Surrey Langley SkyTrain:

Construction Environmental Management Plan Framework

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Abbreviations

Acronym / Abbreviation	Definition
AIA	Archaeological Impact Assessment
ALR	Agricultural Land Reserve
AOA	Archaeological Overview Assessment
AOI	(Archaeological) Area of Interest
APEC	Area of Potential Environmental Concern
AQP	Appropriately Qualified Professional (as defined by MOTI DBSS 165)
BC	British Columbia
BMP	Best Management Practice
CEMP	Construction Environmental Management Plan
COSMOS	City of Surrey Mapping Online System
DBSS	Ministry of Transportation and Infrastructure Design-Build Standard Specifications
EMA	BC *Environmental Management Act*
ENV	BC Ministry of Environment and Climate Change Strategy
EP	Environmental Procedure (as defined by MOTI DBSS 165)
EQMP	Environmental Quality Management Plan
ESA	Environmentally Sensitive Area (as defined by MOTI DBSS 165)
ESC	Erosion and Sediment Control
ESR	Environmental Screening Review
FOR	BC Ministry of Forests
GHG	Greenhouse Gas
GTUF	Green Timbers Urban Forest
HCA	*BC Heritage Conservation Act*
Hemmera	Hemmera Envirochem Inc.
KPI	Key Performance Indicator
MOTI	Ministry of Transportation and Infrastructure
NRDE	Non-road Diesel Engine
Project	Surrey Langley SkyTrain Project
Project Co	Project Contractor
RCD	Reference Concept Design
SE	Screening Element
TDG	Federal *Transportation of Dangerous Goods Act*
TransLink	South Coast British Columbia Transportation Authority
WSA	BC *Water Sustainability Act*

Symbols and Units of Measure

Symbol/Unit of Measure	Definition
%	percent
>	more than
<	less than
dB	decibel
dBA	A-weighted decibel
ha	hectare
hr	hour
m	metre
mm	millimetre
PPV	peak particle velocity
VdB	vibration decibel

1 Introduction

The Surrey Langley SkyTrain Project (SLS or the Project) is a 16 kilometre (km) easterly extension of the existing Expo Line SkyTrain system along Fraser Highway from King George Station in Surrey, British Columbia (BC) to 203 Street in the City of Langley. The Project will be delivered by the Province, led by Transportation Investment Corporation as an assigned project from the Ministry of Transportation and Infrastructure (MOTI) and the BC Transportation Financing Authority.

During the conceptual design of the Project, the Province undertook an Environmental Screening Review (ESR) to study potential effects during the Construction and Operations phases (Hemmera Envirochem Inc. 2023). Appropriately Qualified Professionals (AQPs) identified Screening Elements (SEs) within their relevant fields. The AQPs assessed each SE based on the Reference Concept Design (RCD), existing information and supplementary baseline studies, and determined the potential for Project-related adverse effects to occur. If potential effects were identified, the AQPs determined appropriate mitigation measures to avoid or reduce the identified effects.

The ESR was provided to Identified Indigenous Groups for review in Spring and Summer 2022. In May 2022, ESR preliminary findings were posted on the Project's website and presented at public open house events. Feedback received from Identified Indigenous Groups, stakeholders and the public was incorporated into the final ESR.

During Project procurement, an open bidding process is being held to select suitably qualified contractors (Project Co) to conduct the detailed design and build of the SLS. Before construction can begin, Project Co will be required to develop a Construction Environmental Management Plan (CEMP) which will detail the implementation of mitigation measures and procedures necessary to avoid or reduce any identified adverse effects.

1.1 Purpose and Scope

The purpose of this CEMP Framework is to outline the requirements for Project Co's CEMP, including specific mitigations and procedures to avoid or minimize adverse effects of Project Construction. The final version of this document will form part of the environmental commitments of Project Co as they plan and carry out the Project.

The CEMP Framework considers the potential Project-related effects that were identified from the Reference Concept Design (RCD); as the Project design is advanced and finalized, Project Co will be required to update their temporary and permanent footprint areas, assess any potential changes in identified effects, and adjust their CEMP accordingly. This CEMP Framework document describes required content for the CEMP and its component plans, including the identification and description of:

- Project schedules along with specific construction activities and physical works;
- Existing environmental conditions;
- Legislation relevant to the Project activities;
- Identified environmental constraints (see **Section 4** Environmental Constraints);
- Interactions between SEs and Project physical components and activities;
- Project roles, responsibilities, and reporting relationships for key environmental personnel;
- Applicable Best Management Practices (BMPs);

- Identified mitigation measures and procedures that are applicable to Project Co's construction means and methods to appropriately manage environmental risks;
- Requirements for Project Co's Key Performance Indicators (KPI) to evaluate compliance and effectiveness of mitigation;
- Measures to ensure compliance with Project requirements for environmental protection;
- Monitoring and reporting requirements to inspect, evaluate, and report on work practices and efficacy of environmental mitigation; and
- Contingency and adaptive management strategies that can be deployed, should the proposed approach not be sufficient for achieving Project requirements.

2 Project Team/Roles and Responsibilities

This section describes the various environmental roles and responsibilities of Project Co, their employees and AQPs[1] during construction. The Province will oversee Project Co and other parties responsible for construction activities and monitor compliance with Project requirements during construction, including adherence to the CEMP.

2.1 Project Contractor (Project Co)

Project Co's key environmental responsibilities[2] include the following:

- Obtain and comply with applicable provincial and federal environmental licences, permits, and approvals required for Project construction;
- Document and demonstrate how all comments received on the CEMP from Identified Indigenous Groups were considered;
- Develop and implement the CEMP and component plans in accordance with Project requirements, including the CEMP Framework and ESR;
- Demonstrate compliance with the CEMP, Project requirements, and applicable licences, permits, and approvals via routine environmental monitoring, auditing, and reporting;
- Maintain and update the CEMP to reflect changes to construction plans or activities such as any applicable changes in legislation and conditions associated with licences, permits, and approvals;
- Ensure that all construction work performed by employees and sub-contractors of the Project Co complies with Project environmental requirements, including the CEMP;
- Ensure all construction personnel are trained and familiar with the requirements of the CEMP and component plans, as applicable to specific worker responsibilities;
- Provide all Project Co field staff and sub-contractors with copies of the CEMP as well as provide orientation and activity-specific training on mitigation measures to be carried out for that activity.
- Keep a current version of the CEMP, applicable permits, and approvals onsite in a known location during all construction activities;
- Develop Environmental Work Plans (EWPs)[3] for specific sensitive sites and/or task specific activities as defined by Section 165 of the Design Build Standard Specification (DBSS) and ensure training is provided to all staff undertaking the works;

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1 The Design-Build Standard Specifications for Highway Construction (DBSS) Section 165 defines Appropriately Qualified Professional (AQP) means an applied scientist or technologist specializing in a relevant applied science or technology including archaeology, agrology, forestry, biology, engineering, erosion and sediment control, geomorphology, geology, hydrology, hydrogeology, or landscape architecture. An AQP must be recognized in British Columbia with the appropriate professional organization, registered and in good standing, and acting under that organization's Code of Ethics and subject to disciplinary action by that organization. He or she must also be someone who, through demonstrated suitable education, experience, accreditation, and knowledge directly related and relevant to the level and responsibilities of the particular matter, may be reasonably relied on to provide advice within his or her area of expertise and experience (Ministry of Transportation and Infrastructure 2018).

2 See Section 3 for additional Project Co responsibilities related to First Nations, stakeholder, and public engagement.

3 Environmental Work Plans (EWPs) are synonymous with Environmental Procedure as defined by the Design Build Standard Specifications 165 as are Work or Area-specific written procedures documenting specific environmental protection measures to be used to mitigate potential environmental impacts.

- Communicate regularly and effectively with all Project team members regarding the construction schedule and activities as they pertain to environmental and archaeological issues and adjust construction activities as needed to stay in compliance with the CEMP and any relevant permits or approvals;
- Provide the Province with EWPs at least 15 days prior to commencement of such activities requiring such plans;
- Implement Stop Work orders if a breach of Project requirements occurs or if Project activities have the potential to result in harm to the environment; and
- Implement chance find procedures for archaeology and potential contamination as specified by the CEMP.

2.2 Project Contractor's Appropriately Qualified Professionals

Project Co shall provide AQPs to develop, oversee, manage, and implement the CEMP and any associated EWPs. Project Co's AQPs will include the Environmental Manager, Environmental Monitors, and Environmental Specialists.

2.2.1 Environmental Manager

The responsibilities of the Environmental Manager will include the following:

- Develop, be a signatory to, and ensure implementation of the CEMP, including applicable permits, legislation, the current version of DBSS, the ESR, and the CEMP Framework;
- Support Project Co in developing and implementing designs that can avoid or mitigate environmental effects;
- Act as the lead environmental representative of Project Co and observe, record, and report on environmental aspects of construction activities;
- Secure and maintain applicable environmental permits and approvals to ensure regulatory compliance through an Environmental Quality Management Plan;
- Develop and oversee environmental protection, environmental quality, and environmental monitoring programs, activity-specific EWPs and site-specific restoration plans;
- Implement Stop Work orders if a breach of Project requirements occurs or if Project activities could result or have resulted in harm to the environment; and
- Liaise with regulatory agencies, municipalities, and other authorities as directed by the Province.

2.2.2 Environmental Monitors

The responsibilities of the Environmental Monitors will be consistent with DBSS Section 165 and include the following:

- Deliver environmental orientations to all members of the Project Co's field and support team prior to the start of construction and prior to construction activities in Environmentally Sensitive Areas (ESAs) to address work methods and environmental mitigation;
- Conduct all necessary pre-construction environmental protection and monitoring programs including regular inspections of Erosion and Sediment Control (ESC) measures, water quality sampling and monitoring, noise and air quality monitoring;

- Provide full-time onsite monitoring for the duration of high-risk activities such as in ESAs, instream works, or contaminated material excavation and offsite transportation, and at least once per week during low-risk activities;
- Prepare, review, and report to the Province, the Environmental Manager, and Project Co on environmental compliance and conformance matters within the confines of an Environmental Quality Management Plan;
- Implement Stop Work orders if a breach of Project requirements occurs, or if Project activities could result or have resulted in harm to the environment, or are recurring exceedances of thresholds specified in Project requirements;
- Assist the Environmental Manager in reviewing CEMP component plans to ensure that appropriate mitigation measures are provided and implementation is described in sufficient detail;
- Support the Environmental Manager in assessing and reporting on environmental quality audits;
- Review the CEMP and all relevant documentation and verify that environmental impacts of the construction work have been adequately identified and mitigation measures are sufficient to protect the environment;
- Flag and clearly demarcate any ESAs (including all watercourses) in adjacent areas, communicate the demarcations to field staff prior to start of construction, and ensure that demarcation remains in place throughout active construction;
- Attend all meetings where environmental protection measures are discussed, as well as construction and progress meetings;
- Report on environmental matters that arise during construction and discuss and resolve with the Environmental Manager;
- Provide any other information or advice to construction teams to support compliance with applicable permits, management plans, and bylaws; and
- Assist with or conduct pre-construction fish and wildlife salvages.

2.2.3 Environmental Specialists

Environmental Specialists are qualified AQPs that will provide environmental services as needed to support environmental design, provide input to the CEMP and EWPs, and monitor environmental management of construction activities. These Environmental Specialists will provide task-specific support on topics which require a focused area of knowledge. The minimum subject areas of Environmental Specialist AQPs required to support Project design and construction are described in **Table 2-1**.

Table 2-1 Minimum Subject Areas of Environmental Specialist AQPs Required to Support Design and Construction and Example Responsibilities

AQP Discipline	Example Responsibilities
Contaminated Sites	Develop and implement protocols for managing possible encounters with previously unknown contamination; design and execute soil/water sampling programs to confirm contamination and suitable disposal approaches in line with BC CSRs; provide or review contaminated site assessments; develop and implement chance find procedures for contamination; and coordinate spill clean-up and remediation.
Fisheries and Aquatic	Plan and conduct assessments; lead stream isolation and fish salvage operations in advance of in-water works; provide design and technical inputs for Project Co's Fisheries and Oceans Canada (DFO) submissions and for Water Sustainability Act approvals or notifications; develop restoration plans for riparian areas.
Wildlife	Plan and conduct pre-construction wildlife surveys and salvages; provide input to design mitigation and the CEMP; develop wildlife mitigation and monitoring programs.
Vegetation and Arboriculture	Conduct pre-construction tree survey to identify any hazard or protected trees; prepare clearing plans and conduct monitoring; construction mitigation; develop and oversee invasive species management plan; develop site restoration plans; recommend/implement hazard tree mitigation.
Landscape Design	Support landscape planting prescriptions in accordance with Project requirements; work with the vegetation consultant at site restoration interfaces.
Archaeological/Heritage	Liaise with the Project Archaeologist to support Archaeological Impact Assessments (AIAs) as necessary; plan and implement onsite archaeological monitoring; arrange participation in archaeological monitoring and other field activities for Identified Indigenous Groups; implement the Project Archaeological Chance Find Management Procedure, including Project Co staff awareness and training.
Noise and Vibration	Provide specialized monitoring, noise modelling, and technical information in support of design, technical inputs and the Community Relations Program.
Air Quality	Provide specialized air quality monitoring; prepare technical documentation needed to resolve air quality complaints.

3 Project Assessment and Engagement

The Project has undertaken an ESR process which considers the Planning, Construction, and Operation phases of the Project, and is informed by principles of responsible environmental management, robust fieldwork, analysis, and engagement. The ESR describes the Project, related benefits, potential effects on the natural and human environment, identifies appropriate mitigation strategies, and has incorporated feedback from engagement with Identified Indigenous Groups, stakeholders, and the public.

3.1 Regulatory Liaison

During Project Planning, the Impact Assessment Agency of Canada and the BC Environmental Assessment Office confirmed that the Project does not exceed the regulatory thresholds for physical activities and is not subject to an environmental assessment under the *Impact Assessment Act* or the BC *Environmental Assessment Act*. However, the Project will require various other approvals from federal and provincial agencies to conduct construction activities. Many of these permits require a detailed design as well as information on construction methodology.

The Project will continue to engage with the relevant agencies and Project Co will be responsible for providing detailed submission packages for identified permits. As the Project design is finalized and construction methodologies determined, Project Co will update the effects assessment from the ESR and make all necessary submissions to relevant regulatory agencies.

3.2 Engagement with Identified Indigenous Groups

Project Co's responsibilities regarding Identified Indigenous Groups' involvement in construction environmental management will include:

- Addressing comments received from Identified Indigenous Groups on the CEMP, and its revisions, and providing direct responses to how the comments were considered in the development and revisioning of the CEMP;
- Establishing and maintaining productive working relationships with Identified Indigenous Groups and facilitating training and employment in environmental programs; and
- Supporting the Province's engagement activities with Identified Indigenous Groups.

3.3 Stakeholder and Public Engagement

Project Co's responsibilities regarding stakeholder and public engagement in construction environmental management will include:

- Preparing information for multi-media distribution to stakeholder groups and the public, including construction notifications, advance notice of noisy activities, and traffic alerts/updates;
- Developing and implementing protocols and enabling mechanisms for expeditiously and satisfactorily responding to enquiries, concerns and complaints related to Project construction activities;
- Developing and implementing monitoring and/or mitigation strategies to address public and stakeholder enquiries, concerns, and complaints; and
- Maintaining responsibility for the management and resolution of environmental issues raised by the public and stakeholders throughout Project construction.

4 Environmental Constraints

Environmental Constraints maps for the Project (**Appendix A**) consolidate key environmental considerations for construction planning such as archaeological and heritage sensitivities, community features, areas of potential environmental concern (APECs), watercourses and associated buffer areas, and vegetation features. Additional information on these environmental considerations is detailed in the ESR (Hemmera Envirochem Inc. 2023). Project Co's CEMP will demonstrate how the identified constraints will be addressed.

The provided Environmental Constraints maps (**Appendix A**) are based on the Project's RCD. Key environmental conditions may change as Project Co progresses through detailed design and construction planning. Therefore, it will be the responsibility of Project Co to update their Environmental Constraints maps to reflect preliminary and detailed design, as well as pre-construction information including any and all pre-construction surveys.

4.1 Project Boundary

Appendix A Environmental Constraints Maps shows a draft Project Boundary which includes proposed temporary workspace or footprint in addition to the RCD's requirements for permanent infrastructure. Key environmental features are generally shown within the Project Boundary; however, for information purposes, watercourses and APECs extend outside the Project Boundary.

Project Co will update the Project Boundary to be shown on their Environmental Constraints maps to reflect their detailed design and all sites that will be used for the Project, including temporary work sites and laydown areas.

4.2 Archaeology and Heritage

The Archaeological Overview Assessment (AOA) conducted for the Project identified 17 Areas of Interest (AOI)s with the potential to interact with the Project footprint. Within the AOA study area, 11 previously recorded archaeological sites and 12 previously recorded or designated heritage sites were identified.

A Project-wide Archaeological Impact Assessment (AIA) is currently underway to investigate AOIs and determine the likelihood of archaeological sites interacting with the Project footprint. One archaeological site has been identified in the King Creek drainage near Fraser Highway[4]. Areas of AOIs and where AIAs have been conducted are shown on the Environmental Constraint maps. Archaeological sites are to be avoided during ground-disturbing works and archaeological and heritage resources encountered during construction are to be managed in accordance with legislation, provincial guidance, feedback from Identified Indigenous Groups and Project Archaeologist guidance.

[4] The exact location of this sites is not shown in the provided Environmental Constraints Map due to BC Archaeology Branch guidance on confidentiality. The exact locations will be provided to Project Co. in confidence.

4.3 Community Features

The Project footprint for the RCD is approximately 59.0 hectares (ha), 93% of which (55.0 ha) are previously developed, non-vegetated areas (e.g., pre-existing roadway, parking lots, buildings). The remaining 4.0 ha (7% of footprint) abut natural areas in parks and green infrastructure (e.g., Green Timbers Urban Forest [GTUF], North Creek) or are within Agricultural Land Reserve (e.g., Surrey Golf Course and farmlands surrounding Serpentine River).

Community features shown in **Appendix A** Environmental Constraints Maps include childcare centres, health care facilities, municipal services, places of worship, and green spaces and recreational areas. These features are sensitive to Project impacts related to several assessed SEs including noise and vibration. These features will be considered during Project Co's planning and undertaking of Construction activities. Depending on the predicted Project interactions, additional mitigation measures and/or contingency measures may be needed within the CEMP as well as site-specific Environmental Work Plans. Many of these Community Features may also require focused monitoring for several SEs including noise/vibration and air quality.

4.4 Contaminated Sites and Areas of Potential Environmental Concern

The Environmental Constraints maps show 49 medium-risk and 17 high-risk APECs identified in the vicinity of the Project area during the ESR. Pre-characterization of a number of these sites is complete or underway to support disposal and management of contaminated media[5] from properties identified as APECs. Project Co will manage contaminated media resulting from, or disturbed by, Project activities, in accordance with federal and provincial legislation.

Ground-disturbing and groundwater management activities in proximity to APECs will consider handling, storage, and disposal of suspect and/or confirmed contaminated media, including health and safety reporting and documentation. Each identified site will require individual assessment and consideration for management of contaminated media.

4.5 Drainage and Watercourse Classification

All watercourses that could interact with Construction activities within the Project Boundary are located in the City of Surrey portion of the Serpentine River watershed. These watercourses are part of several sub-drainages of the Serpentine River, including Lay Creek, Quibble Creek, King Creek, Enver Creek, the mainstem of the Serpentine River and North Creek. Watercourses shown on the Environmental Constraints maps are classified according to the City of Surrey's fish classification system as represented in the City of Surrey Mapping Online System (COSMOS) and include:

- Six (6) watercourses were classified as supporting fish year-round (fish class A);
- 14 watercourses were classified as providing or potentially providing overwintering habitat for fish species (fish class A(O));

[5] Media includes soils, groundwater, soil vapour

- Eight (8) watercourses were classified as not fish bearing but are a source of significant food or nutrients for downstream watercourses (fish class B); and
- 15 watercourses were classified as not fish bearing and not providing significant food or nutrients to downstream watercourses (fish class C).

Any construction activities, in, above, or in proximity to these identified watercourses will require specific considerations for the width of streamside protection based on COSMOS (**Table 4-1**). In addition, works in proximity to any watercourse will require regulatory review as well as a site-specific EWP.

Table 4-1 COSMOS Fish Classification System and Streamside Protection Widths

Fish Classification	Colour Coding	Description	Setback From Top of Bank (m) Based on Stream Type		
			Natural	Channelized	Ditch
A	Red	Inhabited by salmonids year-round or potentially inhabited year-round with access enhancement	30	25	10
A(O)	Red-dashed	Inhabited by salmonids primarily during the overwintering period or potentially inhabited during the overwintering period with access enhancement	30	25	10
B	Yellow	Significant food/nutrient value; no fish presence	15	15	7
C	Green	Insignificant food/nutrient value; no fish presence	2	2	2

4.6 Vegetation Features

Vegetation features shown in **Appendix A** Environmental Constraints Maps include coniferous and deciduous trees as well as invasive species occurrences.

4.6.1 Trees

Results of a preliminary tree inventory throughout the Project Boundary are shown in **Appendix A** Environmental Constraints Maps; trees are predominantly deciduous and planted for boulevard landscaping purposes. The Project has committed to reducing the number of trees removed, to the extent possible. The replanting of any lost trees will be coordinated with the relevant municipality.

Prior to construction, Project Co will be required to provide an arborist AQP assessment to fully document any trees which need to be removed as well as identify appropriate protection measures for retained trees. The results of the arborist's assessment will be used to update the Environmental Constraints Map to identify the which trees will be removed as well as retained trees and any associated exclusion zones.

4.6.2 Invasive Plants

The Environmental Constraints maps (**Appendix A**) show baseline assessment occurrences of invasive plants within the Project Boundary. These include occurrences of Himalayan blackberry (*Rubus armeniacus*) and Japanese knotweed (*Reynoutria japonica*), the latter being a designated noxious species. This information will be updated by Project Co based on results from Pre-construction surveys for noxious species.

Within areas of known or suspected invasive plants, additional vegetation management protocols may be required to properly remove and dispose of invasive plants. Within these identified areas, invasive species management, as defined within **Section 5.16** Vegetation and Wildlife Management Plan will be necessary, along with site-specific Environmental Work Plans.

4.7 Wildlife and Habitat Features

4.7.1 Habitat Suitability

The Environmental Constraints maps (**Appendix A**) show that larger areas of suitable wildlife habitat occur within the Project Boundary as follows:

- GTUF - highly suitable for numerous species of amphibians, songbirds, raptors, and bats;
- A small, wooded area at Fraser Highway and 164 Street - potentially suitable for raptor nesting;
- Serpentine River valley between 170 Street and 180 Street - suitable for raptors, great blue heron (*Ardea herodias*) and aerial insectivore foraging; and
- North Creek - suitable for breeding amphibians and songbirds.

Within areas of noted Habitat Suitability, Project Co will be required to conduct pre-Construction surveys of these areas to confirm habitat quality and determine the actual or potential presence of any species of management concern. These surveys may result in additional requirements including, but not limited to, permitting, adherence to published timing windows, site isolation and pre-construction salvage to avoid negative impacts to the environment.

4.7.2 Protected Nests and Roosts

Protected nests include those of great blue herons and bald eagles (*Haliaeetus leucocephalus*), active nests of migratory birds and those protected under the federal *Species At Risk Act,* the federal *Migratory Birds Convention Act and /* or the provincial *Wildlife Act*. The location of a bald eagle nest was confirmed during the 2019 baseline assessment (Hemmera Envirochem Inc. 2021) and is shown on **Figure A-9** of **Appendix A** Environmental Constraints Maps. Should this nest be determined to be active during nearby Project Works, activities will be planned in accordance with several environmental guidance documents, as further outlined in **Section 5.16**.

4.7.3 Species at Risk

Northern red-legged frog (*Rana aurora*) has been documented in drainages in the GTUF (Green Timbers Heritage Society 2022; Hemmera Envirochem Inc. 2023) and potentially other species at risk (e.g., Oregon Forestsnail or Little Brown Myotis) may be present in areas of identified suitable habitat. Therefore, at-risk species shall be considered in the planning for wildlife / aquatic salvage in the vicinity of the tributary to Lay Creek and King Creek. A large portion of the eastern alignment overlaps with critical habitat for barn owl (*Tyto alba*) shown on the Environmental Constraint maps (**Appendix A**). Although baseline assessments (including eDNA sampling and analysis) did not detect other aquatic wildlife species at risk (e.g., Pacific water shrew [*Sorex bendirii*]) in the vicinity of the Project alignment, this is not confirmation of absence. For further information on at-risk species and other species

of management concern, see **Section 11** Vegetation and Wildlife Resources of the ESR (Hemmera Envirochem Inc. 2023). Areas identified on the Environmental Constraints Map as having either confirmed presence of species at risk, or suitable habitat for these species, will required additional and mitigation measures, including preconstruction surveys (see **Section 5.16** Vegetation and Wildlife Management Plan).

4.8 Noise and Vibration Receptors

The ESR identified environmental sensitivities based on the predicted change in noise and vibration levels during construction based on the RCD and assuming likely construction methodologies (see **Section 8** Noise and Vibration and **Appendix D** Noise and Vibration Figures of the (Hemmera Envirochem Inc. 2023). In addition to the community features identified in **Section 4.3**, residential and commercial receptors may also be affected by Construction noise and vibration.

Prior to the commencement of Construction, Project Co. will conduct an updated Noise Impact Assessment and site-specific Vibration Impact Assessment using the detailed design and selected construction methodologies. Properties identified by these assessments as likely to experience exceedances of criteria defined by the United States Federal Transit Administration (United States Federal Transit Administration 2018b) and / or CalTrans (2013) will require the application of additional mitigations measures as well as dedicated monitoring efforts.

5 CEMP and Component Plan Content

The CEMP Framework outlines requirements that have been identified through the ESR process and consultation and engagement with Identified Indigenous Groups, the public, and stakeholders. Feedback received from Identified Indigenous Groups on the draft ESR and CEMP Framework has been incorporated into this key document. The CEMP Framework forms part of the contractual environmental commitments of Project Co under the Project Agreement. These requirements include Project-specific mitigation measures identified by the Province's AQPs as well as those raised directly by Identified Indigenous Groups. Therefore, the below listed mitigation measures additional to any and all reasonable industry-standard BMPs not specifically mentioned.

Project Co will be required to integrate the information contained within this CEMP Framework into their CEMP, which will be applied throughout the Project Lands and to all Construction activities. The CEMP, including its component plans, will demonstrate how Project works and activities avoid or minimize adverse effects to the environment with additional requirements specific for ESAs and sensitive receptors.

5.1 Required Content for the CEMP

The main body of the CEMP (and its annual updates) will include the following sections:

1. **Introduction** – a narrative orientation to the CEMP purpose, scope, and contents;
2. **Project Information** – a brief description of the Project detailed design, construction activities, a summary schedule for the duration of construction which considers environmental timing, Project delivery approach, and a list of Project key contacts;
3. **Permits and Approvals** – a written commitment to comply with all applicable legislation, regulations, and permits, as well as other Project requirements; cross-references to component plans for environmental permits that are or may be required, authorizing agencies, reasons for requirements, and current status of permit applications/approvals;
4. **Environmental Considerations in the Project Area** – a summary of identified environmental constraints[6] for the Project and description of how Project Co's design alters environmental effects as assessed by the ESR for the RCD;
5. **Feedback from Engagement** – details of how information and considerations obtained through engagement with Identified Indigenous Groups, the public, and stakeholders has been considered in the CEMP and how Identified Indigenous Groups will be integrated into Project environmental management;
6. **Environmental Quality Management Plan** – linkages to the Environmental Quality Management Plan (EQMP) including compliance monitoring and auditing;

[6] Constraints shall include but not be limited to those for timing of construction activities, Environmentally Sensitive Areas, watercourses, sensitive biophysical and human receptors, and water quality criteria and guidance

7. **CEMP Implementation** – an overview of the implementation approach including defined roles and responsibilities of Project Co staff, environmental monitoring programs, employee orientation/training/refresher requirements, compliance reporting cycles, Environment Incident Reporting procedures, listing of EWPs anticipated to be required to address work in environmentally sensitive areas and around sensitive receptors and any supplemental documentation;
8. **Environmental Compliance Monitoring** – a detailed description of daily environmental monitoring requirements for construction including specific monitoring actions (e.g., frequency, method of monitoring, protocols) and the monitoring checklist; identification of work activities that will require the Environmental Monitor to be onsite throughout the work activity; a table describing frequency, locations, and parameters for water sampling monitoring (i.e., physical, metals, hydrocarbons, etc.); a list of all parameters to be monitored during construction to meet the KPIs identified in each component plan; a description for weekly, monthly, and annual monitoring and environmental reporting or cross-reference their locations in the EQMP; and an overview of the compliance tracking system to document each non-compliance and corrective actions;
9. **Environmental Awareness and Training –** a description of the orientation and training requirements for all Project personnel including timing, training materials content, frequency, and reporting; a summary of specialized training for EWPs, Environment Incidents, and chance find procedures (e.g., archaeology, contamination); requirements for cultural awareness training including context for Identified Indigenous Groups. Topics should also include seasonal activities and sensitivities, refueling procedures, and waste and water management protocols;
10. **Environmental Work Plans (EWPs) –** listing of identified and/or issued EWPs, their purpose, approximate timing, and status; and
11. **Environmental Incidents** – cross reference to the EQMP for definition and reporting.

5.2 Required Content for Component Plans

Each component plan of Project Co's CEMP will include legislative requirements relevant to the Project scope, KPIs, mitigation measures to avoid or limit potential Project-related effects, and environmental compliance monitoring and reporting requirements. Each component plan will be created by an AQP, signed off by Project Co's Environmental Manager, and updated annually. The CEMP's component plans will include:

- Agricultural Land Management Plan;
- Air Quality and Dust Control Management Plan;
- Archaeological and Heritage Management Plan (including Chance Find Management Procedure);
- Construction Waste Management Plan (including concrete and drilling wastes);
- Construction Water Management Plan (for both surface and groundwater);
- Contaminated Site Management Plan (including excavated materials and chance find protocol);
- Erosion and Sediment Control Plan (including clearing and grubbing);
- Fish and Fish Habitat Management Plan;
- Hazardous Materials Management Plan;
- Noise and Vibration Management Plan;
- Site Restoration Plan;

- Spill and Emergency Response Plan (including incident reporting);
- Transportation Access Communications Plan; and
- Vegetation and Wildlife Management Plan (Including invasive species).

Each component plan will:

- List the roles and responsibilities of Project Co team members specific to that plan;
- Describe environmental provisions that are consistent with applicable legislation, Project commitments, BMPs, the DBSS including Section 165 Protection of the Environment and other relevant documents/procedures;
- Identify on maps and drawings, and describe in writing, any Environmental Constraints and ESAs adjacent to the Project footprint that may interact with the component plan, and identify EWPs that will be applicable;
- Describe mitigation measures to conform with identified requirements as well as any additional BMPs and mitigation measures applicable to Project Co's construction means and methods;
- Describe the expected and scheduled timing of environmental monitoring inspections, including full-time, daily, weekly, and as required inspections;
- Identify specific monitoring locations, methods, and applicable reporting procedures;
- Include relevant emergency procedures and emergency contact information; and
- Provide contact information for Project Co and any personnel applicable to Project-specific construction works.

Each component plan will include the following information:

1. **Introduction** – the Purpose, scope, and objectives of the component plan, roles and responsibilities as well as cross-references to other relevant component plans (to minimize duplication of information);
2. **Regulatory Considerations** – Listing of all applicable licences, permits, and approvals either identified as required, in process of being applied for, and / or obtained for the Project, along with their current status;
3. **Environmental Effect Mitigation** – Identification of activities to be undertaken and equipment required to complete the work, potential environmental effect, associated mitigation measures (including Best Management Practices), and contingency measures to be implemented;
4. **Key Performance Indicators (KPIs)** –Definition of KPIs that will be used to measure adequacy of achieving the plan objectives of each CEMP component plan;
5. **Environmental Monitoring** – Description of how each KPI will be monitored, documented, and measured including timing, frequency, and how they will be tracked;
6. **Adaptive Management** – Description of contingency measures designed to provide Project personnel with instructions for handling unforeseen circumstances;
7. **Environmental Maintenance** – Where applicable, identification of any maintenance requirements, and reference applicable Project requirements and permit conditions; and
8. **Reporting** – Description of reporting to meet Project requirements including tracking of KPIs to demonstrate effectiveness of implemented procedures and mitigation and continuous improvements.

5.3 Agricultural Land Management Plan

5.3.1 Plan Objectives and Requirements

The objective of the Agricultural Land Management Plan is to avoid or limit effects from Project construction on Agricultural Land Reserve (ALR) land, agricultural-zoned land, agricultural operations, and associated infrastructure (i.e., drainage, fencing, access points) within and adjacent to the Project Boundary. The developed plan will:

- Describe measures to avoid encroachment on ALR and other agricultural lands; if encroachment is necessary, the process for establishing a remediation and closure plan will be detailed;
- Identify any activities which may require access/use of ALR or other agricultural lands and document the nature of activities and associated permitting process;
- Identify and describe the implementation of measures to reduce Project-related effects on agricultural land access, drainage, and operations;
- Outline Project Co's assessment procedure to address any potential Project-related changes to drainage onto and within Agricultural operations;
- Demonstrate conformance with any permit requirements related to agricultural land; and
- Establish communications protocols to engage with farm operators within the region during Project planning to inform specific mitigations for the agricultural community with respect to Traffic Management Plans, road work schedules, and access to lands and truck routes.

5.3.2 Identified Agricultural Lands Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Agricultural Lands Management Plan.

- Minimize the use of ALR and non-ALR lands in Agricultural use within the temporary and permanent footprints to the extent possible;
- Conduct pre-construction surveys to verify agricultural operations and agricultural infrastructure that could be potentially affected, directly and indirectly, by the Project Co's design and Construction approach;
- Conduct hydraulic and water quality assessments of agricultural lands if the Project has potential to utilize or interact with existing drainage or irrigation infrastructure, particularly within the Serpentine Valley;
- Engage and communicate proactively with the agricultural community prior to and during Construction,
- Indicate all temporary access routes during construction, particularly during planting and harvesting periods;
- Avoid or minimize disturbances to agricultural infrastructure during Project design and Construction, such as from Project-related changes in drainage, fencing or access;
- Maintain functionality of the Serpentine River dikes in the Project footprint and pumping station;
- Retain function of agricultural infrastructure during Construction. If altered, restore Project-affected agricultural infrastructure to the same condition, where possible, or replace in a manner that provides the same functional services;
- Restore existing access points or provide permanent alternatives during operation; and
- Restore temporarily disturbed agricultural land outside of Fraser Highway Right-of-Way to existing or improved agricultural capability in accordance with AQP and permit requirements.

5.4 Air Quality and Dust Control Management Plan

5.4.1 Plan Objectives and Requirements

The objective of the Air Quality and Dust Control Management Plan is to avoid or limit effects from common Project-related air contaminants (e.g., inhalable particulate matter), Project-induced dust, particulate matter that may result in aesthetic impacts on adjacent properties, as well as greenhouse gas (GHG) emissions (e.g., carbon dioxide). During Construction, Project Co will implement a program to monitor fugitive dust, ambient particulate matter, and ambient air quality within the vicinity of the Project.

The developed Air Quality and Dust Control Management Plan will:

- Describe the implementation of mitigation measures to avoid or reduce the generation of fugitive dust and combustion engine emissions;
- Identify how the Project interacts with health and safety requirements regarding common air contaminants;
- Detail a Project-wide anti-idling policy consistent with the Metro Vancouver Regional District Non-Road Diesel Engine (NRDE) Emission Regulation Bylaw;
- Describe a Project-wide air quality monitoring program for various air contaminants including particulate matter. This will include the timing, frequency, and locations of air quality monitoring along with interpretation, approach, and reporting frequency to demonstrate conformance with Metro Vancouver's Ambient Air Quality Objectives[7];
- Prohibit burning as a means of land clearing or waste disposal;
- Describe KPIs related to public complaints, air quality exceedances and other relevant criteria;
- Describe protocols for investigating, addressing and mitigating public complaints; and
- Identify contingency and adaptive management measures that will be implemented, should air quality monitoring data indicate the implemented mitigations are not sufficient to achieve the Plan Objectives.

5.4.2 Identified Air Quality and Dust Control Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Air Quality and Dust Management Plan.

5.4.2.1 Dust Control

- Grade the construction site in phases, so that exposed soils are limited and timed to coincide with the actual construction in that area;
- Minimize the amount of clearing land/exposed soils required to conduct the construction works;
- Where feasible, cover high-traffic areas with asphalt or coarse gravel to minimize dust generation;
- During dry conditions and when necessary, control Project-related dust sources by minimizing the time that unpaved surfaces are exposed, watering or covering potential dust sources, and/or regularly sweeping adjacent paved surfaces;

[7] http://www.metrovancouver.org/services/air-quality/AirQualityPublications/CurrentAmbientAirQualityObjectives.pdf

- Apply water to exposed surfaces/materials that are potential dust sources to achieve maximum dust suppression (i.e., no dust travelling beyond the Project Boundary) while also achieving site Erosion and Sediment Control objectives (i.e., no site run-off);
- Specify maximum speeds for vehicles and heavy-duty equipment during dry weather and/or in areas where dust is a concern (i.e., unpaved roadways, transition to/from unpaved surfaces);
- Post appropriate signage onsite to notify construction personnel of key traffic restrictions and cleaning requirements;
- Cover all soil and erodible construction materials (including stockpiles and fine-grain materials) with non-permeable material where dust could become airborne; and
- Reduce height of material drops (e.g., when dumping or moving sediment materials).

5.4.2.2 Equipment and Activity Emissions

- Utilize electric-powered equipment over other fossil fuels, such as gasoline and diesel, where feasible;
- Use Tier 2 or higher rated non-road diesel equipment (NRDE) and prioritize the use of Tier 4 rated equipment (per Greater Vancouver Regional District NRDE Emission Regulation Bylaw);
- Use ultra-low sulphur diesel for all diesel-fueled, non-road equipment to minimize SO_2 emissions from diesel fuel combustion;
- Consider the use of alternative concrete mixes that have lower carbon or GHG footprints than conventional concrete, where appropriate, and in consideration of product specifications and structural engineering requirements;
- Inspect all vehicles and motorized equipment regularly and maintain all equipment as per manufacturer recommendations to ensure they are operating in proper condition, thereby minimizing fuel consumption and exhaust; and
- Minimize traffic delays (and associated generation of common air contaminants and GHGs) to the extent possible by providing advanced warning to the public through multiple media modes (see **Section 5.15**), re-routing, and carrying out activities one lane at a time.

5.5 Archaeological and Heritage Management Plan

5.5.1 Plan Objective and Requirements

The objective of the Archaeological and Heritage Management Plan is to avoid potential Project-related effects on archaeological and heritage resources by addressing recommendations made in the Archaeological Overview Assessment (AOA) and Archaeological Impact Assessment (AIA). This plan will provide Project personnel with a framework to identify archaeological sites and artifacts and will provide a clear understanding of the importance of archaeology and heritage resources. The developed Archaeological and Heritage Management Plan will:

- Establish engagement and communication protocols with Identified Indigenous Groups in accordance with Project requirements;
- Demonstrate adherence to the terms and conditions of Identified Indigenous Group permits as well as the Project's *Heritage Conservation Act* (HCA) permit;
- Identify qualified staff and deliver appropriate archaeological investigation and monitoring efforts, based on recommendations from the Project Archaeologist;

- Identify and describe any further AIAs required, as well as monitoring of subsurface investigations required in AOIs based on Project Co's design in accordance with provincial and Indigenous Group permit requirements;
- Describe the implementation of design and construction measures to avoid impacts to known archaeological sites, based on recommendations from the AIA, permit requirements, and the Project Archaeologist;
- Present and implement the Archaeological Chance Find Management Procedure (**Appendix B**[8]) to manage potential encounter(s) with previously unknown archaeological or cultural materials; and
- Outline Project Co's training and orientation content for the Archaeological Chance Find Management Procedure (**Appendix B**) as well as an Archaeology and Cultural Awareness Program.

5.5.2 Identified Archaeology and Heritage Mitigation Measures

The following mitigation measures have been identified through consultation with Identified Indigenous Groups during the ESR process, AIA fieldwork and reporting and consultation on the CEMP Framework to achieve the objectives of the Archaeology and Heritage Management Plan:

- During detailed Project design and construction staging planning, determine whether additional AIAs are required (e.g., due to changes in guideway column locations or station footprint compared to the RCD or locations of ground disturbing activities in areas not previously. If additional AIAs are identified, notify the Province immediately so that AIAs can be conducted in advance of construction under the Project's *HCA Section 12.2 Heritage Inspection Permit*;
- Develop and carry out site-specific mitigation measures where overlap between archaeological resources and Project activities have been identified, in accordance with the HCA, permits, and provincial guidance and in discussion with Project Archaeologists, regulators, Identified Indigenous Groups, and landowners;
- Design and conduct surveillance and/or monitoring programs as recommended by the Project AIA which will be implemented where archaeological resources are considered to have a high probability of occurrence within areas of planned ground disturbance, but are not likely to have been identified through the AIA (e.g., deeply buried sites of areas under pavement);
- Update and implement the Archaeological Chance Find Management Procedure (**Appendix B**) in collaboration with Identified Indigenous Groups, to manage Construction activities if unknown archaeological resources or suspected human remains are discovered during ground-altering Project construction;
- Train all field staff in the cultural importance, recognition of, and care of archaeological and heritage materials in accordance with the Project's Archaeological Chance Find Management Procedure (**Appendix B**);
- Manage and mitigate impacts to previously identified archaeological and heritage sites; and
- Protect known archaeological and heritage sites from accidental disturbance with measures that will include maintained fencing, no-go requirements, and archaeological/environmental monitoring.

[8] The Archaeological Chance Find Management Protocol shall be updated by Project Co with current contacts prior to construction and as required throughout construction.

5.6 Construction Waste Management Plan

5.6.1 Plan Objective and Requirements

The objective of the Construction Waste Management Plan is to manage construction-related waste to protect soil and water quality, wildlife, aquatic environments, and the public from Project-related waste in a manner that is consistent with legislation, including the BC *Environmental Management Act* (EMA). The main streams of non-hazardous demolition waste expected to be generated include concrete and concrete-affected water, asphalt, organic stripping, chemically inert demolition building materials (e.g., insulation, waste wood, roofing), and drill slurry. Details of the separate Hazardous Materials[9] Management Plan can be found in **Section 5.11.** For management of contaminated materials, see **Section 5.8** Contaminated Site Management Plan.

The developed Construction Waste Management Plan will:

- Describe Project Co's implementation of their "reduce, reuse, and recycle" principle to minimize waste generated by the Project;
- Define the different waste streams on site and present appropriate waste sorting, labelling, and tracking procedures;
- Identify and describe the implementation of measures to manage, handle, and dispose of all Project-generated waste to avoid adverse effects on the environment;
- Define Project Co's approach to properly store and dispose of construction materials, manage food waste that may attract wildlife, and re-use non-hazardous construction materials in accordance with BMPs;
- Incorporate BMPs typically used in Metro Vancouver development projects for recycling and beneficially reusing materials; and
- Demonstrate how the plan will comply with regulatory requirements, particularly for ensuring that construction waste is not contaminated with hazardous waste while in the care and control of Project Co.

5.6.2 Identified Construction Waste Management Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Construction Waste Management Plan.

5.6.2.1 Waste Management

- Provide onsite animal-proof garbage collection facilities for disposing of domestic waste at work yards, stockpile sites, offices, and staging areas;
- Provide recycling containers for waste streams (e.g., for paper, wood, cardboard, metals, and glass products) at designated locations on the Project site;
- Collect and store waste in appropriate containers and use appropriate methods to transport waste to an authorized transfer, landfill, or recycling facility;
- Keep all waste containers closed and secured except when adding or removing waste;
- Ensure that drill slurry is fully contained and managed prior to transport offsite;

[9] Hazardous materials include dangerous goods, any substance that has the potential to adversely affect the environment if discharged into water or land, and any controlled or restricted product.

- Avoid storing waste or deleterious substance within 30 m from any watercourse. If not possible, additional mitigations must be specified in an EWP;
- Immediately retrieve any debris that may be accidentally deposited into a watercourse or natural area once safe to do so;
- Remove food and domestic waste from site at least daily to prevent attracting wildlife; and
- Institute a no littering policy throughout the Project Boundary to ensure all workers are responsible for keeping all work and storage areas tidy and well maintained.

5.6.2.2 Waste Disposal

- Dispose of waste materials at facilities licensed to accept such waste;
- Document all waste materials removed from site via certified manifests and track KPIs for waste diversion and recycling rates;
- Seek approval from the local landfill operator and comply with procedures and restrictions of local landfills;
- Store waste materials generated by the Project a minimum of 30 m away from watercourses and sensitive habitats. If not possible, additional mitigations must be specified in an EWP; and
- Remove and dispose of all Project construction waste upon completion of individual construction activities.

5.7 Construction Water Management Plan

5.7.1 Plan Objective and Requirements

The objective of the Construction Water Management Plan is to outline approaches to minimize, monitor, and treat Project site water to achieve any and all federal, provincial, and/or municipal water quality criteria. All water discharged from the Project site to regional or municipal systems shall meet all applicable water quality criteria. The plan will also address the management of contaminated water which may be directly or indirectly discharged into receiving environments from construction works.

The developed Construction Water Management Plan will:

- Demonstrate adherence to regulations and permit conditions, including, but not limited to, the *Water Sustainability Act* and the *Environmental Management Act*;
- Identify and describe the implementation of measures to avoid the release of deleterious substances;
- Identify strategies and approaches for the conveyance, storage, handling, treatment, and discharge of all sources of water within the Project Boundary;
- Reduce the amount of non-contact water introduced to the Project Boundary to the extent possible using site isolation and water diversion strategies;
- Describe approaches to manage construction-related surface water and groundwater to ensure that water quality, water quantity, aquatic environments, and the public are protected in accordance with environmental legislation;
- Describe monitoring strategies for water quality including sampling frequency, locations, parameters to confirm that Project surface water and discharges do not exceed federal, provincial, or municipal criteria;

- Document the process and procedure for specific water treatment strategies required to ensure discharged site water achieves the relevant water quality criteria; and
- Identify contingency measures for addressing extreme weather, including stormwater, temporary work shutdowns, and chance finds of contaminated water.

5.7.2 Identified Construction Water Management Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Construction Water Management Plan.

- Ensure appropriate ESC measures are installed as per **Section 5.9** Erosion and Sediment Control Plan;
- Convey and treat site water prior to discharge using perimeter controls (i.e., silt fence, shallow trenches, berms);
- Identify activities that may generate water above relevant thresholds and develop a water treatment strategy to ensure achievement of applicable water quality criteria before discharge such as settlement ponds/tanks, filtration, chemical treatment, or carbon dioxide treatment;
- Test any stored/treated water prior to discharge; regularly sample site discharge to confirm achievement of relevant water quality criteria;
- If water does not meet applicable water quality criteria, transport water under a chain-of-custody to an appropriately licensed disposal facility;
- Only dewater excavations and discharge retained site water with the oversight and approval of the Environmental Monitor;
- Ensure any surface water or discharged water from the Project complies with the criteria outlined in applicable waste discharge approvals, the DBSS Section 165, and/or provincial and federal water quality criteria;
- Ensure that carbon dioxide cylinders and suitable regulators/diffusers are available on site and ready for use during any concrete works within 15 m of a watercourse, to neutralize any concrete leachate that is inadvertently discharged;
- Ensure dust control measures do not generate excessive surface water that could result in discharge of deleterious materials to receiving environments; and
- Ensure that any fuelling, refuelling, servicing, or washing of machines or equipment does not occur within 30 m of any watercourse. If not possible, develop an EWP that includes all reasonable and feasible mitigation to prevent introduction of deleterious substances into the receiving environment.

5.8 Contaminated Site Management Plan

5.8.1 Plan Objective and Requirements

The objective of the Contaminated Site Management Plan is to manage contaminated or suspect contaminated materials generated during Project Construction. This will include the sampling, storage, handling, disposal and reporting of contaminated and/or hazardous substances in compliance with the Contaminated Sites Regulation of the EMA and Project requirements.

The developed Contaminated Site Management Plan will:

- Identify locations of known and potential contaminated site materials prior to Construction, based on information collected by the Project and updated by Project Co;
- Provide an overview of sampling and reporting procedures for confirmatory sampling of excavated soils/groundwater, including frequency, timing, locations, methods, and reporting;
- Demonstrate proper handling, transportation, and disposal of contaminated media through manifests, chains-of-custody, and other documents, in accordance with applicable legislation and how this will be reported to the Province;
- Identify, classify, and manage fill material used for Project construction;
- Describe remediation and/or disposal strategies to be applied by Project Co for confirmed contaminated materials handled by the Project;
- Detail a Contamination Chance Find Procedure in accordance with Project requirements to guide management of unanticipated and suspected contaminated soil or groundwater;
- Describe quality management including a Chain of Custody Procedure to inspect, track, store, and re-use imported or transferred fill materials on site in accordance with legislation;
- Document procedures that will be followed to reduce the amount of contaminated soil and water generated from Project activities;
- Identify municipal and regional criteria for discharge of water that will be pumped from excavations during construction and develop a protocol to meet applicable discharge quantity and quality criteria; and
- Identify and describe the implementation of measures to prevent the release of deleterious substances to surface water within the Project footprint.

5.8.2 Identified Contaminated Site Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Contaminated Site Management Plan.

- Define soil and water sampling procedures to characterize suspect or unexpected materials in accordance with BMPs and guidance documents from regulatory agencies;
- Establish a detailed tracking system using manifests and chain-of-custody reports to quantify contaminated materials and confirm disposal at appropriate facilities based on the confirmed or assumed quality;
- Identify facilities that will be used to dispose of contaminated soils and water in advance of Construction;
- Pre-characterize shallow soil adjacent to roadways and soil and groundwater adjacent to medium and high-risk APECs; and
- Utilize only clean fill materials for construction and backfilling purposes.

5.9 Erosion and Sediment Control Plan

5.9.1 Plan Objectives and Requirements

The objectives of the Erosion and Sediment Control (ESC) Plan are to manage erodible materials generated or used by the Project and prevent negative environment effects from sediment-laden water release, soil/ground erosion, and wind-generated erosion.

The developed Erosion and Sediment Control Plan will:

- Identify Construction activities and areas within the Project Boundary that have potential to create erosion or discharge of sediment-laden into watercourses and municipal stormwater systems;
- Identify high risk areas (e.g., ESAs) within the Project Lands and provide proactive ESC measures (including EWPs) specific to these locations;
- Demonstrate adherence and implement procedures for monitoring water quality for compliance with the *Fisheries Act*, BC *Water Sustainability Act* (WSA), municipal by-laws and applicable water quality criteria;
- Identify BMPs and mitigation measures to avoid or reduce potential Project-related effects of erosion, slope movement, runoff, and sedimentation;
- Establish and implement controls to manage sources and protect receivers from erosion and stormwater runoff and prevent contaminants and sediment-laden water from entering storm drains and aquatic habitats;
- Provide procedures, drawings, and other tools to manage and minimize erosion and discharges to aquatic environments and stormwater infrastructure that conform with DBSS Section 165 requirements; and
- Describe and implement a water quality monitoring program for benchmarking and confirming achievement of applicable water quality criteria through routine sampling using standardized sampling methods.

5.9.2 Identified Erosion and Sediment Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Erosion and Sediment Control Plan.

- Prepare and implement site-specific ESC Plans that meet all relevant industry and regulatory standards and conform with DBSS Section 165 requirements. These plans will include mitigation measures to address erosion and prevent mobilization of sediment;
- Follow standard ESC measures described in BMPs in all construction areas where runoff could flow into a watercourse;
- Install silt fences (or other acceptable product) along the top of bank of watercourses prior to construction activities in that area to prevent surface runoff from entering the channel;
- Install and maintain ESC measures around construction sites within 30 m of watercourses as directed by the AQP;
- Cover any exposed soils (e.g., stockpiles, grubbed and graded areas) with polyethylene sheeting, erosion control blankets or other measures approved by the AQP (e.g., hydoseeding) when not in active use and / or in advance of precipitation events;
- Conduct dedicated environmental inspections of ESC measures before, during, and after significant rainfall events (>25 mm of rain within 24 hours);
- Implement other erosion protection or sediment control measures until re-vegetation (soil stabilization) can occur;
- Direct grading away from waterbodies;
- Do not stockpile erodible materials within 30 m of a watercourse;
- Do not place fill material in a waterbody without appropriate permitting and utilizing site isolation techniques;

- Direct sediment-laden water to stable, vegetated areas away from any watercourses to allow for infiltration back into the ground. Regularly and no less than weekly monitor the site discharge locations to ensure that sediment-laden water does not reach fish habitat; and
- If water quality monitoring reveals that turbidity is approaching threshold values, develop and implement corrective actions. If corrective actions are not successful, suspend construction activities until effective solutions are identified by the AQP.

5.10 Fish and Fish Habitat Plan

5.10.1 Plan Objective and Requirements

The objective of the Fish and Fish Habitat Plan is to provide procedures and mitigation that will meet regulatory requirements and permit conditions for protecting fish and fish habitat, including minimizing Project-related disruption of fish habitat. Additional measures for protection of fish and fish habitat are also included in **Section 5.7**: Construction Water Management Plan, **Section 5.9:** Erosion and Sediment Control Plan, and **Section 5.14:** Spill and Emergency Response Plan.

The developed Fish and Fish Habitat Management Plan will:

- Summarize affected fish habitat and potential Construction impacts to fish and fish habitat;
- Describe the regulatory requirements for Project Construction and provide a permitting plan to address all temporary and permanent effects to instream and riparian fish and fish habitat;
- Demonstrate adherence to conditions of applicable federal and provincial permits and approvals prior to construction;
- Identify high risk areas within the Project site (e.g., ESAs) and provide proactive mitigation measures specific to these locations;
- Identify construction activities that could lead to negative impacts to fish and fish habitat and provide a schedule of construction activities to demonstrate how applicable federal and provincial reduced-risk timing windows are considered; if work outside of these periods are required, additional mitigation measures will be documented in an EWP;
- Describe methods for protecting and minimizing potential effects to fish and fish habitat, including conformance with permit conditions, fencing and monitoring of watercourses, ESC measures, use of reduced-risk timing windows, fish salvage methods, and linkages to related component plans to prevent potential habitat damage and introduction of deleterious substances to fish habitat;
- Describe monitoring requirements during in-water works and works within 30 m of a watercourse;
- Provide an overview of targeted environmental training on the protection of fish and fish habitat to supervisors and crews working in or around water; and
- Develop plans suitable for permit applications with detailed quantification and drawings for any temporary or permanent disturbances of instream and riparian fish habitat as well as planned mitigation measures and habitat enhancement.

Current published reduced risk timing windows for salmonids that could be present in the Project area are shown in green in **Table 5-1**. Instream work shall be scheduled within these periods, or reflect any revisions, unless it is demonstrated that there are no alternatives for timing of the works. If construction works in watercourses must be completed outside the reduced risk timing window, an AQP shall develop and oversee implementation of an accepted EWP to mitigate potential impacts to fish and fish habitat in accordance with permit conditions.

Table 5-1 Key Fisheries Reduced Risk Timing Windows for Project Construction

Fish Species	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Coho salmon	Avoid instream work if feasible[1]									Avoid instream work if feasible[1]		
Cutthroat and rainbow trout	Avoid instream work if feasible[1]										Avoid instream work if feasible[1]	

Source: (BC Ministry of Environment 2006).

Note:

1. Instream works scheduled for these periods are to conform with permit conditions and regulatory advice and as per AQP's workplan

5.10.2 Identified Fish and Fish Habitat Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Fish and Fish Habitat Plan. Potential mitigation measures during construction activities in or near fish habitat are described below for watercourse and riparian protection, vehicle and equipment access management, and fish salvage. Other relevant and/or related mitigation measures are included within **Section 5.9** Erosion and Sediment Control Plan, **Sections 5.11** Hazardous Materials Management Plan, **Section 5.14** Spill and Emergency Response Plan and **Section 5.16** Vegetation and Wildlife Management Plan.

5.10.2.1 Watercourse and Riparian Area Protection

- Follow requirements and instream work measures as described in DBSS Section 165 including full-time environmental monitoring for all construction activities during in-stream works or ESAs;
- Minimize the temporary Project footprint within 10 m of watercourses or within streamside protection and enhancement areas if greater than 10 m in width;
- Limit grubbing, stripping, and grading to the minimum required for safe passage of equipment and construction;
- Establish and fence no-go zones for ESAs (e.g., watercourses, streamside protection and enhancement areas, root wads, log overhangs) with visually obvious barriers (e.g., snow-fencing) prior to clearing or starting construction near ESAs to prevent personnel from encroaching into the riparian buffers or storing equipment in these areas;
- Conduct work within reduced-risk windows for instream works (see **Table 5-1**) where species and habitat indicate the presence of fish during vulnerable life history stages (e.g., spawning fish, ova, pre-emergent fish);
- Operate machinery only in a dry and hydraulically-isolated stream channel or from outside the high-water mark or top of bank;
- Delay required grading on banks of watercourses until immediately before construction. If required, install effective temporary ESC structures, as directed by the AQP;
- Minimize duration of instream work to the extent possible;
- Postpone construction adjacent to watercourses and riparian areas if excessive flows or flood conditions exist or are anticipated, or construction methods cannot be modified to cope with the increased flow and potential for erosion and sedimentation;

- Schedule clearing, grubbing, drainage, and grading work near watercourses to occur during periods of dry weather outside of the breeding bird window and close-cut vegetation;
- Do not permit clearing equipment within the riparian buffer, unless approved by an AQP. After clearing is complete, confirm the riparian buffer remains intact;
- Grade material away from watercourses to minimize the risk of material entering watercourses;
- Limit the number of vehicle access and egress points to minimize rutting;
- Conduct additional water quality monitoring in accordance with **Section 5.7** Construction Water Management Plan, as appropriate, and ensure water quality does not exceed applicable water quality criteria; and
- Ensure that all fill materials are clean, inert, free of contaminants, and stockpiles of fill are located at least 30 m from fish habitat.

5.10.2.2 Vehicle and Equipment Access Management

- Implement measures as per **Section 5.9** Erosion and Sediment Control to minimize the potential for tracking sediment within and off-site;
- Use existing road access where available and design equipment access routes to avoid/minimize interactions with fish and fish habitat;
- Recontour in places where vehicle and equipment access has left the streambanks exposed to mineral soil, and re-seed or plant disturbed areas in a way that stabilizes the site and facilitates its return to a natural vegetated state;
- Monitor reclaimed sites to confirm successful plant cover re-establishment and long-term site stability;
- Prepare and implement a vehicle access plan for any temporary watercourse crossings to protect the banks from erosion, maintain flows in the watercourse, withstand calculated flows for the 1:100-year return period and adhere to WSA requirements;
- Use work pads, if required, to minimize exposure and disturbance of soils, particularly on slopes leading to watercourse crossings;
- Use biodegradable hydraulic fluid in equipment when working in watercourses or associated ESAs;
- Clean equipment of oil, grease, and other contaminants deleterious to aquatic species, prior to commencing work;
- Use secondary containment for non-mobile equipment and any fuel storage onsite; and
- Adhere to spill prevention precautions identified in **Section 5.14** Spill and Emergency Response Plan.

5.10.2.3 Fish Salvage

Where instream works are proposed in flowing water that contains fish, retain an AQP to develop and implement a fish salvage plan using appropriate fishing methods, and release fish unharmed upstream or downstream of the isolated work area. Following fish salvage, hydraulically isolate and dewater the work area, and commence work in the dry. If the work area becomes hydraulically reconnected during the course of the work, repeat the salvage and isolation process before recommencing work.

5.11 Hazardous Materials Management Plan

5.11.1 Plan Objective and Requirements

The objective of the Hazardous Materials Management Plan is to prevent negative impacts to both human health and the environment. This plan has linkages to **Section 5.6** Construction Waste Management Plan**,** **Section 5.8** Contaminated Site Management Plan, and **Section 5.14** Spill and Emergency Response Plan.

Hazardous materials may include fuels, bitumen, oils, raw and uncured concrete, mortar, glues, lubricants, organic and inorganic contaminants, paints, solvents, cleaners, chemical dust suppressants, pesticides/herbicides, and used filters. Hazardous materials may also include materials encountered in buildings to be demolished, or buried pipes, including asbestos.

The developed Hazardous Materials Management Plan will:

- Demonstrate adherence with applicable legislation including the BC *Environmental Management Act* and its regulations, *Transportation of Dangerous Goods Act*, and applicable building and fire codes;
- Identify and implement procedures for transporting hazardous materials, training requirements for Project personnel and contractors, and procedures for proper inventory and storage of hazardous materials;
- Present a Waste Stream Profile form for any hazardous waste which will include completed manifest document and identify waste transporters and acceptable licensed facility where each material can be taken;
- Describe and implement measures to comply with relevant legislation and DBSS Section 165, including requirements for fuel storage;
- Identify and implement measures to minimize risk of spills, Environmental Incidents, or safety incidents involving hazardous materials; and
- Describe and implement measures to assess and appropriately address risk of exposure to hazardous materials during building demolition, excavation, and all other aspects of the Project.

5.11.2 Identified Hazardous Materials Management Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Hazardous Materials Management Plan.

5.11.2.1 Handling of Hazardous Materials

- Ensure all crew members are aware of their responsibilities for proper handling, identification, documentation, and storage of hazardous materials on the Project site through regular and documented training;
- Ensure crew members who will be handling hazardous materials and waste have valid Workplace Hazardous Materials Information System training;
- Maintain Safety Data Sheets for all potentially encountered hazardous materials, and store onsite in a readily available location; and
- Ensure all hazardous waste vendors complete an internal approval process prior to working at the Project.

5.11.2.2 Containment and Storage of Hazardous Substances

- Store accumulations of hazardous waste in a centralized area or building designed to ensure segregation of non-compatible by-products to optimize control;
- Ensure storage areas for hazardous materials are clearly marked and secured (e.g., barricaded, fenced, or locked up) to prevent access of unauthorized personnel, equipment, and vehicles;
- Ensure storage areas adhere to applicable federal and provincial regulations;
- Hazardous materials storage areas will be:
  - Equipped with sufficient secondary containment to control 110% of the stored material;
  - On level ground at least 30 m away from ESAs; and
  - Covered;
- Conduct visual inspections of all hazardous material containers on the Project site at least weekly, monitor and document the type and volumes of hazardous materials in Project Lands, and ensure there are no releases of hazardous materials to the environment in accordance with the Spill and Emergency Response Plan (**Section 5.14**);
- Ensure containers used to store hazardous materials meet the following criteria:
  - In good condition with no visible defects that could result in leaking or spilling of materials;
  - Leak-resistant and include seals containing liquids;
  - Have removable tops if storing non-liquid materials; and
  - Kept upright and closed at all times unless adding or removing contents;
- Clearly label containers with the following information:
  - "Hazardous Material";
  - Name of the material (e.g., used oil);
  - Type of hazard (e.g., toxic, ignitable); and
  - Once a container is filled, mark the date that the container was placed in the storage area; and
- Provide spill kits appropriate to the type and amount of hazardous waste in strategic, easily accessible locations around the construction area (see **Section 5.14** Spill and Emergency Response Plan).

5.11.2.3 Transportation of Hazardous Substances

- Remove hazardous waste materials from Project Lands as soon as practical;
- Use appropriately licensed waste transporters;
- Complete manifest documents as per the TDG Regulations:
  - Where hazardous waste is expected to be present, provide the hazardous waste type and associated shipping name; and
  - Identify the acceptable licensed facility where materials are to be taken;
- Prior to transportation:
  - Notify the Province of the intent to transport hazardous waste;
  - Confirm TDG-trained personnel who will be onsite to review and sign off on the manifest and collect required manifest copies;
  - Provide copies to the Province immediately on shipping; and.
  - Once material is received at the waste facility, ensure a manifest copy is provided to the Province.

5.12 Noise and Vibration Management Plan

5.12.1 Plan Objective and Requirements

The objective of the Noise and Vibration Management Plan is to avoid or minimize effects on the local community and receptors from Project-related noise and vibration levels that exceed identified thresholds during Construction, such as during site preparation and construction. Construction activities (e.g., clearing, grubbing, earthworks) and operation of construction equipment (e.g., excavators, pile drivers, other heavy equipment) are expected to generate noise and vibration that could affect nearby receptors and communities.

The developed Noise and Vibration Management Plan will:

- Present findings from Project Co's pre-construction noise impact assessment using the detailed design and proposed construction methodology to predict construction-related noise using industry standard US Federal Highways Administration software or equivalent. This assessment will be done in consideration of construction staging as well as night work;
- Present findings from Project Co's pre-construction vibration impact assessment specific to the Jim Pattison Outpatient Care and Surgery Centre (JPOCSC) using the detailed design and proposed construction methodology within the JPOCSC vicinity;
- Identify sensitive noise and/or vibration receptors adjacent to the Project Lands which may experience levels above prescribed thresholds (**Table 5-2** and **Table 5-3**) and provide detailed mitigation measures to reduce or avoid threshold exceedances;
- Demonstrate how the schedule for construction activities considers nearby communities, Point of Reception, and identified sensitive receptors ;
- Detail how Project Co will assist the Province in responding to, tracking, and addressing complaints from the public and stakeholders including documenting corrective actions and contingencies employed;
- Detail and implement a construction noise and vibration monitoring program to regularly verify levels at key locations and enable comparison with specific thresholds and criteria;
- Identify construction activities that could lead to increased noise and vibration levels and provide a schedule of construction activities to demonstrate how Project Co will avoid sensitive periods and locations; and
- List adaptive management approaches and contingency measures should proposed noise and vibration mitigation not be sufficient to achieve relevant thresholds.

Table 5-2 General Noise Assessment Criteria for Project Construction

Land Use	Daytime Criteria, L_d (dBA)	Nighttime Criteria, L_n (dBA)
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: (United States Federal Transit Administration 2018a)

Note: dBA – A-weighted decibel; L_d – daytime sound level; L_n – nighttime sound level

Table 5-3 General Vibration Criteria for Project Construction

PPV Vibration Criteria (VdB)[1]	Effect
103 to 110	Threshold of vibration perception
120	Vibration is distinctly perceptible and may cause public concern but can be mitigated with prior warning and explanation
136[2]	Potential cosmetic damage to historic and some old buildings
138[2]	Potential cosmetic damage to older residential structures
140	Vibration likely to be intolerable for prolonged period
142[2]	Potential cosmetic damage to modern buildings

Source: (British Standards Institute 2008; California Department of Transportation 2013)

Notes: PPV – peak particle velocity; VdB – vibration decibel

1. Referenced to PPV of 1×10^{-6} millimetres per (mm/s).
2. Criteria are applicable to continuous/intermittent vibration sources.

5.12.2 Identified Noise and Vibration Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Noise and Vibration Management Plan.

- Schedule construction activities to minimize or avoid effects to sensitive receptors;
- Document hours, equipment inspection and maintenance requirements, public outreach program, noise monitoring, vibration monitoring, and the various application processes;
- Cast foundations *in situ*, advancing casings using rotary drilling or other low-noise and low-vibration equipment, where practical;
- Limit noise-generating construction activities to the Core Hours of Work: 7:00 a.m. to 10:00 p.m., Monday through Saturday, where practical;
- Provide advanced notification of construction work that may increase noise and vibration for the public's awareness including as follows:
  - Where night work is required and likely to exceed the criteria identified in **Table 5-2** and/or **Table 5-3**, provide two weeks' advance notice to building owners and occupants within a 100 m radius of the planned work;
- Monitor for noise and/or vibration during high-decibel work where there are residences or sensitive receptors within the setback identified by Project Co's pre-construction modelling;
- Promptly conduct and report on supplemental location-specific noise monitoring if complaints are received;
- If pre-construction noise modelling or location-specific noise monitoring indicates a potential exceedance of relevant thresholds, deploy additional mitigation measures (e.g., temporary noise barriers between construction sites and affected receptors or adjust work timing) to reduce noise levels;
- Ensure that all equipment is well maintained and, if feasible, muffled during construction to minimize unnecessary noise; and
- Ensure the size and power of tools used are appropriate for the job, to limit noise from power tool operations.

5.13 Site Restoration Plan

5.13.1 Plan Objectives and Requirements

Construction in and around watercourses and temporary workspaces may result in ground disturbance and removal of existing vegetation. Following construction activities, these areas will require permanent stabilization and restoration to prevent soil erosion, restore and enhance ecosystem productivity, and preserve aesthetic values.

The developed Site Restoration Plan will:

- Describe re-planting and revegetation procedures for temporarily disturbed areas, including riparian areas;
- Demonstrate adherence to federal, provincial, and municipal requirements for habitat restoration;
- Describe Project Co's approach to review and incorporate feedback from Identified Indigenous Groups regarding the use of culturally important plants;
- Demonstrate how Project Co will consider the use of native plant species while considering climate resilience and drought tolerance;
- Confirm how areas requiring permanent planting will be consistent with Project requirements outlined in **Section 5.10** Fish and Fish Habitat Management Plan and **Section 5.16** Vegetation and Wildlife Management Plan;
- Describe Project Co's post-planting monitoring program including the frequency, duration, achievement of minimum survival requirements, and re-planting approaches;
- Provide documentation including construction drawings that are consistent with requirements of the DBSS, including Sections 751, 754, and 766 Click or tap here to enter text. (for topsoil and landscape grading, planting trees, shrubs, and groundcovers, and irrigation); and
- Outline contingency measures to be implemented, including replacement planting, should plant survivorship not achieve minimum requirements.

5.13.2 Identified Site Restoration Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Site Restoration Plan:

- Retain topsoil removed from excavation sites prior to construction; following construction, replace topsoil during favourable weather conditions;
- Prioritize culturally significant plant species as informed by Identified Indigenous Groups and climate-resilient species that meet BCRTC criteria for plantings;
- Restore disturbed streambeds and banks as close as practical to their original pre-construction slope, substrate composition, and height;
- Provide enhancement measures where impacts cannot be avoided or minimized;
- Replace salvaged substrate materials over top of a well-compacted subgrade material to a depth similar to the pre-existing condition;
- Scarify compacted soils to create micro sites for revegetation;
- Seed disturbed banks and riparian areas with an approved ;
- Restrict access to seeded areas until the vegetation has re-established;

- Follow up on work to complete restoration that may have been rescheduled if initial seeding was conducted during an unfavourable time of year or otherwise failed to meet a minimum coverage;
- Remove any non-biodegradable ESC measures (e.g., silt fence) once the site is stable and vegetation is re-established; and
- Conduct revegetation survival monitoring in accordance with Project requirements.

5.14 Spill and Emergency Response Plan

5.14.1 Plan Objectives and Requirements

The objectives of the Spill and Emergency Response Plan are to avoid, minimize, or limit the potential for an accident or malfunction caused by Project-related activities, and equip Project personnel with procedures to follow in the event of an accident, malfunction, or natural hazard, including incident reporting to relevant regulatory agencies. This plan will be developed in accordance with the BC *Environmental Management Act* (EMA) and Contaminated Sites Regulations to allow for rapid response and reporting of spills of fuels and other hazardous materials.

The developed Spill and Emergency Response Plan will:

- Present and define a Project-wide Spill Response Procedure which includes sequenced steps taken by Project Co to immediately respond to a spill including roles and responsibilities, reporting and documentation, communications protocols and clean-up procedures;
- Identify responsible Project personnel, external/regulatory contacts, and third-party contractors along with notification requirements for different spill scenarios (i.e., type and quantity of material);
- Outline a training program for all Project Co employees and sub-contractors in requirements of applicable legislation related to, spill and emergency response procedures, and hazardous waste management including the use of spill kits, spill recognition, response, reporting and clean-up procedures;
- List Project Co's approach to maintain training records for spill and emergency response;
- Identify, in tabular form, spill volume and substance type thresholds for internal and external reporting that conforms with the Spill Reporting Regulation of the EMA;
- Define procedures for maintaining records of spill frequency, type, root cause, follow-up actions, and corrective actions to prevent recurrence; and
- List the required contents of spill abatement materials and equipment and the locations where they will be stored on Project Lands to support emergency response activities.

All spills, regardless of size, must be reported to the Province in accordance with the Emergency Management BC requirements and properly cleaned up, following the procedures outlined by Project Co. The Spill Response Procedure shall be posted at conspicuous locations throughout the Project site and communicated to all Project Co crew members at the start of work and thereafter at regular intervals for the duration of Project activities. Non-reportable spills will be reported internally to the Province within 24 hrs and the final report within 7 days. These will be reported in the EM reports in accordance with EQMP requirements.

5.14.2 Identified Spill Response Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Spill and Emergency Response Plan. Project Co shall identify potential spill hazards, determine the level of risk for activities that could result in a spill, and employ the following measures to reduce the potential of a spill.

For hazardous materials mitigation, see **Section 5.11** Hazardous Materials Management Plan.

5.14.2.1 Materials Storage

- Store all fuels and lubricants in properly labelled containers and in secondary containment designed to contain 110% of the volume;
- Do not store fuels or other hazardous materials within 30 m of watercourses or ESAs;
- Store all hazardous materials in a labelled, secure facility;
- Store limited quantities of oils, greases, fuels, and other deleterious substances (e.g., paints, epoxies, wood preservatives) on-site;
- Establish and maintain a monthly inventory of all hazardous products; and
- Appropriately train equipment operators and crews on how to contain spills or leakage from equipment.

5.14.2.2 Equipment Maintenance and Refueling

- Equipment refueling and maintenance shall occur at least 30 m from watercourses or at designated offsite refuelling stations;
- Place absorbent pads and drip trays underneath equipment/vehicles during maintenance, to contain accidental spills;
- Ensure that any equipment left in the construction workspace overnight is secure and any fluid (e.g., oil, engine coolant) containers are locked within each piece of equipment;
- Place drip trays underneath all heavy equipment that will be stationary for more than 3 hours when parked within 30 m of a watercourse or ESA;
- Visually inspect all construction vehicles/equipment for leaks and excess lubricants before operating equipment each day;
- Ensure all vehicles and equipment operating in the Project Lands are equipped with appropriate spill kits that are fully stocked;
- Ensure all machinery working near aquatic environments uses bio-degradable hydraulic fluids; if equipment is incompatible, detail additional mitigations;
- Avoid overfilling any vehicle or equipment fuel tanks;
- Post written procedures for the refuelling of vehicles and equipment at all fuel depots/storage locations and provide regular training on refuelling procedures; and
- Incorporate spill contingency measures in procedures for use of products and equipment.

5.14.2.3 Other Activities

- Transfer liquid waste into containers using funnels, pumps, or other flow control devices to minimize the potential for spills;
- Use sealable hazardous waste containers when disposing of items such as oil containers, grease tubes, and used absorbent pads, and dispose at a facility that processes hazardous materials;

- Keep fire extinguishers and other emergency response equipment and supplies in known and visible locations, and ensure access to them is not blocked; and
- Ensure fire extinguishers and spill kits are routinely inspected and certified.

Natural Hazards Management and Response

Natural hazards include extreme weather conditions, high wind occurrences, flooding, and earthquakes. The Spill and Emergency Response Plan must identify all evacuation routes and emergency muster stations in the event of a natural hazard emergency.

Fire Abatement and Response

Project construction activities have the potential to cause fires (e.g., welding, electric sparks, working in elevated fire risk periods). All Project personnel will collaborate on identifying risks and implementing mitigations to reduce those risks. Project Co shall employ the following mitigation measures:

- Comply with Provincial and local authority fire bans and restrictions;
- Identify and label (signage) all locations on-site associated with fire hazards (fuel stations, welding sites, hazardous material storage facilities, etc.);
- Restrict smoking on Project Lands only to designated smoking areas;
- Properly store and label flammable materials and ban heat and flame in these areas;
- Remove flammable waste to waste storage to prevent accumulation and dispose off-site as soon as practical;
- Train all employees and contractors in fire prevention and designated permanent employees in fire response, and ensure sufficient trained personnel are on-site and have access to personal protective equipment at any given time during active construction;
- Train all personnel in fire response and containment, including the use of fire extinguishers;
- Develop a fire evacuation plan;
- Identify safe zones for workers at the Project area if evacuation is not possible; and
- Implement the following additional precautions as first response to small fires in the Project area, and in the vicinity of GTUF or the Serpentine Valley during periods when fire risk is elevated:
  - Locate fire-fighting equipment strategically around the Project to help contain/extinguish any fire; and
  - Equip construction site/works areas with fire-fighting tools, training, and other measures as necessary to supply initial attack to accessible fires.

5.15 Transportation Access Communications Plan

5.15.1 Plan Objective and Requirements

The objective of the Transportation Access Communications Plan is to support information dissemination on temporary Project-related effects to local access to residential and non-residential properties, community amenities, and emergency services. A separate and standalone Traffic Management Plan will address the coordination of construction traffic with buses, trucks, emergency services and other road users.

The developed Transportation Access Communications Plan will:

- Demonstrate how all road users (e.g., drivers, cyclists, pedestrians of all abilities) are notified;
- Identify appropriate media to communicate mitigation measures to avoid or reduce potential Project-related effects on access;

- Describe how all available communication methods will be used to communicate with the public and stakeholders regarding traffic and access detours; and
- Outline how road signage will be used to mark alternative cycling and pedestrian routes with adequate signage including the dates and duration of any temporary closures and rerouting of any existing facilities.

5.15.2 Identified Transportation and Access Communication Mitigation Measures

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Transportation and Access Communications Plan.

- Incorporate input from the Province, TransLink and its operating agencies, the City of Surrey, the Township of Langley, the City of Langley, emergency services, and other relevant stakeholders (e.g., local businesses) to reduce potential disruptions when developing access communications;
- Clearly communicate alternative routes to emergency responders well in advance to ensure the safety and security of the public;
- Provide advance notification of planned roadway lane closures to allow road users, including pedestrians and cyclists, to make informed travel choices;
- Maintain public awareness that businesses and services are open during Construction to mitigate potential construction-related impacts; and
- Clearly identify and communicate alternative routes well in advance for sidewalk and bike lane closures as well as vehicular access to businesses and residences.

5.16 Vegetation and Wildlife Management Plan

5.16.1 Plan Objectives and Requirements

The objectives of the Vegetation and Wildlife Management Plan is to avoid or limit Project-related effects on wildlife, wildlife habitat, and vegetation (e.g., boulevard trees, plant species at risk), and prevent the spread and establishment of invasive and noxious species. Environmental Constraints maps (**Appendix A**) provide baseline information for reference and information. For information on site restoration, including revegetation, see **Section 5.13** Site Restoration Plan.

The developed Vegetation and Wildlife Management Plan will:

- Describe the permitting plan to address all temporary and permanent effects to vegetation and wildlife and demonstrate adherence to conditions of any obtained permits and approvals prior to construction;
- Using the Environmental Constraints maps (**Appendix A**) as a starting point, identify high-risk areas within the Project site (e.g., ESAs; sensitive/critical habitat) and provide proactive mitigation measures specific to these locations;
- Identify environmental constraints within and adjacent to the Project Lands including identified bird nests, protected trees/vegetation, and sites of known species of interest and invasive/noxious species;
- Identify construction activities that could lead to negative impacts to vegetation and wildlife or its habitat and provide a schedule of construction activities to demonstrate how applicable Environmental Timing Window (ETW) are considered to avoid such effects;

- Describe methods for protecting and minimizing potential effects to vegetation and wildlife, including compliance with Project approvals, fencing and monitoring of habitat, ESC, use of ETWs, salvage methods, and linkages to related component plans, to prevent potential habitat damage and introduction of deleterious substances to habitat;
- Outline the requirements and process for pre-construction surveys by AQPs for confirming presence/absence and locations of species of management concern (such as at-risk species and invasive/noxious species) as well as, important habitat, and culturally important species within the Project area;
- Describe contingency measures for encounters with species at risk or species of interest during Construction;
- Define procedures and approach to the management of invasive or noxious weeds species before, during, and after Construction;
- Demonstrate how wildlife–human conflicts will be avoided or minimized and documented during Construction; and
- ETWs for the Project have been established as guidelines to protect breeding birds and other wildlife species during sensitive periods and are provided in **Table 5-4**; identify construction activities that could lead to negative impacts on vegetation, wildlife or habitat, and provide a schedule of construction activities to demonstrate how applicable ETWs are considered; if work outside of these periods is required, provide additional mitigation measures to minimize impacts and satisfy regulatory requirements.

Table 5-4 Key Environmental Timing Windows (ETWs) for Construction

<table>
<tr><th rowspan="2">Biological Feature</th><th colspan="12">Month</th></tr>
<tr><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td>Nesting Birds[1]</td><td colspan="2">Raptor surveys[3], pileated woodpecker surveys</td><td colspan="6">Avoid tree and vegetation clearing[2]
Conduct nesting survey before building demolition[3]</td><td>ETW</td><td>ETW</td><td>ETW</td><td>ETW</td></tr>
<tr><td>Bat Maternity Roosting and Hibernation</td><td colspan="3">Conduct bat survey before building demolition</td><td colspan="5">Avoid tree and vegetation clearing and conduct bat survey before building demolition[1,3]</td><td>ETW</td><td>ETW</td><td colspan="2">Conduct bat survey before building demolition</td></tr>
<tr><td>Amphibian Breeding</td><td colspan="8">Avoid construction activities in watercourses[4]</td><td>ETW</td><td>ETW</td><td>ETW</td><td>ETW</td></tr>
</table>

Notes:

1. Raptor nesting activities may commence earlier (e.g., January 25) than migratory bird nesting period (March 25 to August 18) (Ministry of Forest, Lands and Natural Resource Operations 2013) (Environment and Climate Change Canada 2022) (Bird Studies Canada 2020).. Targeted surveys for nests of raptors and for pileated woodpeckers should be conducted prior to tree removal during the associated nesting periods.
2. Unless otherwise approved by the Province and in accordance with an EWP prepared by an AQP.
3. Buildings should be assessed by an AQP for bird nesting bat roosting and hibernation prior to removal. The general bat hibernation period is November to April.
4. Unless salvages are completed and otherwise approved by the Province.

Environmental Timing Windows for Nesting Birds

Where possible, conduct vegetation clearing during the ETW (see **Table 5-4**) to avoid disturbance or destruction of active bird nests. If the breeding bird season cannot be avoided, undertake pre-construction nest surveys prior to any clearing of vegetation within suitable nesting habitat and implement mitigation such as buffering of active nests in accordance with an approved EWP.

Bat Roosting Windows

Bats potentially present in the Project area may use trees and buildings as maternity roosts when rearing their young and may use buildings during hibernation (BC Ministry of Environment 2016). To minimize potential effects on bats (particularly at-risk species such as little brown myotis [*Myotis lucifugus*]) during the maternity period (**April to August**), conduct clearing of trees likely to be used for tree roosting during the ETW (see **Table 5-4**). An AQP will prepare site-specific EWPs if potential tree roosts will be removed during the bat maternity period. Site-specific scheduling may be required when non-volant (flightless) bat pups may be present in tree roosts. Buildings proposed for demolition should be inspected by an AQP to assess their potential for bat use before demolition occurs.

Amphibian Breeding Window

Northern red-legged frog and Pacific tree frog (*Hyla regilla*) have been documented in the GTUF (Green Timbers Heritage Society 2022). Hemmera detected the presence of northern red-legged frogs in King Creek in GTUF in 2019 through environmental DNA analysis (Hemmera Envirochem Inc. 2023)(). Although their presence has not been documented in the Project area, the at-risk species western toad (*Anaxyrus boreas*) could occur in high suitability habitat (e.g., GTUF or the Serpentine Valley).

Amphibian breeding spans late February to early April, eggs are present into May, hatchlings are present until early August, and juveniles disperse into early October (Government of BC 2014). In wetlands and watercourses where amphibians are expected or have been documented, Project Co will conduct amphibian salvage prior to construction that could adversely affect their habitat in accordance with *Wildlife Act* permits. Provincial guidance recommends conducting work in late summer to fall, or in winter if there are no adults overwintering in aquatic habitat (Government of BC 2014), together with AQP-recommended protective measures.

5.16.2 Identified Vegetation and Wildlife Mitigation

The following mitigation measures have been identified through the ESR process and CEMP Framework consultation with Identified Indigenous Groups to achieve the objectives of the Vegetation and Wildlife Management Plan.

5.16.2.1 Vegetation Clearing and ESA Management

- Retain as much green space as possible,
- Maintain buffer zones for clearing and grubbing activities around watercourses, ESAs, and identified sensitive or critical habitat;
- Follow clearing and grubbing measures described in MOTI DBSS, including Section 165 and **Section 5.9** Erosion and Sediment Control Plan and **Section 5.10** Fish and Fish Habitat Plan;
- Retain an AQP (e.g., certified arborist) to survey all trees within the Project Area and develop a Tree Management Plan prior to construction in order to:
  - Provide a detailed inventory of all trees in the Project Area;

  - Quantify the number and biometrics of all trees requiring removal;
  - Identify hazard trees and describe removal approach;
  - Define required tree protection areas and requirements for demarcation;
- Clearly mark on Project construction drawings and in the field:
  - Project clearing boundaries with flagging/signage at all work sites. Ensure clearing boundaries are maintained to avoid encroachment on adjacent natural /vegetated areas;
  - City of Surrey Sensitive Ecosystem Development Permit Area (i.e., streamside protection areas and City of Surrey Green Infrastructure Network (GIN) areas) for avoidance and/or disturbance setbacks;
- Provide adequate notice (e.g., 2 weeks) to Identified Indigenous Groups regarding provision of safe access to felled trees that may serve as firewood or harvesting materials from standing trees for cultural purposes;
- Ensure Environmental Monitors are present prior to and during activities conducted in ESAs;
- Reduce the number of access points when access through vegetation is required to get to a work area, to minimize impacts of machinery and foot traffic on vegetation;
- Conduct clearing activity within the identified construction workspace only;
- Hand-clear where directed by the AQP and within 10 m of all watercourses and wetlands to avoid or reduce disturbance in ESAs; and
- Develop disposal protocols for different types of vegetation debris (i.e., invasives, noxious weeds, native vegetation) that follows relevant BMPs.

5.16.2.2 Invasive Plant Management

- Follow BMPs to minimize the spread of invasive plants and noxious weeds;
- Maintain buffer zones for clearing and grubbing activities around watercourses, ESAs, and identified sensitive or critical habitat;
- Conduct pre-construction surveys of construction areas to identify, flag, and manage occurrences of noxious weeds within the Project area;
- If invasive or noxious species are identified, clearly mark off and label an appropriate setback (as per BMP guidance) to prevent disturbance and spread;
- Inspect all vehicles and equipment (e.g., undercarriage, all tires) prior to entering or exiting weed-infested sites in the Project area and remove any plant material or large clumps of soil found. Bag the plant parts and dispose in the garbage (do not compost);
- Inspect all clothing and boots for plant parts and seeds prior to entering and exiting the Project area;
- Properly dispose of noxious weeds, including knotweed, and soil containing roots and pieces of noxious weeds in accordance with Metro Vancouver BMPs (Metro Vancouver 2021) [10];
- Steam clean (at designated cleaning stations) equipment if mud-tracking or digging equipment has been working in areas infested with noxious species;
- Minimize unnecessary soil disturbance during Project area access;
- Cover or otherwise protect areas of bare soil;
- Prevent vehicles from moving freely between weed-infested and non-infested areas; and
- Report invasive plants or noxious weed infestations to the Environmental Monitor, who will include this information in daily monitoring reports.

[10] Metro Vancouver provides and updates a list of disposal facilities that accept invasive species and infested soil (Metro Vancouver 2021b).

5.16.2.3 Wildlife and Wildlife Habitat Management

- Complete pre-construction surveys of all suitable trees within 100 m of the Project alignment for raptor and heron protected bird nests (**Table 5-4**);
- Have the AQP undertake pre-construction nest surveys prior to any clearing of vegetation within suitable nesting habitat if the breeding bird season cannot be avoided;
- Adhere to AQP recommendations for site-specific scheduling if tree roosting habitat areas with confirmed non-volant bat pups are present and could be affected by Project construction activities;
- Prepare an EWP for amphibian surveys and salvages following Best Management Practices for Amphibian and Reptile Salvages in British Columbia (FLNRO 2016) for any affected amphibian habitat;
- Complete amphibian surveys no less than seven days prior to Project construction activities that may affect standing or low-flow water habitats, particularly during the amphibian breeding season (approximately March through August) and follow up with salvage for native amphibians as directed by the AQP;
- Conduct pre-clearing surveys for habitat features;
- Prior to building demolition, the AQP shall:
  - develop and implement a wildlife salvage plan for any species likely to reside in the demolition zone; and
  - inspect buildings to determine the risk of inadvertent disturbance or mortality of wildlife;
- Inspect work sites at the beginning of each workday for any trapped wildlife prior to construction activities and notify the Environmental Monitor if any wildlife or bird nests are observed in the working area or could be adversely affected by construction activities;
- Remove all food and odorous wastes from the construction workspace daily to avoid attracting wildlife;
- Ensure Project personnel do not feed or harass wildlife, or destroy wildlife habitat that is not otherwise authorized for the Project; and
- Preserve and maintain or restore habitat features such as coarse woody debris, riparian vegetation cover, and hydrological regime of watercourses.

5.16.2.4 Species at Risk

- To protect at-risk species, the AQP shall:
  - Conduct pre-construction surveys for amphibians and at-risk invertebrates (e.g., Oregon forestsnail, western thorn [*Carychium occidentale*]) in suitable habitat when these species are likely to be active;
  - Determine whether salvages are required prior to construction;
  - Identify suitable areas for translocation, and ensure that all necessary permits are in place during salvage activities;
  - Develop a translocation plan following any applicable guidance documents; and
  - Report all incidental encounters of federally designated at-risk species, including translocation areas, to Canadian Wildlife Service;

- If a previously unidentified species at risk is encountered within or adjacent to an active worksite, field staff will immediately:
  - Notify the AQP, who will record data (e.g., location, photos, etc.) of any species at risk encountered during construction activities in monitoring reports; and
  - Temporarily suspend all work in the immediate area until an appropriate course of action has been determined in consultation with the AQP and in accordance with any relevant regulatory requirements.

6 References

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APPENDIX A

Environmental Constraints Maps

Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

Legend

- Surrey Langley SkyTrain Project Centreline
- A-2 Mapsheet and Page Number
- Adminstrative Area
- First Nation Reserve
- Watercourse
- Waterbody

Notes

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2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Contains information licensed under the Open Government Licences - British Columbia
- Base Map: ESRI World Topographic Map

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103715-04	Production Date: Jun 1, 2023	Figure A-1

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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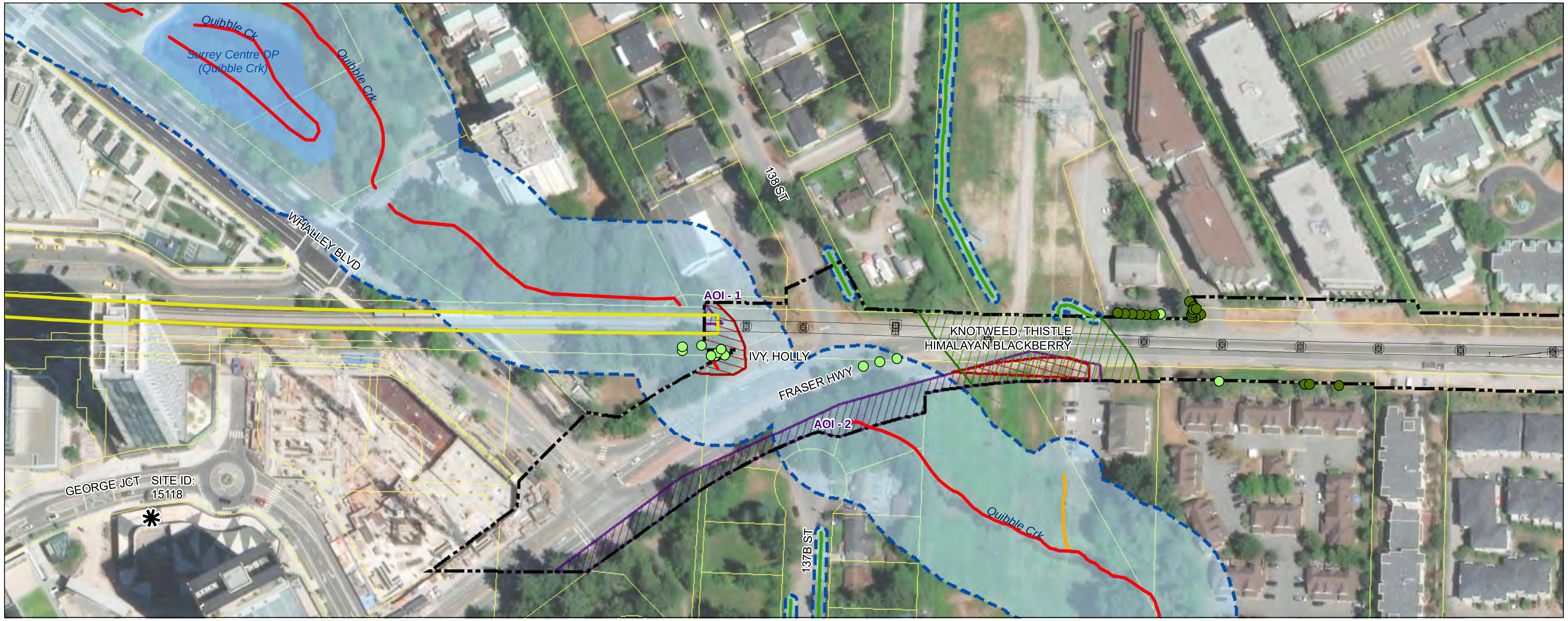
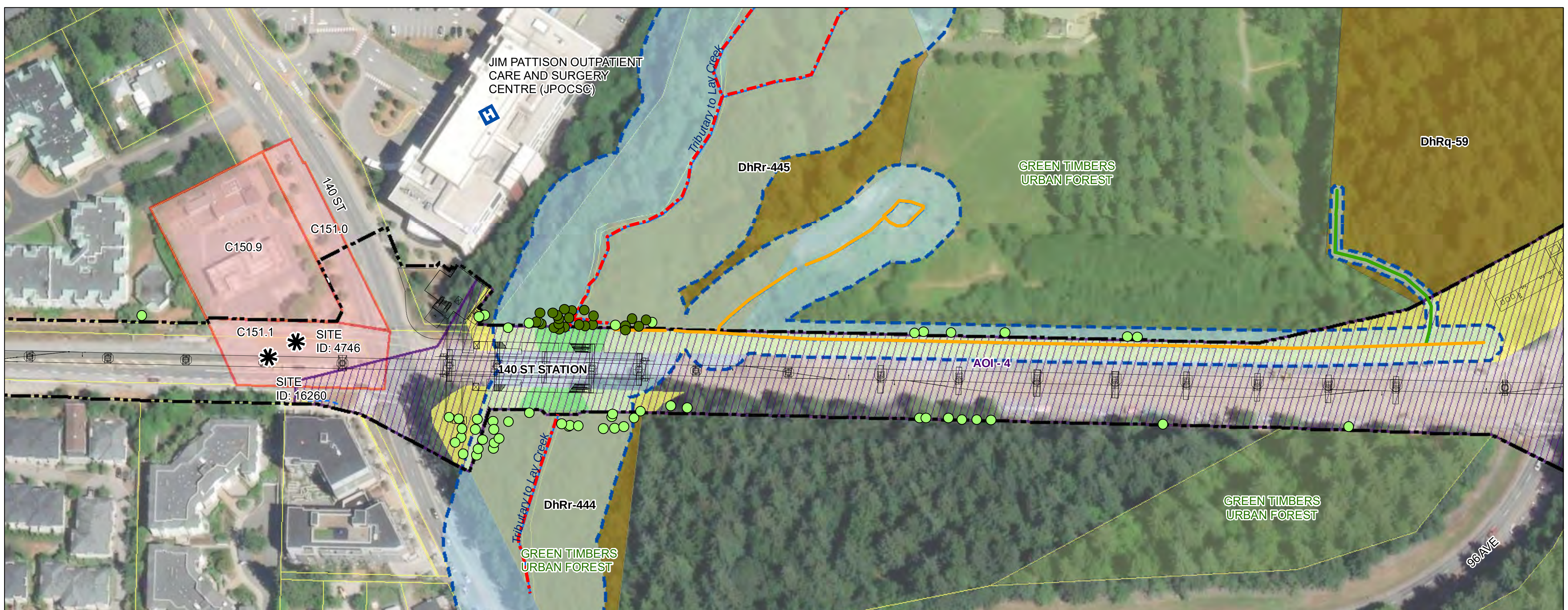
Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map





Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
- Bald Eagle Nest (recorded, activity status unknown)
- Northern Red-legged Frog (eDNA detection)
- Proposed Barn Owl Critical Habitat (draft)[5]
- Very High Habitat Suitability[6]
- High Habitat Suitability[6]
- Moderate High Habitat Suitability[6]

Notes

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Tree data: Diamond Head Consulting Ltd., City of Surrey, & Hemmera, 2019-2022.
- Archaeological data: Kleanza Consulting Ltd., 2020
- Aerial Image: ESRI World Imagery

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103715-04	Production Date: Jun 1, 2023	Figure A-2

Surrey Langley SkyTrain

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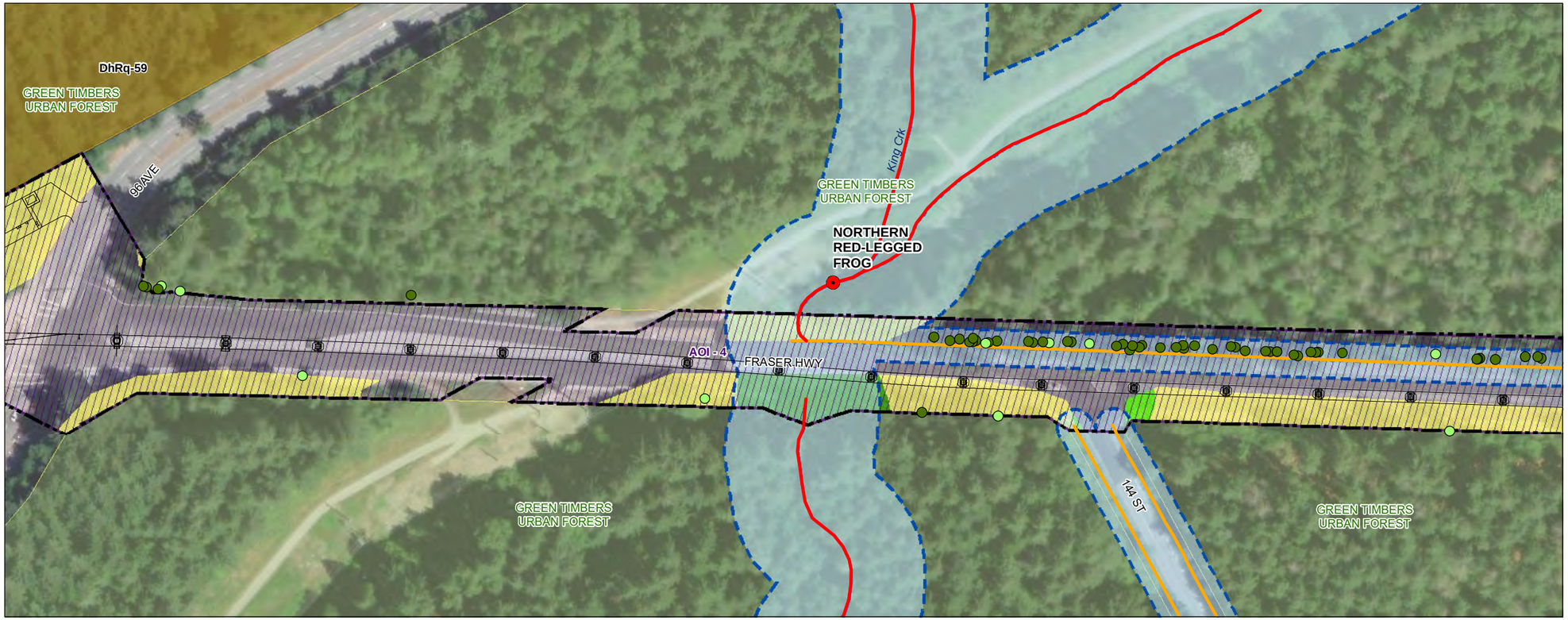
Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map



Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
- Bald Eagle Nest (recorded, activity status unknown)
- Northern Red-legged Frog (eDNA detection)
- Proposed Barn Owl Critical Habitat (draft)[5]
- Very High Habitat Suitability[6]
- High Habitat Suitability[6]
- Moderate High Habitat Suitability[6]

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- Archaeological data: Kleanza Consulting Ltd., 2020
- Aerial Image: ESRI World Imagery

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103715-04	Production Date: Jun 1, 2023	Figure A-3

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

Legend

Project Features

- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features

- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)

- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]

- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]

- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features

- Bald Eagle Nest (recorded, activity status unknown)
- Northern Red-legged Frog (eDNA detection)
- Proposed Barn Owl Critical Habitat (draft)[5]
- Very High Habitat Suitability[6]
- High Habitat Suitability[6]
- Moderate High Habitat Suitability[6]

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103715-04	Production Date: Jun 1, 2023	Figure A-4

Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
- Bald Eagle Nest (recorded, activity status unknown)
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- Very High Habitat Suitability[6]
- High Habitat Suitability[6]
- Moderate High Habitat Suitability[6]

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103715-04	Production Date: Jun 1, 2023	Figure A-5

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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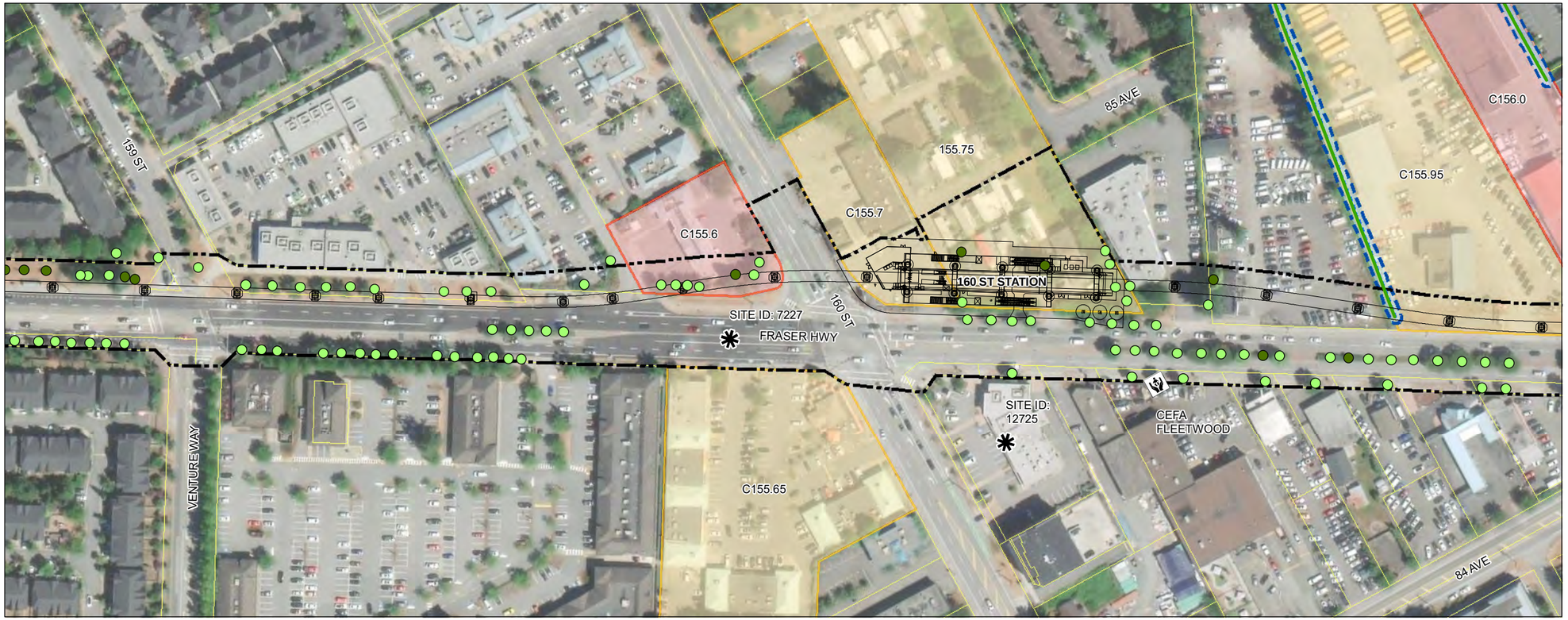
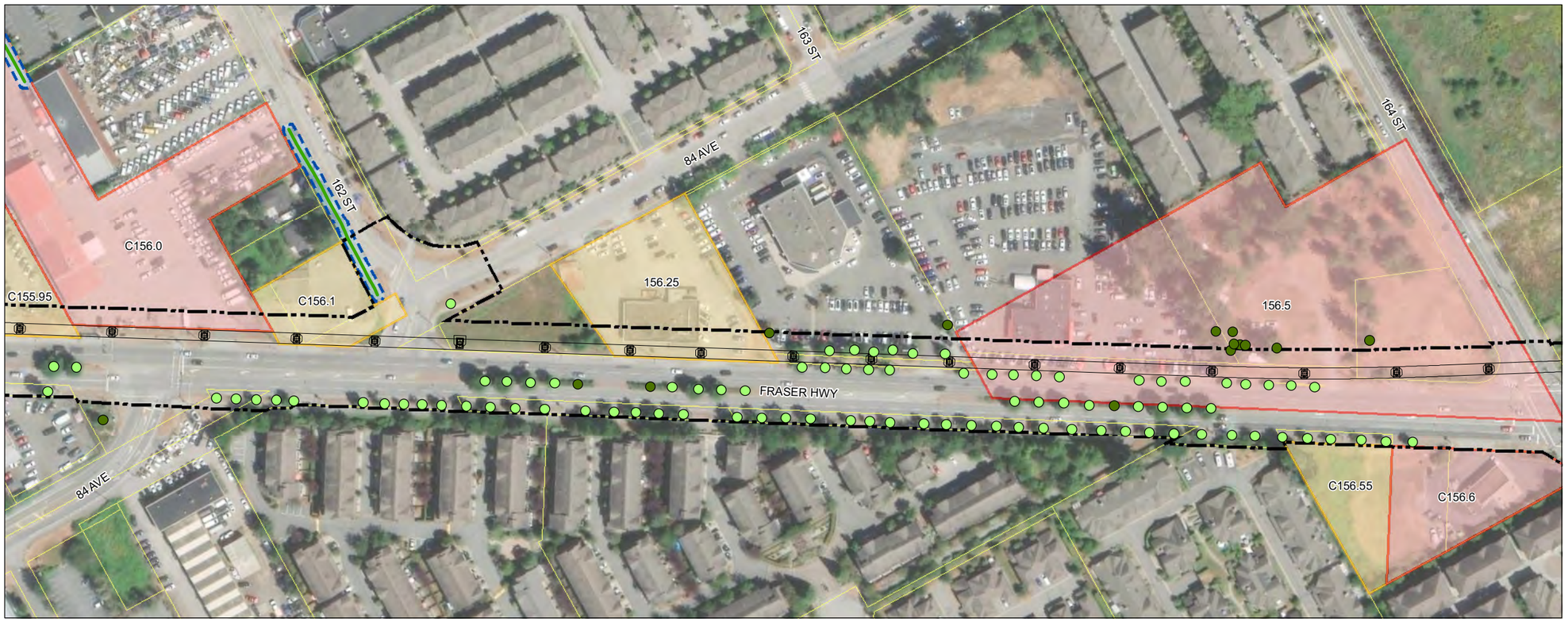
Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map





Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
- Bald Eagle Nest (recorded, activity status unknown)
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- High Habitat Suitability[6]
- Moderate High Habitat Suitability[6]

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103715-04	Production Date: Jun 1, 2023	Figure A-6

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

SITE ID: 16191
SURREY SPORT & LEISURE COMPLEX
166 ST
166 ST STATION
156.5
C156.6
FRASER HWY
164 ST
AOI - 16
SITE ID: 1340
80 AVE FG N
80 AVE
SURREY PENTECOSTAL ASSEMBLY PLACE OF WORSHIP
AOI - 18
HIMALAYAN BLACKBERRY
168 ST
SCOTCH BROOM
80 AVE

Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
- Bald Eagle Nest (recorded, activity status unknown)
- Northern Red-legged Frog (eDNA detection)
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- Moderate High Habitat Suitability[6]

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103715-04	Production Date: Jun 1, 2023	Figure A-7

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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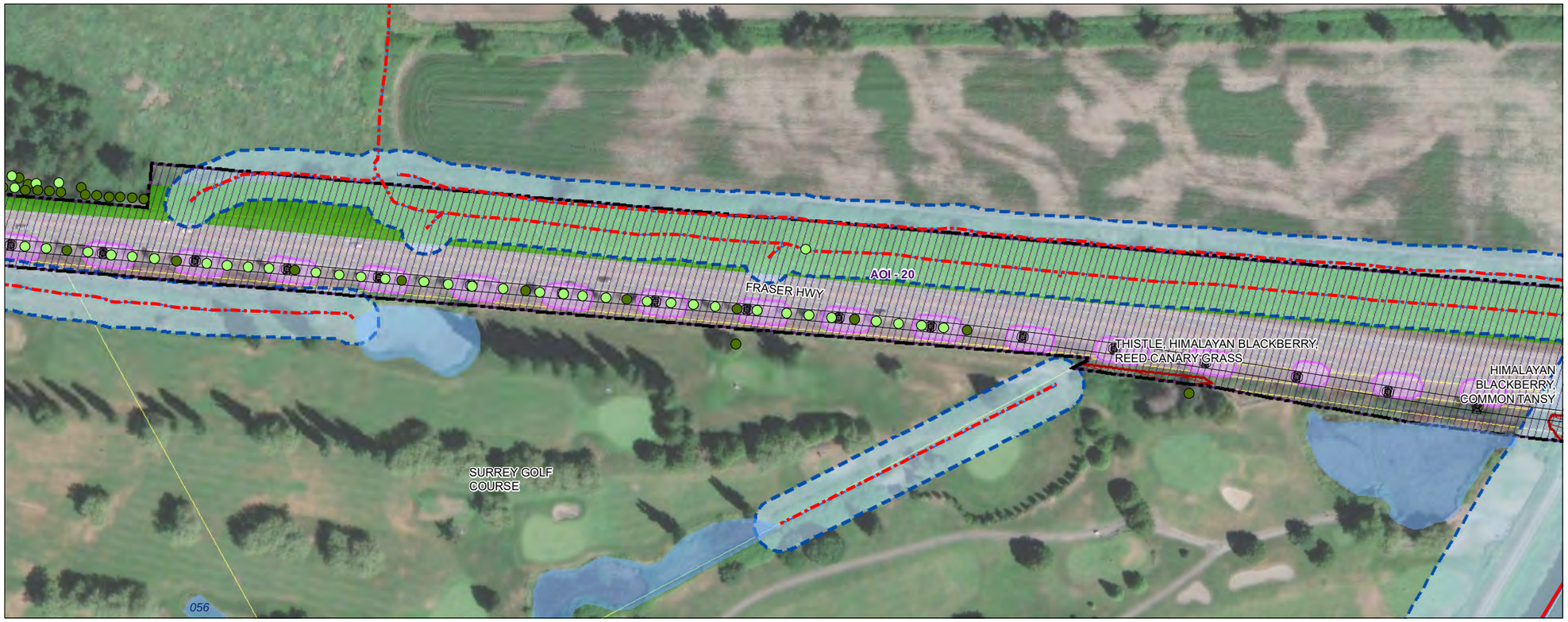
Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map



Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
- Child Care
- Community Facility
- Health Care
- Place of Worship
- Senior Care
- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
- Deciduous Tree[4]
- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
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- Northern Red-legged Frog (eDNA detection)
- Proposed Barn Owl Critical Habitat (draft)[5]
- Very High Habitat Suitability[6]
- High Habitat Suitability[6]
- Moderate High Habitat Suitability[6]

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103715-04	Production Date: Jun 1, 2023	Figure A-8

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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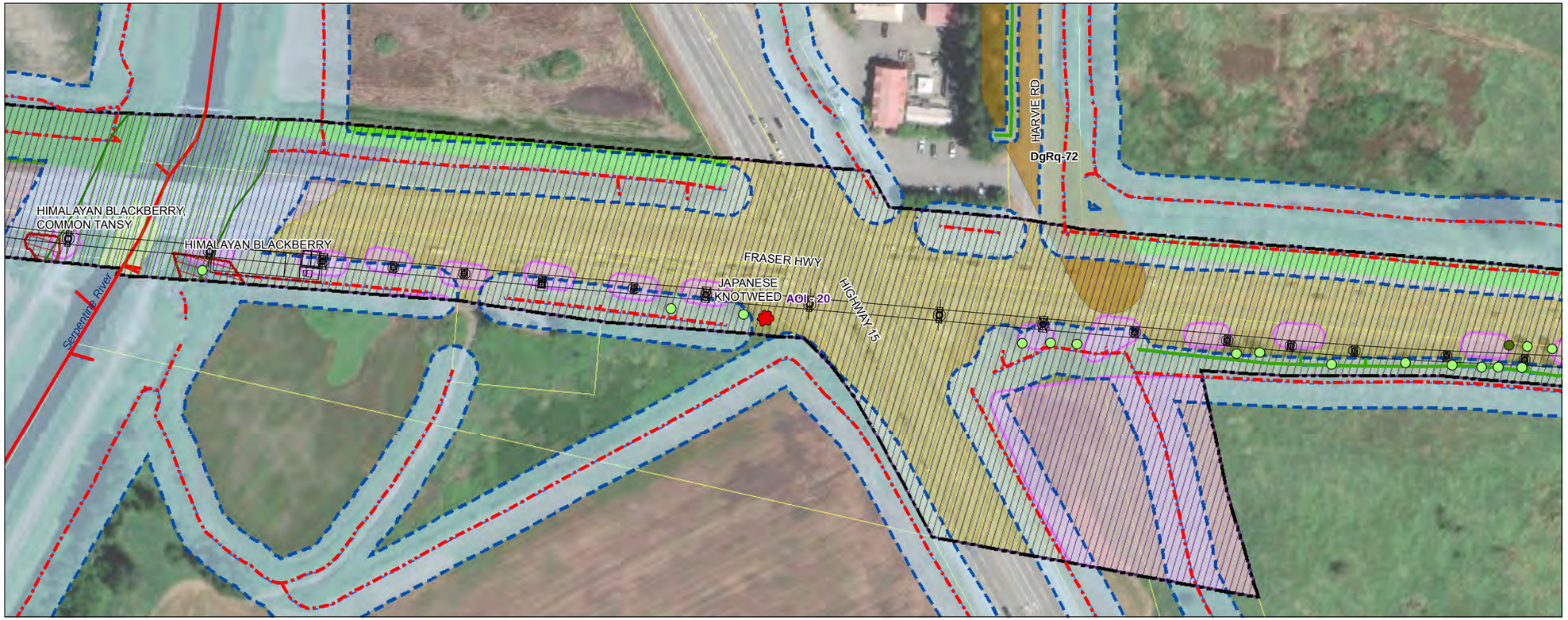
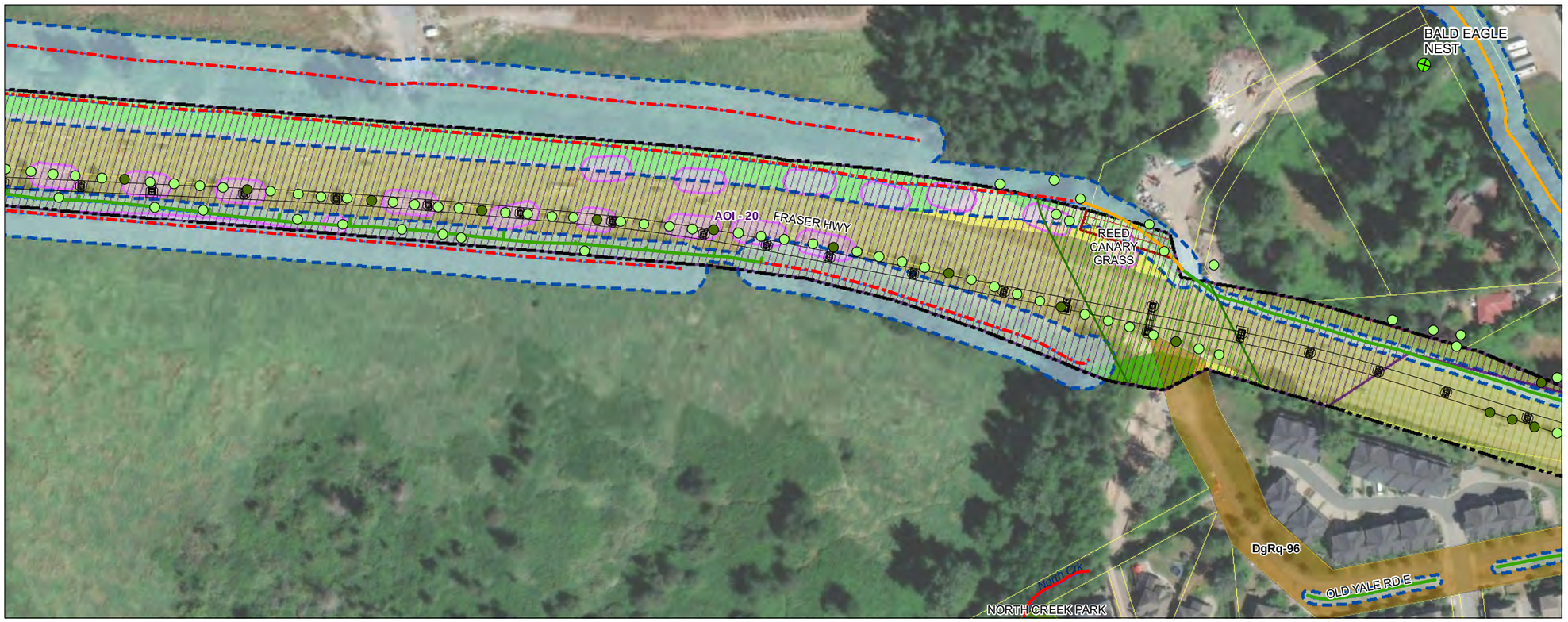
Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map





Legend

Project Features
- Proposed Surrey Langley SkyTrain Project
- Existing Rapid Transit Line
- Draft Project Boundary
- Archaeological Impact Assessment Survey Coverage
- Area of Interest (AOI) with Interest Number – High Archaeological Potential
- Registered Heritage Site

Community Features
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- Health Care
- Place of Worship
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- Property Line
- Green Timbers Urban Forest
- Green Infrastructure Network Corridor[1]
- North Creek Park

Contaminated Sites and Areas of Potential Environmental Concern (APECs)
- BC ENV Site Registry Listing
- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
- Coniferous Tree[4]
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- Invasive Plant Spot Occurrence
- Invasive Plant Occurrence

Wildlife and Habitat Features
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- Northern Red-legged Frog (eDNA detection)
- Proposed Barn Owl Critical Habitat (draft)[5]
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- High Habitat Suitability[6]
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103715-04	Production Date: Jun 1, 2023	Figure A-9

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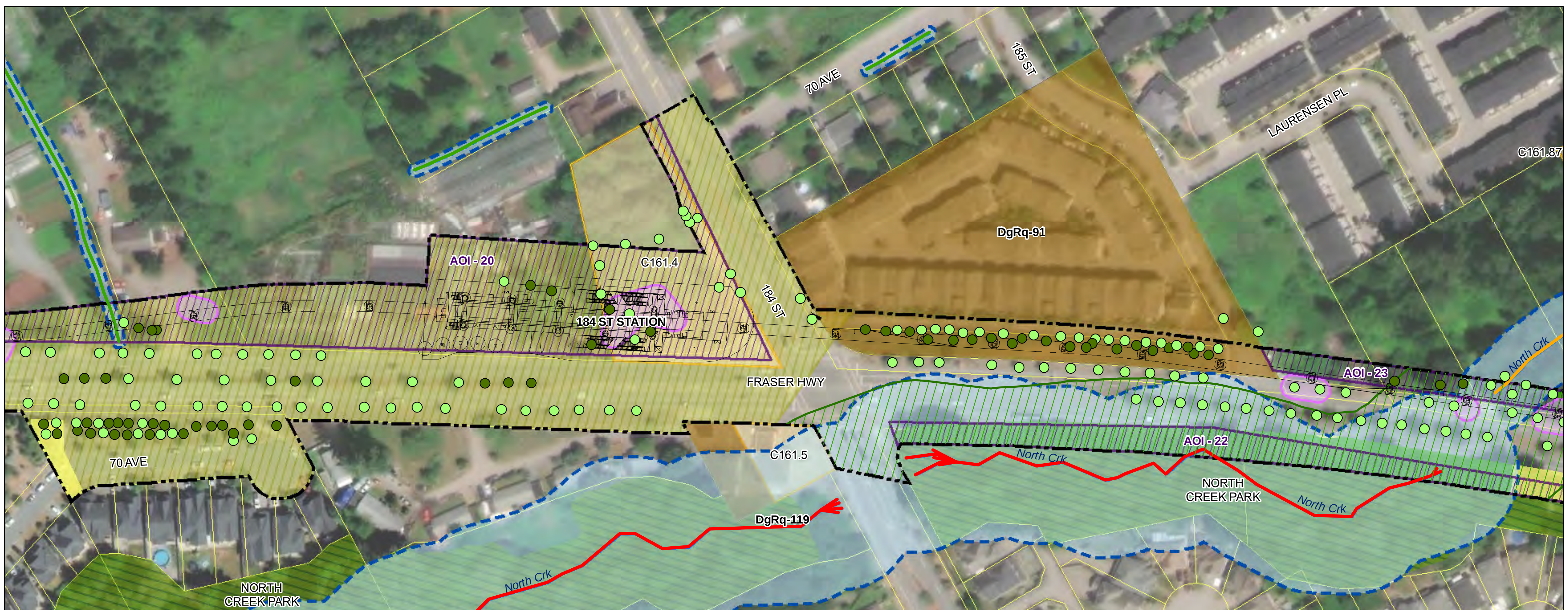

Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

Legend

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Contaminated Sites and Areas of Potential Environmental Concern (APECs)
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- APEC - High Risk
- APEC - Medium Risk

Drainage and Watercourse Classification[2]
- Class A (salmonid-bearing)
- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
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- Deciduous Tree[4]
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Wildlife and Habitat Features
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103715-04	Production Date: Jun 1, 2023	Figure A-10

Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

Legend

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- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
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Vegetation Features[3]
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Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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Surrey Langley SkyTrain Project
Surrey and Langley, BC

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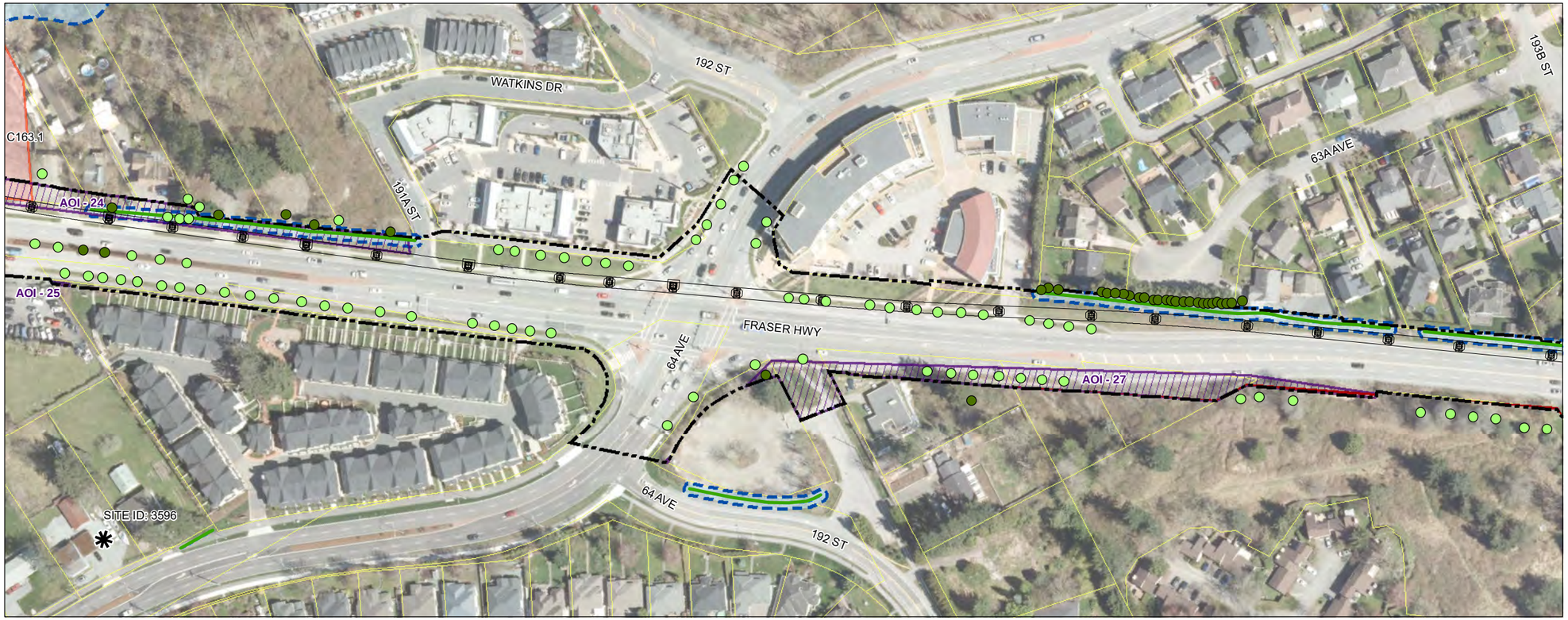

Legend

Project Features
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- Area of Interest (AOI) with Interest Number – High Archaeological Potential
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- APEC - High Risk
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Drainage and Watercourse Classification[2]
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- Class A(O) (salmonid-bearing overwintering)
- Class B (significant food/nutrient; non-fish-bearing)
- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
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Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

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Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map

WILLOWBROOK MALL
WILLOWBROOK DR
196 ST
196 ST STATION
LANGLEY BYPASS
196A ST
LANDMARK WAY
SITE ID: 12984
SITE ID: 232
SITE ID: 11058
SITE ID: 12467
C164.8
C164.81
C164.95
C165.0
PRODUCTION WAY
200A ST
200 ST
FRASER HWY
SITE ID: 8220
C165.0
C165.05
C165.25
C165.35
C165.51
C165.52
C165.53
C165.6

Legend

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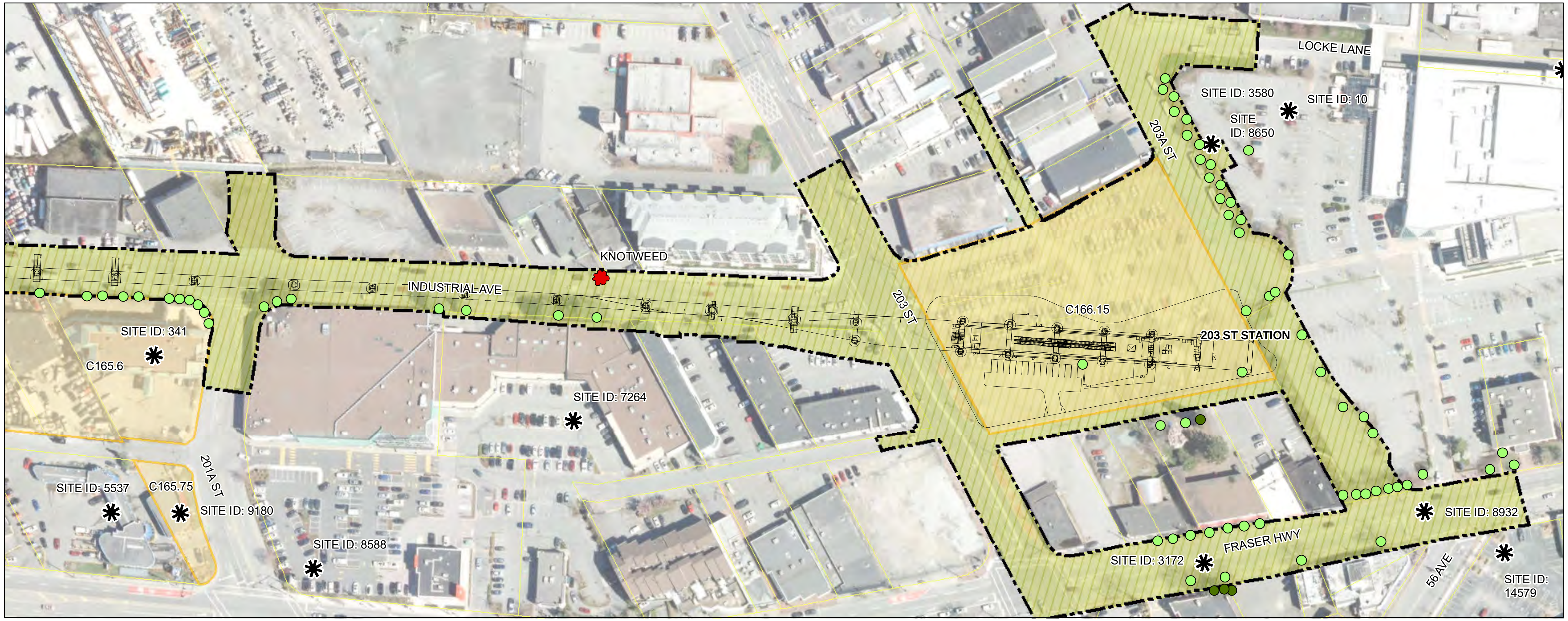
103715-04	Production Date: Jun 1, 2023	Figure A-13

Surrey Langley SkyTrain | Ministry of Transportation and Infrastructure | transportation investment corporation

Surrey Langley SkyTrain Project
Surrey and Langley, BC

Environmental Constraints Map



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- Class C (non-fish-bearing)
- Riparian Area Setback
- Waterbody

Vegetation Features[3]
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103715-04	Production Date: Jun 1, 2023	Figure A-14

Surrey Langley SkyTrain

APPENDIX B

Archaeological Chance Find Management Procedure

Surrey Langley SkyTrain Project

Chance Find Management Procedure for the Surrey Langley SkyTrain Project, Surrey and Langley, BC.

Revised September 15, 2022

Prepared by
Kleanza Consulting Ltd.
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Vancouver, BC V6B 1K6
T: 604-563-5243

Prepared for:
Dennis Kim, EP, ENV SP
Ausenco
Floor 18 – 4515 Central Blvd.
Burnaby, BC V5H 0C6
Email: dennis.kim@ausenco.com

Table of Contents

1.0 Introduction

1.1 General

Kleanza Consulting Ltd. (Kleanza) prepared this Chance Find Management Procedure (CFMP) for Ausenco (the Client) on behalf of the Ministry of Transportation (MoTI). This document relates to archaeological chance finds on the Surrey Langley SkyTrain Project, which runs along Fraser Highway between King George Station in Surrey and 203 Street in Langley ("the Project" area).

The purpose of this document is to provide protocols and procedures to on-site personnel in the event that unanticipated archaeological materials are exposed during ground-disturbing activities.

Following these steps will ensure that archaeological sites are documented and managed as required. Information on how to identify common types of archaeological materials is provided. The document describes STOP WORK procedures and explains when and how to contact the appropriate authorities. All personnel working in the Project area should review and follow the procedures outlined in this document.

As indicated in the iMapBC Consultative Areas Database, the Project area is within the asserted traditional territories of the Katzie First Nation, Kwantlen First Nation, Matsqui First Nation, Seabird Island Band, Semiahmoo First Nation, Shxw'ow'hamel First Nation, Skawahlook First Nation, Soowahlie First Nation, Stó:lō Nation and Tribal Council, Tsawwassen First Nation, and xʷməθkʷəy̓əm (Musqueam Indian Band).

1.2 Objectives

This CFMP aims to promote the management of archaeological sites while minimizing the disruption of development scheduling. This document should be reviewed by all project personnel and subcontractors working on-site **prior** to the commencement of construction. If followed, this procedure will ensure that all personnel and subcontractors involved in construction activities are aware that:

- heritage resources are protected by law on provincial lands;
- any archaeological materials or human remains encountered during construction must be reported immediately; and,
- a STOP WORK procedure must be implemented right away, should any artifacts or remains be encountered.

1.3 Potential Impacts to Archaeological Sites

Land-altering developments have the potential to impact archaeological and cultural materials. Such developments include the excavation or disturbance of soils or sediments. Anticipated activities within the Project area have the potential to negatively impact archaeological and cultural materials.

Impacts to the Project area from Project construction and associated utilities include, but are not limited to, the removal of any previous structures, removal of vegetation

and surficial soil layers, connection of utilities associated with the Project and landscaping outside of areas not otherwise disturbed by the Project.

An archaeological overview assessment (AOA) of the Project area was conducted in 2019 and an archaeological impact assessment (AIA) is ongoing as of June 2022. The AIA is being carried out under a *Heritage Conservation Act* (*HCA*) Section 12.2 Heritage Inspection Permit (2019-0444).

In addition to the *HCA* permit, heritage permits were also obtained from xʷməθkʷəy̓əm, Kwantlen First Nation, Katzie First Nation, and Stó:lō Research and Resource Management Centre.

1.4 Relevant Legislation

Archaeological sites are the physical remains of past human activity. In BC, all archaeological sites that predate AD 1846 are protected by the *HCA*, whether on Crown or private lands. Sites that have been designated by the Archaeology Branch (Ministry of Forests) are protected regardless of age. Burials, First Nations' rock art sites, and ship and plane wrecks over two years old are also protected under the *HCA*. Protected archaeological sites can only be altered under a Section 12.4 Site Alteration Permit issued by the Archaeology Branch.

The majority of the province has not yet been surveyed for archaeological sites; thus, most archaeological sites have not been recorded. The *HCA* provides substantial penalties for the destruction or unauthorized disturbance of archaeological sites including imprisonment for up to two years and fines of up to $1,000,000.

1.5 First Nations Heritage Management Plans

The First Nations in BC have a long and complex history dating back at least 14,000 years. Much of this history was not documented using written records like it was in other parts of the world. Instead, rich oral traditions and archaeological remains record the history of BC and the people who have populated it for millennia. These sources show that the First Nations had elaborate social structures, cultural practices, economies, laws, and material cultures.

Archaeology is recognized by the BC Archaeology Branch as being "of great value to First Nations, local communities and the general public". In particular, it holds importance to BC's First Nations, in that it demonstrates continued land use over time. The people who occupied this area 14,000 years ago are not gone — they still collect traditional foods and materials, still own land and water according to their laws, and still record and tell their own histories. Archaeology is an important tool in helping to record and tell that history.

Nearly all of the recorded archaeological sites in BC are Indigenous in origin, and First Nations communities have special rights and responsibilities as caretakers of that inheritance. Some First Nations in BC have developed their own formal heritage management plans in response to observed shortfalls in the *HCA*, in relation to community heritage interests and values. As the *HCA* does not extend to federal lands

(such as reserves), heritage management plans can provide direction for managing heritage resources in the absence of any federal heritage legislation.

An important part of First Nations heritage management plans is the issuance and management of First Nations heritage inspection permits. Obtaining these permits is a critical part of ensuring that First Nations groups are aware of work being conducted within their traditional territory, allowing them an opportunity to provide feedback on aspects of the work and the reporting, and allowing them a chance to participate in the fieldwork. Kleanza has already applied for all relevant First Nations heritage permits, and will continue to retain them until project completion. Should the present CFMP need to be implemented due to a chance find, these First Nation heritage permits ensure that relevant first nations 1) are already aware of the work being conducted and 2) can be properly notified of any significant project developments.

2.0 Archaeological and Cultural Site Types

Archaeological sites consist of artifacts, features, and other physical evidence of human habitation in the past. Often, artifacts on the ground surface are the clearest indicator that an archaeological site is present, especially to those not trained in the identification of archaeological sites.

For the purpose of this CFMP, archaeological and cultural site types have been organized under the eight site types expected within the Project area:

- Lithic artifacts and debitage
- Bone, shell, and antler artifacts
- Burials
- Wet sites
- Subsurface archaeological deposits
- Traditional Use Sites
- Spiritual Sites
- Historical materials and sites

2.1 Lithic artifacts and debitage

Stone tools, or lithics, are the most common type of artifact in BC. Stone was one of the primary materials used by Indigenous peoples to craft tools, ornaments, and other objects. Lithics are broadly divided into two categories:

- **Flaked artifacts** were carefully chipped to form sharp-edged tools like knives and projectile points (arrowheads or spear points). Raw materials include obsidian, chert, and quartz (Figure 1).
- **Groundstone artifacts** were pecked and ground smooth to form tools like axes and adze blades, or ceremonial objects like mauls. They were made from a variety of raw materials, including dacite, quartzite, slate, sandstone, and nephrite (Figure 2).

Lithic artifacts also include the waste materials produced as a result of forming stone tools, known as **lithic debitage**, or **flakes** (Figure 3). Lithics may also be found in collections of two or more pieces, called **lithic scatters**. These collections represent a place where stone tools were made. Be aware of concentrations of stone not native to the area, such as obsidian (Figure 4) and chert, both types of rock that break with a glass-like fracture pattern.

Figure 1. Flaked stone spear points made from basalt and chert.

Figure 2. Groundstone adze blades made from a variety of materials.

Figure 3. A variety of flakes, or debitage, including basalt (the matte, grey-black stone) and chert (reddish and grey stone with a shinier, waxy appearance).

Figure 4. Obsidian flakes — note the glass-like appearance. Obsidian is commonly black or grey but can also have red or green colouration.

Fire-cracked rock (FCR) is any rock that has been reddened, burnt, or split from the intense heat of a cooking fire. The presence of FCR indicates a hearth and possibly a settlement (Figure 5).

Figure 5. Fire-cracked rock (FCR).

2.2 Bone, shell, and antler artifacts

Another important raw material category includes organic artifacts made from bone, shell, and antler. While none of these materials preserve as well as stone in the archaeological record, there are often present in significant quantities at long-term habitations sites like villages.

Bone artifacts may include a variety of tools made out of worked bone, such as needles, knives, points, awls and scrapers (Figures 6 and 7). This class of material includes processed and unprocessed animal bones, or faunal artifacts. Typical faunal artifacts include fishing hooks, and harpoons, awls, needles, and other items for which animal bone was the perfect carving medium. Sometimes, bones are found that have not been shaped into tools, but show evidence of cutting, butchering, or burning by humans. Cooked or burned bone preserves much better than uncooked or unburned bone. Unprocessed faunal material may include land or sea mammals, fish, and bird specimens.

A wide variety of tools and ornaments were produced using marine shell. Shell artifacts very often include beads and pendants. Types of shell artifacts may include, but are not limited to scrapers, cutting implements or ornamentation (Figure 8).

Figure 6. Worked bone artifacts.

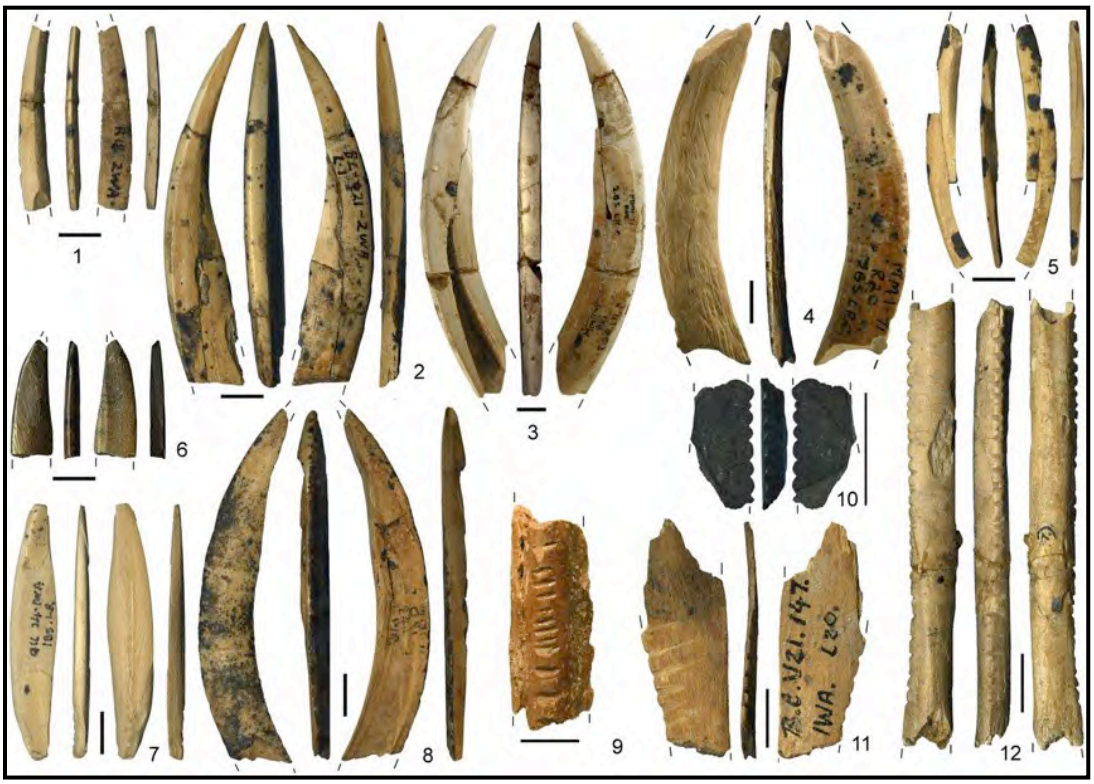

Figure 7. Bone, claw, and tooth artifacts.

Figure 8. A collection of shell beads.

2.3 Burials

Any physical ancestral remains, rectangular depressions or whole or fragmented cedar box remnants may be an indication of a burial site. Cremations may be represented by dense concentrations of charcoal, ash and fire-altered rock.

Ancestral Human Remains: If ancestral remains or indicators of human remains (such as rectangular depressions, rock cairns, or cremations that may be represented by dense concentrations of charcoal, ash and fire-cracked rock) are found, all work **MUST STOP** and the RCMP/coroner, a qualified archaeologist, the Archaeology Branch, and all concerned First Nations contacted immediately. The coroner will determine if the remains are of archaeological or forensic concern. Respect is paramount when dealing with ancestral remains or burial features — they should be shown the proper respect and dignity owed to any human being, living or deceased.

2.4 Waterlogged, well-preserved archaeological deposits (wet sites)

Most of the material items used by First Nations people of BC in the past were made of materials that typically degrade and perish in archaeological settings. Artifacts made of organic materials such as hardwood, softwood, bark, roots, and even hair and fur typically only preserve in oxygen-free environments that exist in the water-saturated soil below the water table. In these environments, the lack of oxygen inhibits the growth of bacteria and fungi that feed on the organic materials. These sites are relatively rare and typically occur in wetlands, floodplains, intertidal setting, marshes, deltas, rivers, creeks, and bogs.

The types of artifacts that may be encountered in a wet site include worked wood, worked bark, bark weaving, root weaving, clothing, cordage, ceremonial artifacts and artifacts, and wood detritus from fishing weirs, fish hooks, and others (Figures 9 and 10).

Figure 9. Example of a woven bark artifact (left) and cordage (right).

Figure 10. Remains of fish trap in Burrard Inlet

2.5 Subsurface archaeological deposits

Archaeological sites often contain distinct horizontal layers of cultural deposits that represent activities people were engaged in at different periods of time. These include buried ground-surfaces that show evidence of being heavily used in the past, such as house-floors, occupation areas and activity areas, such as hearth features. These types of cultural deposits can all be identified by a linear subsurface concentration charcoal, fire-reddened soil (Figure 11), rich layers of organic material and/or fire-cracked rock. Subsurface cultural deposits may also include cultural shell deposits (midden), subsurface lithics, or other features such as cultural depressions, hearths, and partial structures.

Figure 11. Example of subsurface cultural layer. Note the band of fire-reddened soil.

Another type of distinct strata is cultural shell deposit (Figures 12 and 13). Cultural shell deposit is characterized by the presence of fragmented or whole shell suspended in dark brown greasy organic-rich matrix, which commonly contain charcoal, ash, fire cracked rock and burnt sediments, as well as stone, bone, shell and antler artifacts. Cultural shell deposit deposits vary from small pockets to very large sites several hundred meters square and are usually, but not always, found along or near the shoreline. Cultural shell deposit can also be very fine and at times hard to discern from the surrounding sediments, as shown in Figure 13.

Figure 12. Example of cultural shell deposit and associated organic material, indicated by black, greasy sediment and thick, sharp shell deposits.

Figure 13. Example of fine cultural shell deposit and faunal remains in river sand, indicated by small, sharp shell fragments.

2.6 Traditional Use Sites

Traditional use sites are the tangible (physical) and intangible (non-physical) components of land and water use by First Nations, including objects, places, traditions, culture, history, structures, processes, events, conceptual, oral, and behavioural traditions. These sites are typically non-archaeological (as designated by the Province of BC, post-1846) cultural heritage sites that relate to a traditional societal practice, and include important resource gathering areas, sites of spiritual or historical significance, culturally modified trees, or ceremonial sites.

Cultural values may include not only the sites themselves, but also the things that connect these areas together — trails, legends, wildlife movements, or rivers. Traditional use sites in BC are not currently protected under the *HCA,* though they may have significance for local First Nations communities.

These site types may be hard to recognize in the field. However, developing an understanding of traditional use sites particular to the Project area, as determined in discussions with the First Nations liaison and local communities will help build an awareness to cultural resources that may not initially be apparent. Often local First Nations have resources citing traditionally significant named places for archaeologists to utilize prior to survey (Figure 13). If any of these significant named places overlap with the Project area, archaeologists will discuss this with the local First Nations in order to fully understand the significance of the site and the possible traditional site types they may encounter there.

Figure 13. Some traditional use sites are difficult to spot. They may be areas where a particular resource is abundant, such as plant or berry-picking areas.

Some traditional use areas are locations where local First Nations conducted and continue to conduct culturally significant spiritual practices. These areas generally are not mapped and are not available to the public, even to archaeologists. This is one of the many reasons why it is so important for archaeologists and First Nations to work closely together, as these areas of significance can then be discussed prior to project commencement. Propper planning and acknowledgement of these highly culturally significant areas ensures the proper procedures, protocols, and members of the local First Nation are in involved, and the area is treated with the utmost respect by archaeologists and all on-site project personnel.

2.7 Spiritually significant sites

In addition to resources procurement sites, the local First Nations have countless spiritual sites situated throughout the Fraser Valley. These sites include but are not limited to, transformer stones, spiritual bathing sites, burial sites, and other tangible and intangible named places. As these places are very culturally significant, some of these locations are not shared with the public to ensure that these places remain protected. It has been communicated to Kleanza by multiple *hənˈq̓əminˈəm̓* archaeologists that burials in particular are highly significant, as it is believed that the Ancestors remain at their burial location, making these places highly spiritual as well as being physically visible.

2.8 Historical materials and sites

This class of material includes historical (post-1846) structures, ceramics wooden artifacts, metal artifacts, glass, trap boxes, historical structures, furnishings, clothing, and buttons, among others. Post-1846 material is not protected under the *HCA*.

Figure 14. Partial glass bottle (top left); metal door hinge (bottom left); glass telegraph insulator (center); ceramic/stoneware bowl (top right); tin can lid, embossed (bottom right).

3.0 Archaeological Chance Find Protocol Procedures

If personnel involved in Project construction activities believe they have encountered potential archaeological materials, features, or human remains they should **STOP WORK** in the vicinity of the find and follow the procedures outlined below:

1) **STOP** all construction activities in the vicinity (within 10 metres) of the archaeological find immediately.

2) Contact your site foreman or supervisor immediately and have them contact Ausenco and the Kleanza Project archaeologist immediately (see Section 4.0 Key Contacts for contact information).

3) Accurately record the locations of the find, using a GPS or smartphone if available. Ask your supervisor to take a photo of the find (with a hardhat, glove, or other object as a scale reference). Mark the location clearly, using flagging tape if possible. Leave all archaeological materials and remains in place.

4) Kleanza will assess the potential significance of the archaeological find and mitigative options will be identified accordingly.

5) If the significance of the archaeological materials warrants further mitigative action and avoidance is not possible, Kleanza will consult with the Archaeology Branch and First Nations representatives to determine the appropriate course of action.

6) If human remains are found, the archaeologist will contact the RCMP and local Coroner's Office immediately (Archaeology Branch 1999). If the coroner, possibly with the assistance of the archaeologist, assesses the remains to be archaeological and not of forensic concern, the Archaeology Branch and First Nation will be consulted to determine how to handle them. Options may include avoidance or respectful removal and reburial.

7) Kleanza will inform the Project lead when work may recommence in the vicinity of the find. And of any required mitigative measures They will also inform all involved First Nations of any mitigative measures to be taken, if necessary.

4.0 Key Contacts

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