



Surrey Langley SkyTrain:
Environmental Screening Review



Updated Terms of Reference
May 2022



Prepared by:

Hemmera
4515 Central Boulevard, 18th Floor
Burnaby, BC V5H 0C6

Prepared for:

Transportation Investment Corporation
1100-401 W Georgia Street
Vancouver, BC V6E 3P3

Contents

1	Introduction	1
1.1	Proponent	1
1.2	Regulatory Background.....	1
1.3	Complementary Work	2
2	Project Description	3
2.1	Project Design Priorities.....	3
2.2	Project Design Overview	4
2.2.1	Elevated Guideway	4
2.2.2	Stations	4
2.2.3	SkyTrain Vehicles	5
2.2.4	Supporting Infrastructure Requirements	5
2.3	Construction Activities.....	5
2.4	Project Schedule	6
2.5	Project Operation	6
2.6	Project Benefits.....	7
3	Environmental Screening Review	8
3.1	Introduction	8
3.2	Project Description	9
3.3	First Nations Engagement.....	9
3.4	Public and Stakeholder Engagement	9
3.5	ESR Scope and Methods	9
3.5.1	Scoping and Selection of Screening Elements	10
3.5.2	Spatial and Temporal Assessment Boundaries.....	11
3.5.3	Baseline Conditions.....	11
3.5.4	Project Interactions and Effects Assessment.....	12
3.5.5	Mitigation of Potential Effects	15
3.5.6	Discussion of Results and Conclusion	15
3.6	Summary and Conclusion	15
3.7	Environmental Management During Construction	15

3.8	Environmental Guidance During Operation	16
3.8.1	Electromagnetic Fields.....	16
3.8.2	Noise	16
3.8.3	Post-construction Monitoring.....	16

Tables

Table 2-1	Project Construction Activities	6
Table 4-1	Summary of Proposed Screening Elements	10
Table 4-2	Potential Project Effects and Review Indicators.....	13

Figures

Figure 1	Overview of Proposed Alignment.....	3
Figure 2	Example Station Design Concept	5

Abbreviations

A list of the acronyms and abbreviations used in the Terms of Reference is below.

Abbreviation	Definition
BC	British Columbia
CEMP	Construction Environmental Management Plan
ESR	Environmental Screening Review
GHG	Greenhouse Gas
MOTI	Ministry of Transportation and Infrastructure
Project	Surrey Langley SkyTrain Project
SLS	Surrey Langley SkyTrain
TI Corp	Transportation Investment Corporation
TransLink	South Coast British Columbia Transportation Authority

Symbols and Units of Measure

A list of the acronyms and abbreviations used in the Terms of Reference is below.

Symbol/Unit of Measure	Definition
km	kilometre
m	metre
mm	millimetre

1 Introduction

The proposed Surrey Langley SkyTrain Project (SLS or Project) will extend the Expo Line 16 kilometres (km) from the King George SkyTrain Station in Surrey, British Columbia (BC) along Fraser Highway to 203 Street in the City of Langley via an elevated guideway. The Project is being jointly delivered by the Transportation Investment Corporation and the Ministry of Transportation and Infrastructure, which will be collectively referred to as “the Province” in this document.

This Final Terms of Reference outlines the methods and scope of issues that will be considered in the Project’s Environmental Screening Review (ESR), which will report on the assessment of potential Project-related environmental effects. The ESR process will support the Province’s commitment to transparency while facilitating the design of a project that is informed by First Nations, public, and stakeholder input. The ESR will also demonstrate the Province’s commitment to studying and appropriately managing environmental risk and ensuring consideration of relevant information during procurement and construction. This document incorporates input from engagement with the First Nations, public, and stakeholders in 2019 and 2020.

1.1 Proponent

The Project is being delivered by the Province.

The mailing address for the Project is:

1100-401 W Georgia Street
Vancouver, BC V6E 3P3

Website Address: gov.bc.ca/surreylangleyskytrain

All communication regarding the Project should be directed to:

Project email: surreylangleyskytrain@gov.bc.ca

Once operational, the SLS will be seamlessly integrated with Metro Vancouver’s transit network and operated and maintained by TransLink.

1.2 Regulatory Background

The Project comprises approximately 16 kilometres (km) of non-high-speed rail and is therefore not considered reviewable under provincial or federal environmental assessment processes. In spring 2019, both the BC Environmental Assessment Office and the Impact Assessment Agency of Canada (under the previous *Canadian Environmental Assessment Act, 2012*, SC 2012, c. 19, s. 52) confirmed in writing their decisions not to review the Project under their mandated legislation. The *Impact Assessment Act* (SC 2019, c. 28, s-1) came into effect on August 28, 2019 and replaces the *Canadian Environmental Assessment Act, 2012*. The Province has reviewed the current Physical Activities Regulations (SOR 2029-285) to confirm that the Project will not trigger a federal environmental assessment under the new regime.

Federal and provincial permits for Project components, such as new or modified watercourse crossings, contaminated soil handling, or others, will be obtained prior to construction of that component.

1.3 Complementary Work

The Province has over 30 years of experience building portions of Metro Vancouver’s SkyTrain system and is thus familiar with construction considerations. The Province is working closely with TransLink on operational and maintenance requirements for SkyTrain. TransLink has initiated system-wide reviews of environmental and safety issues associated with the SkyTrain system including the following:

- SkyTrain Noise Study – initiated in 2018, ongoing;
- McNeil Program – implementation of safety, reliability, recovery, and customer experience recommendations arising from major service disruptions that occurred in July 2014; and
- Transit-Oriented Communities Design Guidelines – published by TransLink.

Additional information on these three initiatives is available at www.translink.ca.

Project development for the SLS includes preparation of Supportive Policy Agreements with municipalities through which the SkyTrain will run. These partnering agreements with the City of Surrey, Township of Langley and City of Langley will:

- i. Specify supportive land use and transportation policies to coordinate and integrate with transportation and land use planning in the Project corridor; and
- ii. Identify specific actions and policies to coordinate and integrate with transportation and land use planning.

The City of Surrey has initiated a Fraser Highway SkyTrain Corridor Planning process. Additional information is available at www.surrey.ca.

2 Project Description

The Project would extend the Expo Line 16 km from the King George SkyTrain Station along Fraser Highway to 203 Street in the City of Langley (**Figure 1**). The proposed extension would run on an elevated guideway primarily situated along Fraser Highway. The design and location of the extension is guided by the approach for the existing SkyTrain network, provincial and TransLink planning documents, and Metro Vancouver’s broader regional growth plans for transportation, population, and employment. The SLS is anticipated to provide high-quality rapid transit that will increase transit mode share and help shape land use to support and align with federal, provincial, regional, and municipal goals.



Figure 1 Overview of Proposed Alignment

2.1 Project Design Priorities

The following overarching design priorities support the development of the SLS:

Maximize Value for Money

- Select lower-cost options unless a situation warrants more expense for a measurably improved outcome.

Maximize Integration

- Maximize station integration with the surrounding community.

- Foster the link between land use, development, and transit-oriented complete streets.

Maximize Transit Segregation and Priority

- Maximize transit segregation of the SLS from the existing road system to prioritize rapid transit along the transportation corridors.

Minimize Property Impact

- Avoid or minimize the need to acquire property outside of the existing right-of-way for Project components wherever possible.

2.2 Project Design Overview

This section presents an overview of the Reference Concept Design, which will be assessed in the ESR.

2.2.1 Elevated Guideway

An elevated guideway would extend along Fraser Highway from the existing terminus of the Expo Line at the King George SkyTrain Station. The guideway and supporting infrastructure would be situated primarily along Fraser Highway, with storage tracks constructed on some segments. Roadway segments would be widened or reconfigured as needed to accommodate the guideway columns and may include work at certain locations to match existing topography and watercourse crossings. In addition, existing utilities and services would be modified or relocated as needed to facilitate Project construction and operation.

2.2.2 Stations

The SLS includes eight stations that would feature platform(s) accessible by elevator and escalator from street-level station house structures, similar to the stations along the existing Expo Line.

Figure 2 shows a design concept for the 140 Street Station as an example.



Figure 2 Example Station Design Concept

2.2.3 SkyTrain Vehicles

SkyTrain vehicles similar to those currently used on the Expo Line would run along the new extension. The SkyTrain fleet consists of various car models. Current train configurations include two, four, or six cars per train, although future configurations may vary. SkyTrain vehicles are powered by linear induction motors, with power supplied by two electrified rails (+ve and -ve).

2.2.4 Supporting Infrastructure Requirements

TransLink has initiated supporting infrastructure projects to expand capacity within the existing SkyTrain network so that the Project would integrate fully with existing SkyTrain network systems and protocols and meet existing and future demand. As SLS would be powered by electricity supplied by BC Hydro via existing or new dedicated distribution lines, up to 9 power propulsion substations would be needed to power the SkyTrain extension. The Project would also include new transit bus exchanges at 166 Street, 196 Street and 203 Street Stations.

2.3 Construction Activities

The Project's main construction activities will include site preparation and roadwork; civil and structural works for stations and the guideway; utility relocations; and traffic and transit management. **Table 2-1** summarizes the scope of construction work.

Construction is anticipated to begin in 2024, following receipt of associated environmental permitting and advance utility work.

Table 2-1 Project Construction Activities

Project Component / Activity	Description
Management, Design, and Engineering	Project management; planning; architectural, civil, and systems engineering; procurement; systems integration; cost, quality, schedule, and environmental management/permitting
Traffic Management	Implementation of traffic measures including roadway diversions, signage, traffic control, temporary lane closures, temporary access closures, and temporary road closures
Utility Relocation	Relocation of buried and overhead utilities (e.g., electricity, telecommunications, municipal utilities)
Site Preparation	Ground improvement, clearing and grubbing, demolitions, drainage works, new watercourse crossings including at Serpentine River
Environmental Mitigation	Implementation of environmental mitigation measures identified in the ESR, which may include removal of contaminated material, habitat works, noise attenuation measures, and landscaping
Roadworks	Widening and alteration of roadways, where required, to accommodate guideway columns, including changes to medians and boulevards and installation of drainage upgrades as well as replacement of street lights and signals, where required, to accommodate the elevated guideway and stations
Elevated Guideway	Installation of reinforced concrete elevated guideway and piers including track switches and crossovers
System Structures	Installation of power propulsion substation buildings and power distribution / communications ducts
Stations	Construction including platform structures, lighting, access, safety barriers, service connections, and station security
Testing and Commissioning	Testing and commissioning of system

2.4 Project Schedule

The Project is in the pre-procurement phase. Following business case approval by senior governments, the Project will enter the procurement phase.. Final design, construction, and testing and commissioning will then follow before the start of revenue operation. The current anticipated in-service date for Surrey Langley SkyTrain is 2028.

Environmental studies began in 2016 and are ongoing. This Final Terms of Reference for the ESR precedes the draft Construction Environmental Management Plan (CEMP) Framework, which will be available for public comment later in 2022.

2.5 Project Operation

The operation of the Project includes the following key features:

- Driverless system with central vehicle control centre;
- Frequency: 6-minute to 8-minute headways in peak periods in both directions; and
- Travel time: Approximately 22 minutes between Surrey’s King George SkyTrain Station and 203 Street terminus in the City of Langley.

2.6 Project Benefits

The Project would provide numerous benefits, including:

- Encourage and create opportunities for mixed-use compact and affordable communities;
- Improving transit service by increasing capacity, reducing travel times, increasing reliability, and providing better user experience and comfort;
- Increasing sustainable mode share by shifting automobile trips to transit trips;
- Improving regional accessibility and promoting social and community cohesion by connecting Surrey Metro Centre, Fleetwood Town Centre, and Langley with rapid transit – connecting people to more housing, employment, education, businesses, community facilities, and services;
- Encouraging long-term economic growth by improving accessibility to employment and educational opportunities, creating new jobs, improving efficiency for businesses to get their goods to market, supporting urban agglomeration and densification, increasing businesses' access to the region's labour force, and driving innovation by an increase in competition among firms;
- Increasing health benefits by encouraging physical activity, improving air quality, and providing better access to health services; and
- Providing a clean and resilient mode of transportation that improves the environment by reducing GHG emissions through reductions in vehicle kilometers travelled, replacing diesel bus service with electric SkyTrain service, reducing congestion-related idling, and reducing the need for roadway expansion.

3 Environmental Screening Review

The ESR will provide a description of the Project, related benefits, anticipated effects on the natural and human environment as well as mitigation strategies, and a summary of feedback from First Nations, public, and stakeholder engagement. The ESR Report will include the following sections:

- Executive Summary;
- Introduction;
- Project Description;
- Project Benefits;
- First Nations Engagement;
- Public and Stakeholder Engagement;
- ESR Scope and Methods;
- Biophysical Environment Assessment –
 - Air Quality and Greenhouse Gases,
 - Noise and Vibration,
 - Contaminated Sites,
 - Fisheries and Aquatics, and
 - Vegetation and Wildlife Resources;
- Human Environment Assessment –
 - Archaeology and Heritage,
 - Agricultural Land,
 - Land Use,
 - Transportation and Access, and
 - Visual Landscape;
- Environmental Management during Construction;
- Environmental Guidance during Operation; and
- Summary and Conclusions.

The following subsections provide an overview of the above-listed sections of the ESR.

3.1 Introduction

The introduction section will describe the following:

- Purpose of the document and the Project’s objectives, including how they relate to broader private or public sector policies, plans, or programs;
- Location of the Project, including how it fits into the regional context; and
- Relevant background information, including exploratory or investigative studies as well as a review of Project alternatives.

3.2 Project Description

This section will present the following information:

- Identification and description of Project components;
- Description of all Project stages, including Project delivery, as well as timelines for construction and operation (since the Project has no fixed end to operation, Project decommissioning is not applicable and thus will not be a subject of study);
- Description of activities associated with all components and stages of the Project; and
- Outline of “Advance Works” activities that will be undertaken by the Province in advance of construction.

3.3 First Nations Engagement

This section of the ESR will describe the Project’s approach to First Nations engagement, which includes:

- Providing potentially affected First Nations with general Project updates, including specific environmental information;
- Providing First Nations with opportunities to review key environmental documents and participate in field studies, as appropriate; and
- Obtaining feedback on the Project from First Nations and respecting the confidentiality of information provided by First Nations.

This section will also summarize the Project’s engagement activities with First Nations, including:

- Key comments from First Nations regarding the Project and environmental review process and the Project’s responses, including proposed mitigations; and
- Past and future engagement opportunities for First Nations on the ESR.

3.4 Public and Stakeholder Engagement

The ESR will outline engagement activities with members of the public and key stakeholders, including:

- Information on the role of the City of Surrey, Township of Langley, and City of Langley in Project development; and
- Engagement activities including a summary of past and future ESR-related engagement opportunities, description of Project-related information available to the public (e.g., display boards and survey questions), and a description of key ESR-related interests and responses, including how feedback is considered.

3.5 ESR Scope and Methods

This section of the ESR will describe methods to assess potential Project-related effects to the biophysical and human environment for Project components and activities. Development of the ESR will follow the methodology, as described below, to assess proposed SEs, including the rationale for their selection, baseline conditions, and potential Project-related changes to each SE. The ESR will also describe mitigation measures to avoid or minimize effects on the biophysical and human environment. Additional details on key elements of the ESR, such as environmental management during construction and operation, are provided in **Section 3.7** and **Section 3.8**.

3.5.1 Scoping and Selection of Screening Elements

The ESR will include a description of how environmental values will be considered (referred to as Screening Elements), the metrics to measure or describe Project-related changes to each Screening Element (Review Indicators), as well as the spatial and temporal boundaries for the effects assessment.

Proposed Screening Elements (SEs), identified in **Table 3-1**, were selected for the ESR based on the following criteria:

- Relevant environmental policies, regulations, and guidance;
- Potential Project-related effects;
- Elements that were assessed in similar projects (e.g., Evergreen Line and other recent advanced light rail transit projects); and
- Interests and concerns identified by First Nations, the public and stakeholders.

A standard approach for the assessment methods will be employed using the following steps:

- Confirmation of the proposed SEs, spatial and temporal boundaries, and Review Indicators;
- Description of baseline conditions;
- Determination of potential effects based on information and feedback identified in **Section 3.3** (First Nations Engagement) and **Section 3.4** (Public and Stakeholder Engagement);
- Identification of applicable mitigation measures; and
- Conclusions.

The proposed SEs, the rationale for their selection, and their spatial boundaries are presented in **Table 3-1**.

Table 3-1 Summary of Proposed Screening Elements

Screening Element	Rationale for Selection	Proposed Spatial Boundaries
Biophysical Environment		
Air Quality and Greenhouse Gases	During construction, the Project may affect local air quality. During Project operation, net reductions in emissions may benefit local and regional air quality.	<ul style="list-style-type: none"> • City of Surrey, Township of Langley, and City of Langley • The Lower Fraser Valley airshed comprises the regional boundary
Noise and Vibration	Noise emissions during construction and operation may affect sensitive receptors. Vibration from construction equipment and activities may affect sensitive receptors.	<ul style="list-style-type: none"> • Within 150 metres (m) of the Project centreline for noise effects • Within 50 m of the Project centreline for vibration effects
Contaminated Sites	Contaminated or hazardous material may be encountered during construction.	<ul style="list-style-type: none"> • Within 100 m of the Project centerline
Fisheries and Aquatics	Construction and operation may affect freshwater fisheries and aquatic resources.	<ul style="list-style-type: none"> • Watercourses within 30 m of the Project footprint • Habitat up to 300 m downstream of instream works or riparian habitat • Habitat up to 50 m upstream of instream works or riparian habitat

Screening Element	Rationale for Selection	Proposed Spatial Boundaries
Vegetation and Wildlife Resources	Construction may affect vegetated areas as well as wildlife and their habitat.	<ul style="list-style-type: none"> Vegetation: 10 m buffer around the Project footprint Wildlife: 200 m corridor centred on the Project’s proposed centreline
Human Environment		
Archaeology and Heritage	Construction may adversely affect archaeological and heritage resources.	<ul style="list-style-type: none"> Within 200 m of the Project centerline where Project construction could disturb archaeological and heritage resources
Agricultural Land	Construction and operation may affect agricultural use, access, and infrastructure.	<ul style="list-style-type: none"> 200 metre (m) buffer on each side of the Project centreline from the existing King George Expo Line station to 100 m beyond the City of Langley terminus at 203 Street
Land Use	The Project may influence land use and may affect designated residential, commercial, and park lands along the corridor.	<ul style="list-style-type: none"> 200 m buffer on either side of the centreline of SkyTrain alignment and stations
Transportation and Access	Construction may disrupt existing traffic flows and affect access including for emergency services. Operation will change traffic patterns, access, public safety, security, and parking around new stations.	<ul style="list-style-type: none"> City of Surrey and Langley communities, properties adjacent to the Project, and travel routes within 200 m of the Project centerline
Visual Landscape	The Project may result in a change for residences and areas used for recreation from existing view conditions.	<ul style="list-style-type: none"> Study Location: area of study in a 300 m radius from the Project centreline Viewpoint: selected street-level photographs

The scope of the ESR Terms of Reference considered additional SEs that were suggested during engagement with First Nations, public, or stakeholders if a likely interaction was reasonably anticipated between Project activities and the additional proposed SE.

3.5.2 Spatial and Temporal Assessment Boundaries

The ESR will include spatial boundaries for the assessment of each SE. The determination of spatial and temporal assessment boundaries will include consideration of relevant Project stages, components, and activities, as well as the potential extent of Project-related effects. Spatial boundaries for each SE are presented in **Table 3-1**.

3.5.3 Baseline Conditions

The ESR will provide an overview of the baseline conditions of the study area for each SE, including geographical and biophysical features, land use, and the built environment as relevant to the topic. This will include mapping of municipal roads, parks and other public areas, institutions (e.g., schools and health facilities), and residential, commercial, and industrial areas.

The ESR will include a description of existing (or baseline) conditions for each SE in sufficient detail to enable review of the identified potential Project-related interactions and to provide more detailed information on field studies, modelling, and analysis. Key findings from baseline work will be summarized in the ESR.

3.5.4 Project Interactions and Effects Assessment

The ESR will provide details on potential interactions between Project construction and operation activities and SEs, which will be summarized in a matrix for each SE. The ESR will also include a brief description of the mechanism for assessing each identified interaction between a Project activity or physical work and a SE, indicating how each Project-related change could impact the SE.

The proposed Review Indicators for anticipated Project-related effects are summarized by SE in **Table 3-2**. Review Indicators may be refined during the assessment to more accurately define potential effects of the Project.

Table 3-2 Potential Project Effects and Review Indicators

Screening Element	Potential Project-related Change	Review Indicators
Biophysical Environment		
Air Quality and GHG	Potential change in ambient CAC concentration from baseline Potential change in emissions of GHG from baseline	<ul style="list-style-type: none"> Estimated change in emissions of CACs (SO₂, NO₂, CO, PM₁₀, PM_{2.5}, VOCs) relative to ambient CACs Estimated changes in emissions of GHG (CO₂, CH₄, N₂O, reported as CO₂e)
Noise and Vibration	Potential change in construction and operation noise levels compared to noise baseline Potential change in vibration levels during construction and operation compared to vibration baseline	<ul style="list-style-type: none"> Predicted noise levels (in dBA) at sensitive receptors as follows: <ul style="list-style-type: none"> Daytime and nighttime equivalent (Ld and Ln) Hourly equivalent (Leq [1 hour]) Day-night (Ldn) Predicted ground vibration levels at sensitive receptors as follows: <ul style="list-style-type: none"> Peak particle velocity in mm per second Root mean square velocity in mm per second
Contaminated Sites	Potential release of contaminants during construction	<ul style="list-style-type: none"> Effects of disturbance to contaminated sites during Project construction Extent and nature of contaminated sites within assessed area
Fisheries and Aquatics	Potential permanent change in fish habitat from baseline Potential changes to water quality from baseline	<ul style="list-style-type: none"> Net changes (losses and gains) (m²) to instream habitat and riparian habitat Changes in water quality Changes to fish mortality or health
Vegetation and Wildlife Resources	Potential change in abundance of species of management concern from baseline Potential change in habitat connectivity	<ul style="list-style-type: none"> Extent of provincially listed ecological communities at risk Change in availability of wildlife habitat features Change to potential for wildlife movement Change in spatial extent of forest canopy cover Change in spatial extent of vegetated elements and potential for changes to connectivity Change in number and type of trees within the Project alignment, including heritage or protected trees Potential change to occurrence and locations of invasive species

Screening Element	Potential Project-related Change	Review Indicators
Human Environment		
Archaeology and Heritage	Potential changes to archaeological resources (known and unknown sites) Potential alterations to heritage buildings or other registered sites	<ul style="list-style-type: none"> • Areas with high archaeological potential that could be affected • Number and description of archaeological sites with potential to be altered • Number and description of heritage sites with potential to be altered
Agricultural Land	Potential change in agricultural land area, farm access, or infrastructure from baseline	<ul style="list-style-type: none"> • Extent of farmland affected • Changes to farm access • Changes to farm infrastructure • Change to water supply (e.g., wells)
Land Use	Potential change in commercial and residential land use from baseline, effects to parkland, and consistency with land use policy	<ul style="list-style-type: none"> • Alignment with local and regional government land use plans • Residential and commercial properties affected by the Project and description of anticipated changes • Area of parkland affected
Transportation and Access	Potential change in traffic, transportation, access, public safety, and security from baseline during construction and operation	<ul style="list-style-type: none"> • Roadway description (e.g., number of lanes, traffic flow characteristics) • Change in parking and access • Change in vehicle volume (vehicles/day, vehicles/km travelled) • Passenger vehicle travel time (selected origin/destinations) • Transit (travel time, ridership) • Changes to pedestrian and cycling access • Public access to emergency services (qualitative) • Emergency medical services, fire rescue, and police response (qualitative) • Potential change in public safety and security (qualitative)
Visual Landscape	Potential change in view conditions from baseline	<ul style="list-style-type: none"> • Changes to views from residential and park properties due to the Project

Notes:

CAC – criteria air contaminant
 CH₄ – methane
 CO – carbon monoxide
 CO₂ – carbon dioxide
 CO₂e – carbon dioxide equivalent
 dBA – A-weighted decibel

Ld - daytime equivalent sound level
 Ldn – day-night equivalent sound level
 Leq – equivalent continuous sound pressure level for a specified period
 Ln – nighttime equivalent sound level
 m² – square metre
 mm – millimetre

N₂O – nitrous oxide
 NO₂ – nitrogen dioxide
 PM_{2.5} – particulate matter 2.5 micrometres or less in diameter
 PM₁₀ – particulate matter 10 micrometres or less in diameter
 SO₂ – sulphur dioxide
 VOC – volatile organic compound

3.5.5 Mitigation of Potential Effects

To avoid or minimize potential effects on the biophysical and human environment during construction, the ESR will include identify applicable Project and site-specific mitigation measures that meet or exceed industry standards. The mitigation measures will be incorporated into the framework for the CEMP.

See **Section 3.7** and **Section 3.8** for additional detail on environmental management during construction and operation.

3.5.6 Discussion of Results and Conclusion

For each SE, the ESR will provide descriptions of the effects that remain following implementation of mitigation measures. Characteristics of effects such as magnitude, geographical extent, and duration will be used to describe and characterize the effects. Where effects cannot be characterized quantitatively, they will be described qualitatively.

3.6 Summary and Conclusion

The ESR will present key findings of the environmental screening and describe how these findings will be used to avoid or minimize potential effects as well as any next steps for First Nations, public, and stakeholder engagement.

3.7 Environmental Management During Construction

The ESR will include a CEMP framework that will summarize the following in a table format: Project activity or physical work; potential effects linked to that activity; and associated mitigation. The CEMP framework will describe performance objectives, associated best practices intended to meet those performance objectives, and required content for each sub-plan. The CEMP framework will also include details on Project roles and responsibilities for the team's key members during construction.

The CEMP framework will include the following:

- Proposed mitigation, best practices, and guidance;
- Requirements to manage the effectiveness of monitoring; and
- Key performance measures to evaluate effectiveness of mitigation.

The CEMP will include, at a minimum, the following sub-plans:

- Environmental Awareness and Training Plan;
- Environmental Monitoring Plan;
- Erosion and Sediment Control Plan;
- Archaeological and Heritage Management Plan;
- Agricultural Land Management Plan;
- Fish and Fish Habitat Plan;
- Vegetation and Wildlife Management Plan;
- Spill and Emergency Response Plan;
- Contaminated Soil and Water Management Plan;
- Air Quality and Dust Control Management Plan;
- Noise and Vibration Management Plan;

- Construction Waste Management Plan;
- Site Restoration Plan; and
- Traffic and Access Management Plan.

Each CEMP sub-plan will include a list of applicable licences, permits, and approvals that may be required during construction, and describe how the legislation is applicable to the work. Each sub-plan will also reference other associated plans and consultation programs relevant to environmental management during construction.

3.8 Environmental Guidance During Operation

Environment guidance for the Project during operation will be integrated and consistent with environmental management of the rest of the Expo Line. The following elements are likely to require ongoing management during operation:

3.8.1 Electromagnetic Fields

The ESR will present an overview of findings from comparable electromagnetic fields assessments for advanced light rail transit projects. If applicable, it will also include a description of how the fields will be managed to address any potential effects on human health and electromagnetic interference.

3.8.2 Noise

Noise due to Project operation will be managed in accordance with current TransLink practices for SkyTrain projects. Additional information on TransLink's operational noise assessment is available at www.translink.ca.

Assessment, engagement, and consultation may indicate site-specific requirements for noise attenuation measures.

3.8.3 Post-construction Monitoring

Mitigation measures may require post-construction effectiveness monitoring. Adaptive management practices will be key in addressing measures that do not function as intended or designed.