorization under the *Water Sustainability* Act will likely be required. Onsite locations can include the enhancement of existing riparian areas and disturbed areas. The amount of offsetting can be determined once design is 90% complete. Site locations should have similar habitat features and should provide at minimum a 2:1 ratio of compensation. A List of Native Plants including coniferous, deciduous, shrubs and grasses ideal for the habitat location should be made available depending on the site location chosen.

REFERENCES

Streambank Lupine Recovery Team. 2014. Recovery Plan for Streambank Lupin (*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.

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.