



Ministry of
Transportation
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Business Case

Surrey Langley SkyTrain Project

March 2022

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LIST OF ACRONYMS

Acronym	Description
AIA	Archaeological Impact Assessment
AIRCC	Allied Infrastructure and Related Construction Council
ALR	Agricultural Land Reserve
ALRT	Advanced Light Rapid Transit
AOA	Archaeological Overview Assessment
AOI	Area of Interest
BAU	Business as Usual
BCIB	BC Infrastructure Benefits Inc
BCR	Benefit-Cost Ratios
BCRTC	British Columbia Rapid Transit Company
BCTFA	BC Transportation Financing Authority
CBA	Community Benefits Agreement
CEB	Community Employment Benefits
CEPTED	Crime Prevention through Environmental Design
DBF	Design-Build-Finance
DBF	Design-Build
DBFM	Design-Build-Finance-Maintain
ESG	Environmental, Social and Governance
ESR	Environmental Screening Review
FTDA	Frequent Transit Development Area
GBA+	Gender-Based Analysis Plus
GHG	Greenhouse Gas
IBC	Infrastructure BC
IDC	Interest During Construction
ITDS	Integrated Transportation and Development Strategy
LRT	Light Rail Transit
MCA	Multiple Criteria Analysis
MOTI	Ministry of Transportation
MOU	Memorandum of Understanding
NPC	Net Present Cost
NPV	Net Present Value
OMC	Operations and Maintenance Centre
OSPA	Overarching Supportive Policy Agreement
PPS	Propulsion Power Substations
RCD	Reference Concept Design
RGS	Regional Growth Strategy

Acronym	Description
RMB	Risk Management Branch
SLS	Surrey Langley SkyTrain Project
SNG	Surrey-Newton-Guildford
SPA	Supportive Policy Agreement
TDM	Transportation Demand Management
TOC	Transit Oriented Community
TOD	Transit Oriented Development
VFM	Value for Money

EXECUTIVE SUMMARY

This Business Case recommends the implementation of the Surrey Langley SkyTrain Project (SLS Project, or the Project), a 16 km Advanced Light Rapid Transit (ALRT or SkyTrain) extension, with a capital cost of \$3.939 billion. The Project will extend the existing Expo Line SkyTrain system (Expo Line) from its current terminus at King George Station in the City of Surrey, through the Township of Langley, to a new terminus at Langley City Centre. Figure 1 shows the proposed Project alignment and study area.

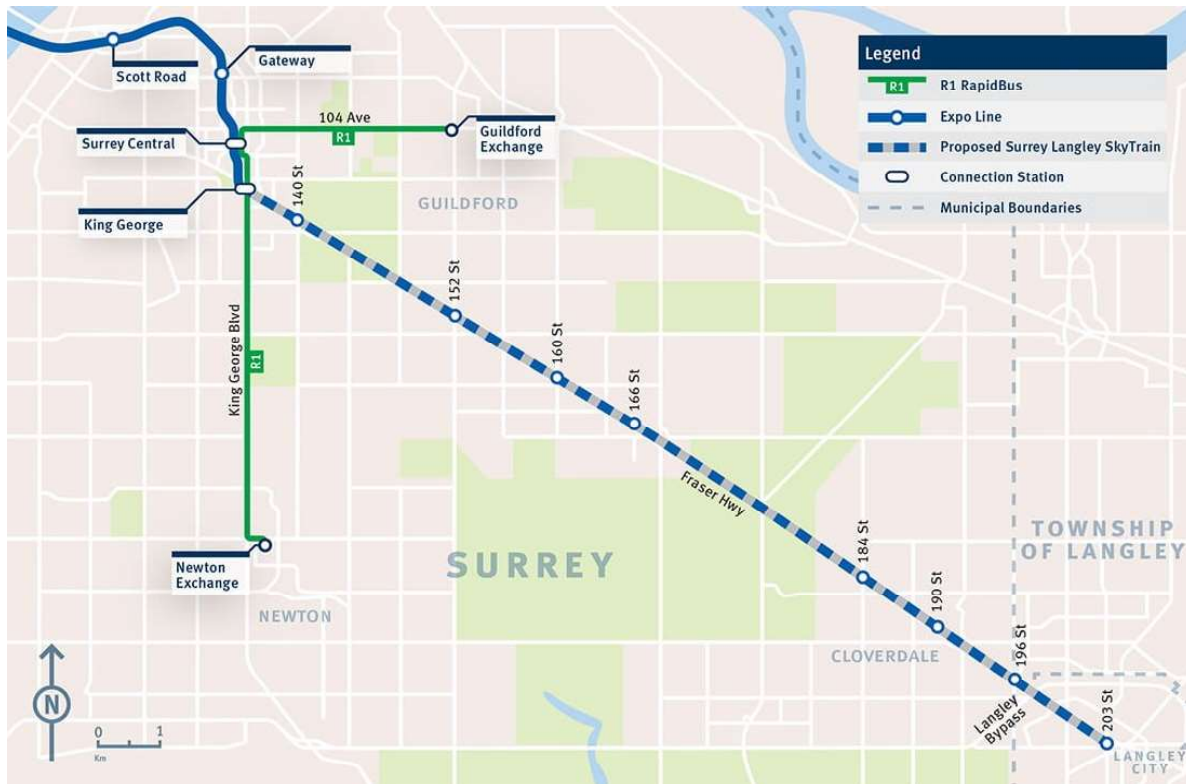


Figure 1 - Proposed Project Alignment

The Project represents a significant investment in rapid transportation improvements, and supports provincial and regional strategies, sustainability objectives, and the economic development of the Metro Vancouver region (the Region), the Province, and Canada. These strategies include provincial priorities such as creating affordable housing, childcare, meeting the objectives of **CleanBC**, supporting mode-shift with active transportation infrastructure for all ages and abilities, as well as TransLink's Transport 2050 Regional Transportation Strategy (which identifies the Project as the highest regional priority¹).

The Project will also support TransLink's Climate Action Strategy to achieve a net-zero greenhouse gas (GHG) and climate-resilient public transportation system by 2050².

¹ TransLink (January 2022) TransLink 2050 Regional Transportation Strategy, British Columbia. Retrieved from: <https://view.publitas.com/translink/transport-2050-regional-transportation-strategy>.

² TransLink (January 2022) TransLink 2050 Regional Transportation Strategy, British Columbia. Retrieved from: <https://view.publitas.com/translink/transport-2050-regional-transportation-strategy>.

INVESTMENT NEED

By 2050, it is anticipated there will be 1,200,000 more residents and 500,000 new jobs in the Region. This includes a projected 424,000 new residents and 150,000 new jobs in the City of Surrey, City of Langley and the Township of Langley (the Three Municipalities). Together, the population of the Three Municipalities is projected to increase by 35% from 2017 to 2035 and 60% from 2017 to 2050, compared to 24% and 39% respectively for the rest of the Metro Vancouver and Fraser Valley.

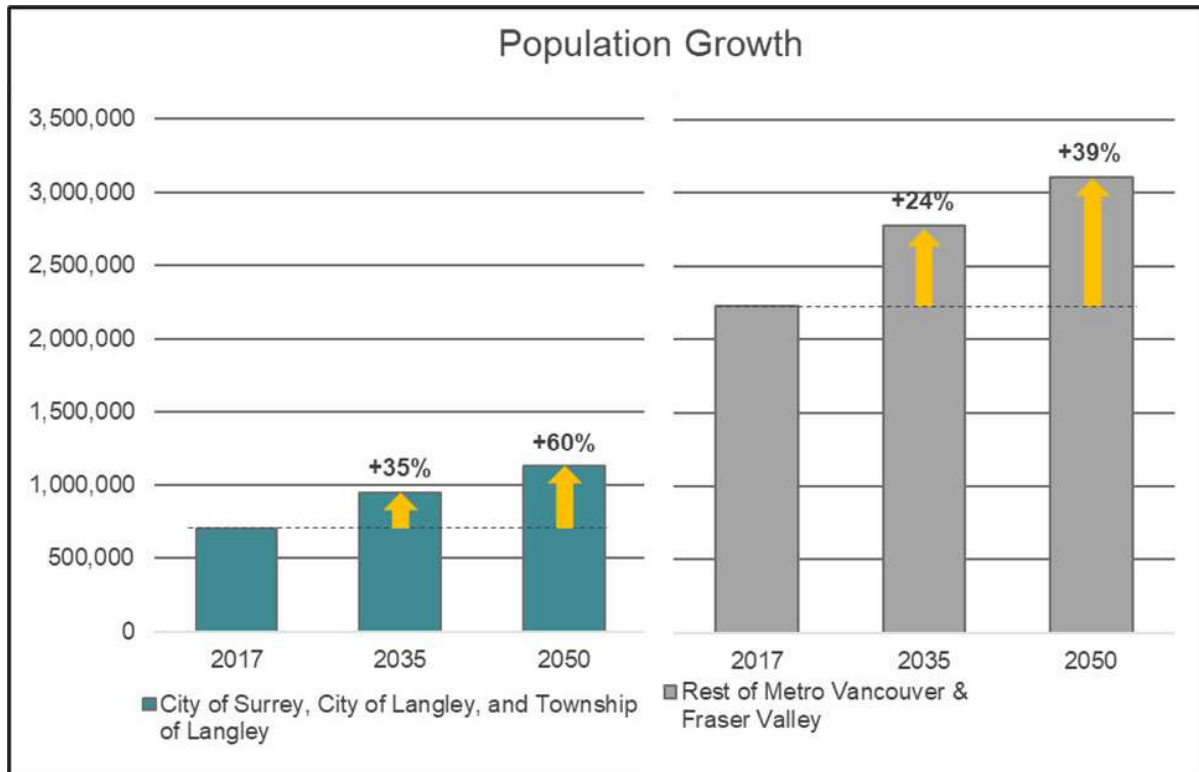


Figure 2 - Projected Population Growth in the Region by 2050

With the influx of new residents, a growing workforce and an increased demand for goods movement, substantial strain on the local road and public transportation networks will continue to increase.

It is generally acknowledged that the Three Municipalities are currently underserved by transit, with a lower proportion of residents living or working within walking distance of rapid transit compared to other parts of the Region. Prior to the COVID-19 pandemic, the TransLink system had an average annual ridership growth of 5.5%³ between 2016 and 2019. Transit users were experiencing overcrowding on buses and the Fraser Highway corridor along the Project's alignment (the Corridor) was reaching capacity during peak hours.

³ https://www.translink.ca/-/media/translink/documents/about-translink/corporate-reports/quarterly_reports/2019/2019_year_end_financial_and_performance_report_final_with_appendix-1.pdf

In addition, the current sustainable transportation mode share (including biking, walking and transit) is 18% in the Three Municipalities, which falls well short of the 50% target for the Region⁴. For comparison, the current sustainable transportation mode share in the City of Vancouver is 45%⁵. The Province will be working closely with the Three Municipalities and TransLink to ensure that opportunities to support active transportation, as part of integrating planning initiatives associated with the Project, are realized.

Finally, the Project will act as a catalyst for integrated land use planning and development by providing significant opportunities to advance public policy objectives, which includes alternative revenue generation and provision of affordable housing in the Region. The Province, the Three Municipalities, and other provincial organizations such as BC Housing, are working together to identify and pursue these social and economic benefits. Investment in critical infrastructure, active transportation infrastructure, and housing are all priorities under the Province's economic recovery plan, **StrongerBC**, which outlines how the government intends to help people, businesses, and communities recover and emerge from COVID-19 stronger and better prepared for the next stage of recovery.

PROJECT DEVELOPMENT

The Project developed as follows:

- In June 2014, the Mayors' Council on Regional Transportation approved a 10-Year Vision for transportation in Metro Vancouver.
- The 10-Year Vision for transportation in Metro Vancouver included 27 km of Light Rail Transit (LRT) in the City of Surrey.
- In December 2018, following a request from a newly-elected Surrey City Council, the TransLink Mayors' Council endorsed a change in approach, with work proceeding on the development of SkyTrain on Fraser Highway.
- The new plan involved a two-stage approach, with an initial stage from King George to Fleetwood 166th Street (Stage 1), based on available funding. It was assumed that the line from Fleetwood to Langley City Centre (Stage 2) would proceed once additional funding became available.
- In 2020, the impact of the COVID-19 pandemic became apparent, with ridership on public transportation systems substantially dropping, negatively impacting TransLink's revenue, and creating funding challenges for its capital projects.

Given the importance of the expansion of rapid transit in the Three Municipalities, the Province assumed responsibility for the Project in October 2020 and committed to deliver the SkyTrain extension to the City of Langley. An analysis was undertaken to determine how best to proceed, and the following three service delivery options were evaluated:

- **Business as Usual:** Fraser Highway RapidBus service, which is a continuation of the current Route 503 service.

⁴ TransLink. (2013). *Regional Transportation Strategy: Strategic Framework*. Retrieved from: https://www.translink.ca/-/media/Documents/plans_and_Projects/regional_transportation_strategy/rts_strategic_framework_07_31_2013.pdf?1a=en&hash=0A459174FB44A8870D00EFCE54124A01078D0698

⁵ TransLink (2017) 2017 Trip Diary, British Columbia. Retrieved from https://public.tableau.com/app/profile/translink/viz/Trip_Diary_2017/TripDiary2017

- **Option 1: Consolidated Approach** - Construct the Project in one phase using SkyTrain technology with an advance works package to mitigate risk; and
- **Option 2: Phased Approach**- Construct the Project in two phases using SkyTrain technology: Stage 1 from King George to Fleetwood and Stage 2 from Fleetwood to Langley with an advance works package to mitigate risk.

The analysis concluded that:

- A consolidated approach could deliver the Project for \$3.950 billion with an estimated completion date of 2028, which is approximately \$550 million less and two years sooner than a phased approach;
- There are opportunities for the Province to directly support the creation of Transit Oriented Development (TOD) in collaboration with organizations such as BC Housing, local governments, and Indigenous groups; and
- There would be an opportunity to enhance active transportation infrastructure along the Corridor in partnership with the Province, TransLink, and the Three Municipalities.

For further details, see **Appendix A – Service Delivery Option Analysis**.

In October 2021, the Province proceeded with Business Case planning on the basis the Consolidated Approach option was optimal for the Project. A number of advance works were approved to proceed in parallel with Business Case planning to de-risk certain key elements and support the schedule in recognition of the Project's high priority. The advance works include major utility relocation, project investigation and engagement, road widening and property acquisition.

SCOPE OF THE PROJECT

The Project will extend the Expo Line 16 km on an elevated guideway from King George Station to Langley City Centre along the Fraser Highway. The following eight above ground stations are proposed (listed west to east):

- **140 Street Station:** Located in Surrey City Centre and within proximity to mid-rise residential development and community amenities. Designed to connect from the existing King George station of the Expo Line.
- **152 Street Station:** Located in west Fleetwood with a number of commercial developments nearby, such as strip malls, gas stations and automobile dealerships.
- **160 Street Station:** Located in the heart of Fleetwood Town Centre the area is characterized by mid-density residential development and auto-oriented commercial and retail.
- **166 Street Station:** Designed to be a transit exchange. Located in east Fleetwood within proximity to a growing density of housing and sports amenities. The area presents a number of opportunities for retail redevelopment.
- **184 Street Station:** Located in west Clayton and within proximity of a low-density rural neighborhood characterized by residential properties and farmlands.
- **190 Street Station:** Located in what is currently a green field east of 189 St and Fraser Highway.

- **196 Street Station:** Designed to be a transit exchange located near Willowbrook Mall and characterized by a significant population growth and a rapid commercial development in recent years.
- **203 Street Station:** Designed to be the terminus station and a transit exchange and located in Langley's City Centre.

The Project will also purchase 30 new SkyTrain vehicles and fund a portion of the construction of a storage and maintenance centre for these vehicles.

The Project will be fully integrated with existing SkyTrain systems and protocols and will be operated by TransLink.

BENEFITS FOR THE PROVINCE AND REGION

The Project is estimated to have a benefit to cost ratio of 1.02. It will address the identified challenges and provide a range of benefits, including continuity for SkyTrain riders on the Expo Line, integrated transfers to bus services, and technological integration.

Key benefits of the Project include:

- 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.

The Project is forecasted to serve daily weekday ridership of 56,000 in the 2028 opening year and grow to 80,000 by 2050. Of the forecasted trips in 2050, approximately 43% (or 34,400 trips) are new transit trips that switched over from other modes of transportation (predominately auto travel).

Though the COVID-19 pandemic has negatively impacted public transportation ridership in recent years, ridership modelling and a sensitivity analysis of the pandemic impacts and other uncertainties into the year 2050 indicate that the expected post-pandemic recovery of ridership supports the investment in the Project.

The economic impacts and inherent employment impacts generated by investment in the Project are predicted to be approximately 12,000 direct and 12,000 indirect Employment Impacts (Full Time Equivalents, or FTES). This forecast is based on the standard Transportation Classification in BC Input Output Model (I-O model) for Transportation, Engineering and Construction.

INDIGENOUS GROUPS ENGAGEMENT

The Ministry of Transportation and Infrastructure (Ministry, or MOTI) has a legal duty to consult with Indigenous groups as the Project could impact asserted and/or defined Indigenous groups' interests. Further, the Project Team has developed its Indigenous engagement approach to align with the Province's reconciliation commitments with Indigenous peoples. The Project is currently engaging with six Indigenous groups at a deep level: Katzie First Nation, Kwantlen First Nation, Matsqui First Nation, Musqueam Indian Band, Semiahmoo First Nation, and the Tsawwassen First Nation. Engagement with these groups began in early 2019 and will continue on all aspects of the Project through planning, procurement, final design, and construction. Engagement activities include regular Project update meetings, review of the environmental screening report, review of the reference concept design, and discussion on the Indigenous procurement approach. The Project offers funding to support Indigenous groups' participation. The Project Team will seek consensus regarding the delivery of the Project with the six Indigenous groups, which will provide enhanced certainty to the Project through construction. The Project Team anticipates that consensus and/or consent will be provided in the form of a Project Agreement.

ENGAGEMENT AND GBA+

Stakeholder and public engagement are key components of rapid transit planning and help to inform decision-making, including the Project development and design work. The Project includes a robust stakeholder and public engagement plan, which includes outreach to diverse stakeholders such as local community organizations, business associations, interest groups, institutions, residents, and elected representatives from all levels of government. Between April 4-26, 2019, the first stage of public engagement was carried out, including multilingual awareness and marketing campaigns that helped to drive engagement and interest in the Project. For example, one survey under this stage of public engagement indicated that 85% of Surrey and Langley respondents are supportive of the Project (with 84% of respondents in the rest of the region registering their support).

Gender-Based Analysis Plus (GBA+) is an analytical process used to assess how diverse groups of women, men and non-binary people may experience policies, programs, and initiatives. The GBA+ lens is an element of one of the Province's five foundational principles to reduce barriers and limitations for racialized and marginalized people to participate fully in their communities, workplaces, government and their lives. GBA+ considerations will be applied throughout the lifecycle of the Project. A process is underway to develop a GBA+ plan that will gather and analyze data and determine how this data can be used to identify opportunities during the procurement, construction, and operations phases of the Project.

LABOUR OBJECTIVES

The Province has identified a number of strategies for investing in skills training, building resilient communities, advancing reconciliation and growing an economy that works for more people and families. Investing in public infrastructure projects provides a way to deliver these community benefits while building infrastructure for British Columbians.

The Project will be delivered under British Columbia’s Community Benefits Agreement. The Community Benefits Agreement provides tools for the Province to diversify and grow skilled trades through increased opportunities for apprentices and training, increased participation by Indigenous groups and groups traditionally underrepresented in the construction industry, and greater employment opportunities for local residents.

PROCUREMENT ASSESSMENT AND PROJECT DELIVERY

A procurement assessment, including qualitative and quantitative analysis, has been completed for the Project. Based on the analysis, a Multiple Contract strategy is recommended for the Project. The analysis shows this approach will maximize competition and market participation and provide more opportunities for local contractors.

The Multiple Contracts combined model is structured as follows:

- **Contract 1 – Substructure and Superstructure:** One Design-Build-Finance (DBF) contract with approximately 20 percent of private financing;
- **Contract 2 – Stations:** One Design-Build (DB) contract for eight stations; and
- **Contract 3 – Systems and Trackwork:** One Target Price contract for trackwork and all necessary systems.

PROJECT SCHEDULE AND COSTS

The anticipated timeline for the Project from the start of procurement and end of the construction phase is outlined in Figure 3.

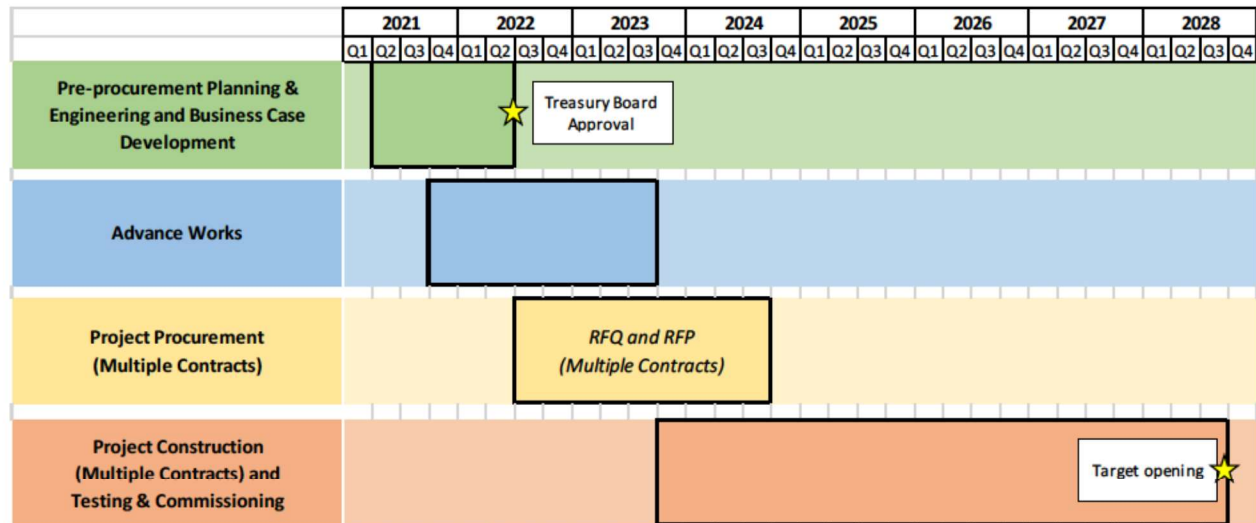


Figure 3 - Project Schedule

The Project cost estimate, including planning, procurement, construction, and Interest During Construction (IDC) is detailed in Table 1.

Table 1 - Project Capital Cost Estimates

Components in the Capital Cost Estimates ^[1]	Allocation (\$million, nominal dollars)
Contractor's Construction Cost	█
Design and Construction	█
Contractor IDC	█
Transferred Risks	█
Owner's Cost	█
Project Management and Staff Costs, Vehicles, TransLink support, and other costs	█
Property acquisition ^[1]	█
Advance works ^[1]	128
Retained Risks and Contingencies	█
Provincial IDC	█
Total Capital Cost	3,939^[2]

[1] Funding for the advance works has been approved and includes █ of property acquisition.

[2] Total Capital Cost of \$3,939m plus planning costs (Operating Expense) of \$11 million, for total Project related costs of \$3,950 million.

PROJECT FUNDING

The Province has been actively engaging the Government of Canada to cost share in the Project, and a commitment has been made to fund \$1.306 billion. The Project has already secured funding of \$0.128 billion for the advance works from the Province and the Government of Canada under the Investing in Canada Infrastructure Program (ICIP).

The Project is requesting additional funding from each of the three Project partners, as identified below:

Table 2 - Funding Allocation by Source (Nominal \$ million)

Funding Source [1] (\$million, nominal dollars)	Allocated Funding	Additional Requested	Total Allocation
Provincial Government	112	2,296	2,408
Government of Canada	16	1,287	1,303
TransLink		198	198
City of Surrey Contribution of Properties & Rights		30	30
Total Capital Budget	128	3,811	3,939

[1] Total Capital Cost of \$3,939m plus planning costs (Operating Expense) of \$11m, for total Project related costs of \$3,950m.

DECISION REQUESTS FOR THE CAPITAL PROJECT

- a. Approval of the Project and of the Project Scope;
- b. Approval for the Project to proceed immediately under a Multiple Contracts strategy described in the Business Case; and
- c. Approval of the Project's total capital cost of \$3.939 billion, including:
 - i. Previously approved advance works funding of \$128 million
 - ii. Additional funding request of 3.811 billion, to be funding as follows:
 - Provincial funding of \$2.296 billion;
 - Federal funding of \$1.287 billion;
 - TransLink funding of \$198 million; and
 - City of Surrey in kind contribution of \$30 million.

1 PURPOSE AND APPROACH

1.1 PURPOSE

This Business Case establishes the need to invest in the SLS Project. It describes how the recommended service delivery option will contribute to provincial and regional objectives and strategies to improve transportation infrastructure in Metro Vancouver.

The main purpose of this Business Case is to:

- Demonstrate the need and provide background information with respect to the Project;
- Describe in detail the planning process and recommended Project scope to meet the need;
- Describe in detail the procurement assessment conducted for the Project; and
- Recommend a procurement approach and implementation strategy.

This Business Case also provides information and analysis to inform decisions on the Project.

1.2 APPROACH

The document consists of the following five main parts:

Part A – Need for Investment: Describes the need for the Project based on strategic context and transportation plans for the region and priorities for the Ministry, and current conditions associated with the Business-As-Usual scenario.

Part B – Service Delivery Analysis: Describes the physical scope of the Project for implementation and provides a capital cost estimate based on the reference concept of a consolidated approach for the Project's delivery.

Part C - Procurement of the Project: Presents the analysis and results of the detailed assessment undertaken to determine the optimal approach to procure the Project.

Part D - Implementation Plan and Funding: Describes the plan to implement the Project, based on the recommended procurement models and Project Schedule, and presents the estimated Project budget and funding sources.

Part E – Decision Request: Provides the overall recommendation to proceed with the Project.

PART A: NEED FOR INVESTMENT

This part of the Business Case describes the need for the Project. This discussion highlights the strategic context and transportation plans for the region, priorities for the Ministry, the current conditions and existing challenges of the Corridor, and the anticipated Project benefits.

This section concludes that:

- Looking to the year 2050, the Sub-Region faces challenges to achieve transport and climate objectives while accommodating projected increases of 424,000 residents and 150,000 jobs.
- The Corridor is currently underserved by rapid transit.
- The Project supports provincial and regional strategies (including CleanBC, StrongerBC, and the TransLink 2050 Regional Transportation Strategy), sustainability objectives, affordable housing, active transportation, and the economic development of the region, the Province, and Canada.
- The Project considers and integrates with other Provincial priorities such as Truth and Reconciliation Commission Calls to Action, the Community Benefits Agreement, GBA+, and sustainable transportation mode share.
- The opportunity to create Transit Oriented Development (TOD) will be not realized if investment in rapid transit is not secured.

2 STRATEGIC CONTEXT

2.1 PROVINCE OF BRITISH COLUMBIA

The Ministry strives to build and maintain a safe and reliable transportation system and provide affordable, efficient and accessible transportation options for all British Columbians. This work includes investing in road infrastructure, public transit, the coastal and inland ferry service, active transportation network improvements and other green modes of transportation.

The Project supports the Province's priority to support economic recovery from the effects of the COVID-19 pandemic in communities across BC by continuing to build important infrastructure projects and ensuring that infrastructure investments deliver benefits for local communities and workers.

The Ministry's strategic direction is provided by the Province, which remains focused on five key commitments to British Columbians: putting people first, reconciliation, equity and anti-racism, fighting climate change, and a strong, sustainable economy that works for everyone. Key initiatives underpinning these strategic priorities include the implementation of:

- The ***Declaration on the Rights of Indigenous Peoples Act*** and the Truth and Reconciliation Commission Calls to Action, demonstrating support for true and lasting reconciliation; and
- The ***CleanBC Plan***, putting BC on the path to a cleaner, better future – with a low carbon economy that creates opportunities while protecting our clean air, land, and water.

United Nations Declaration on the Rights of Indigenous Peoples

The Province passed legislation in November 2019 to implement the United Nations Declaration, which the Truth and Reconciliation Commission confirms as the framework for reconciliation. The new ***Declaration on the Rights of Indigenous Peoples Act*** creates a path forward that respects the human

rights of Indigenous peoples while introducing better transparency and predictability in the work we do together. BC is the first province to put the United Nations Declaration into action through legislation. All work with Indigenous groups on the Project will be within this framework for reconciliation, see section 7.6 for further details of the work with Indigenous groups on the Project.

Climate Change

Transportation accounts for 37% of BC's total emissions. The Province is undertaking multiple strategies to address climate change and reduce greenhouse gas (GHG) emissions, including the development of new 2030 climate change targets. Investing in new transportation infrastructure in the Region will support the achievement of the Province's climate change target.

The Project will support TransLink's Climate Action Strategy for a net-zero GHG and climate-resilient public transportation system by 2050⁶ and the CleanBC Plan. The CleanBC Roadmap 2030⁷ includes foundational pathway actions to achieve targets that align with the Project, particularly the target to support emission reductions by focusing on efficiency-first transportation options. A Project objective was developed to incorporate **CleanBC**:

Support a healthy environment: *A service that supports healthy and accessible communities and contributes to a healthy environment by reducing vehicle kilometers travelled*

The Project does not intend to complete environmental certifications (LEED nor Envision). The Project will focus on the environmental outcomes rather than certification (through completion of an Environmental Screening Review). The Project does not require a formal impact assessment (Environmental Assessment) under the provincial and federal legislations.

As part of the Federal funding application, the Project Team will complete a Climate Lens assessment.

2.1.1 Project Corridor Revitalisation

The Project, the active transportation initiative, and the integrated development initiatives are distinct. However, these three initiatives are deeply interconnected and together will facilitate a revitalisation of the Corridor, with rapid, reliable SkyTrain transportation as the catalyst. All three initiatives are actively communicating to ensure cohesion but are operating on different schedules and seeking approval to proceed through separate business cases.

Specific information about the active transportation and integrated development initiatives is detailed below.

2.1.2 Active Transportation

Delivering an active transportation strategy was identified as a goal in CleanBC, and in June 2019 the Ministry launched **Move. Commute. Connect.: B.C.'s Active Transportation Strategy** to support and increase safe walking, cycling and other forms of active transportation for all ages and abilities. The goal of this strategy is to double the percentage of trips people take by active transportation modes by 2030. The Project presents an opportunity to support active transportation by providing integrated, safe, convenient multi-modal travel options for pedestrians and cyclists. The CleanBC Roadmap 2030 also has

⁶ TransLink (n.d.) TransLink 2050 Regional Transportation Strategy, British Columbia. Retrieved from: <https://view.publitas.com/translink/transport-2050-regional-transportation-strategy/page>.

⁷ https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf

a goal of supporting mode shift from the personal vehicle to active transportation and transit, thereby reducing vehicle kilometres travelled (vkt).

The current status of this initiative is in section 7.11. Any active transportation initiatives will be developed jointly with local governments, and TransLink to ensure alignment with the regional cycling network and the municipal cycling plans.

2.1.3 Integrated Development

The Project presents an opportunity to support Homes for BC, the Province's 30-point plan for housing affordability in BC. As part of the plan, the Province will deliver 114,000 affordable homes between 2018-2028 via an investment of \$6.6 billion.

There are opportunities to encourage and support housing options, such as developing affordable and purpose-built rental housing, in partnership with BC Housing, local governments, Indigenous groups, and private developers.

Given the development potential along the Corridor using the Project as the catalyst, there is an opportunity to meet a variety of housing needs and encourage TOD. This includes developing different types of housing for families, meeting the needs of BC Housing's typical client populations as well as those in the region who are subject to housing supply challenges. To support TOD, TransLink and the City of Surrey entered a Supportive Policy Agreement (SPA) for the Project in February 2020. The SPA sets out commitments from the City of Surrey and TransLink regarding land use planning, urban design, affordable housing and transportation adjacent to the City of Surrey's portion of the Corridor. The Project SPA commits the City of Surrey to increasing its existing population and employment projections for the Corridor.

See section 7.10 for the current status of this initiative.

2.1.4 Other Government Policies

The Project Objectives were developed in recognition of evolving government policies and are described in section 4.2.

In addition to aligning objectives with the strategic goals of the MOTI Service Plan, the Project has also considered several other government policies that may apply to capital. These considerations include the Environmental, Social, and Governance Framework for Capital, and Gender-Based Analysis Plus (GBA+).

Environmental, Social, and Governance (ESG) Framework for Capital

A Project objective was developed to incorporate the ESG Framework for Capital.

Deliver community benefits: Support Indigenous and other Equity Groups by providing access to work and facilitating training and employment opportunities on select major infrastructure projects that ensures individuals, communities and businesses have full and fair opportunity to participate in the benefits of a project.

Gender-Based Analysis Plus (GBA+)

Gender-Based Analysis Plus (GBA+) is an analytical process used to assess how diverse groups of women, men and non-binary people may experience policies, programs, and initiatives. The "plus" in GBA+ acknowledges that many other identity factors, including Indigeneity, race, ethnicity, religion, age, sexual orientation, mental or physical impairments, or family status or composition, intersect to shape an individual's experiences.

The use of a GBA+ lens is an element of one of the Province's five foundational principles to reduce barriers and limitations for racialized and marginalized people to participate fully in their communities, workplaces, government, and lives. GBA+ is a tool to inform all policy and budget decisions to assist in meeting this foundational principle. This includes consideration of the impacts and outcomes of infrastructure investments, which serve as an essential foundation for public services.

The Project, including its associated active transportation and integrated development initiatives, will create access to social infrastructure, such as childcare, combined with multi-modal transportation, including SkyTrain's reliable, frequent, and accessible service. Additionally, improved access to employment and training opportunities will benefit individuals who previously may not have such access due to cost of owning or renting a vehicle. In this sense, there are many dimensions to, and implications of, the social and economic benefits of the Project.

Approach

The Project Team will apply GBA+ considerations throughout the lifecycle of the Project, recognising this is an iterative process with opportunities for training, enhanced engagement, and the application of lessons learned over time. For example, in the collection, use of, or reference to data, a gender inclusive approach will be undertaken (where possible) that avoids reinforcement of the gender binary (man/woman) and including information pertaining to 2SLGBTQIA+ people.

Engagement during the design development phase of the Project that relates to equity, diversity and inclusion consists of:

- Meeting or exceeding station design requirements, including accessibility and Crime Prevention through Environmental Design (CEPTED) safety principles, as prescribed by the Region's transit authority;
- Improving accessibility in the Project design by considering streetscape design, station amenities and features (such as washrooms, elevators, entrances/exits, and lighting), service disruption, and accessibility during construction;
- Considering input from stakeholders, including accessibility advocates;
- Input from Indigenous groups, including discussion of future training, business, and procurement opportunities (refer to section 7.6 of the Business Case for details on the Project's engagement with Indigenous engagement);
- Incorporating the Community Benefits Agreement to address potential employment, training, and business opportunities for under-employed/represented groups; and
- Considering best practices or lessons learned from other major transportation projects.



Figure 4 - GBA+ Engagement and Development Process

A process is underway to develop a GBA+ plan to gather and analyze data and identify opportunities for GBA+ assessments, including during the procurement, construction, and operations phases of the Project.

The Project will work collaboratively to ensure the GBA+ plan meets Ministry objectives as well as best practices and existing analytical tools and processes, such as the Guide to Gender-Based Analysis Plus (GBA+) and Inclusive Open Government⁸. Some possible opportunities are outlined below, noting this is not an exhaustive list and further analysis is required:

- Procurement: The Project has engaged Infrastructure BC to assist in determining potential opportunities to include GBA+ criteria into the Project's procurement process;
- Construction: The Project anticipates implementation of the Community Employment Benefits (CEB) Reporting Framework, which encourages the creation of employment opportunities for specific Canadian communities that may be underemployed/underrepresented; and
- Operations: As the agency responsible for operating and maintaining the Surrey Langley SkyTrain extension, TransLink has a number of policies or programs that support or promote accessibility within its hiring and day-to-day operational practices⁹. Consistent with the rest of the Expo Line SkyTrain operating system, the Project will adhere to TransLink's Access Transit Strategy in the development of the Project – to work toward a transit system that is accessible as possible for everyone.

⁸ <https://www.opengovpartnership.org/wp-content/uploads/2019/05/Guide-GBAandInclusive-Open-Government.pdf>

⁹ <https://www.translink.ca/about-us/about-translink/equity-diversity-and-inclusion>

The Project looks forward to an opportunity to undertake further analysis and better integrate GBA+ concepts into planning and implementation phases. One of the Project Objectives is to provide infrastructure that meets the needs of the community, and a commitment to GBA+ concepts is integral to achieving this objective.

Provide infrastructure that meets the needs of the community: A service that is constructible, operable, and publicly acceptable

2.2 MUNICIPALITIES

The Project will extend the existing Expo Line SkyTrain along the Corridor through the Three Municipalities of the City of Surrey, Township of Langley and the City of Langley. Figure 5 shows the geographical boundaries of each of the municipalities.



Figure 5 - Geographical Boundary of the Three Municipalities

2.2.1 City of Surrey

The City of Surrey is the second largest municipality in British Columbia with an estimated 2017 population of 549,000. Current forecasts suggest the population of the City of Surrey will surpass the City of Vancouver (675,000; 2017) in the next 30 years.

The City of Surrey's land area is almost the size of Richmond, Burnaby, and Vancouver combined and includes a mix of urban and suburban areas, with one-third of its land mass consisting of agricultural land.

2.2.2 Township of Langley

Located in the southeastern part of Metro Vancouver, the Township of Langley is one of the fastest growing municipalities in the Region. Its 2017 population of 126,000 is expected to increase to 215,000 by 2050¹⁰. The majority of the Township's 316 km² of land area is located within the Agricultural Land Reserve (ALR), with agriculture and farming playing a key role in the community. Goods movement is also a primary characteristic of the Township's landscape with integrated road, rail, port and airport infrastructure bolstered by access to the U.S. border.

2.2.3 City of Langley

Also located in the southeastern portion of the Region is the City of Langley, which is designated as one of Metro Vancouver's Regional City Centres. The City of Langley, with a 2017 population of 27,000 and a geographic area of 10 km², is considered one of the most active commercial and industrial land bases in the Region, incentivizing significant growth in high-density residential development.¹¹

The City of Langley's commercial and industrial base serves a trade area of more than 200,000 people, which is rapidly growing and over the long-term, provides a strong market for rapid transit riders from the trade area and those travelling to the trade area by transit from points east.

2.2.4 Municipal Access Agreements

The Province is working with the Three Municipalities to develop Municipal Access Agreements, which will stipulate the Project's requirements to implement and operate infrastructure, such as land access, and the municipal requirements for project execution.

Supportive Policies Agreements

Supportive Policies Agreements (SPAs) are one component of the 'Partnership Agreement' umbrella called for in TransLink's 10-Year Vision for major projects. Other component agreements may include an MOUs, Contribution Agreements, and Municipal Access Agreements, and are discussed below. SPAs identify principles and performance measures to guide transit-oriented development along each project corridor, as well as a range of specific land use and transportation outcomes relating to population and employment growth. In addition, TransLink, Metro Vancouver and the Province recently completed SPA negotiations for two separate agreements with the City of Langley and Township of Langley.

The purpose of SPAs are as follows:

- To provide surety that the municipality and TransLink will fulfill land use and transportation actions which are outside of the direct scope of the Project but have significant influence on the Project's success. SPAs identify principles and performance measures to guide transit-oriented development along each project corridor, as well as a range of specific land use and

¹⁰ Province of British Columbia. (n.d.) Investing in Township of Langley, British Columbia. Retrieved from: <https://www.britishcolumbia.ca/invest/communities/british-columbia/lower-mainland-southwest/greater-https://www.britishcolumbia.ca/invest/communities/british-columbia/lower-mainland-southwest/greater-vancouver/township-of-langley/vancouver/township-of-langley/>

¹¹ Province of British Columbia. (n.d.) Investing in City of Langley, British Columbia. Retrieved from: <https://www.britishcolumbia.ca/invest/communities/british-columbia/lower-mainland-southwest/greater-vancouver/city-https://www.britishcolumbia.ca/invest/communities/british-columbia/lower-mainland-southwest/greater-vancouver/city-of-langley/of-langley/>

transportation outcomes relating to population and employment growth. The actions include plans, policies, and projects for the following:

- Transit supportive land use;
 - Affordable housing;
 - Complete integrated, multi-modal street network;
 - Urban design; and
 - Transportation Demand Management (TDM).
- To advance the principles of the Transit-Oriented Communities Design Guidelines, shared regional goals and municipal plans and policies.

The content of an SPA includes commitments for:

- Initiatives related to land use planning, urban design, housing, and transportation, which are to be achieved by defined times;
- Collaboration with partner agencies (Province, TransLink, and Metro Vancouver) on key initiatives; and
- Formal monitoring of both the SPA commitments and related performance measures/outcomes.

At the time the City of Surrey's SPA was drafted, the Project was to be delivered in two stages and owned by TransLink. Now that the Project is being delivered by the Province in a single stage to Langley City Centre, a higher degree of coordination and collaboration between the partners is required to ensure its success. As such, the Province has drafted an Overarching SPA (OSPA) to ensure a consistent approach by Project partners to meet provincial, regional and municipal objectives, such as transit delivery, land use planning, and active transportation. The Province, the City of Surrey, Langley City, the Township of Langley and TransLink will be signatory to the OSPA.

This Agreement is intended to complement existing SPAs, not duplicate or replace them and like individual SPA agreements and focus on key priorities that are outside the direct scope of the 16-kilometre SkyTrain extension but have a significant bearing on the success of the Project.

2.3 METRO VANCOUVER

The Region has experienced substantial growth in the past decades, and this growth is projected to continue. As this growth continues, a key challenge will be to accommodate the growing population in ways that advance both livability and sustainability. To help accomplish this, Metro Vancouver has collaborated with the Region's municipalities to develop a regional growth strategy.

Based on **Metro Vancouver 2050**, the municipalities will experience population growth, with the Three Municipalities projected to absorb over 420,000 new residents in the next 30 years.

Figure 6 presents the projected population growth for the Three Municipalities relative to the rest of Metro Vancouver and Fraser Valley by 2050. The population of the Three Municipalities is projected to increase by 35% from 2017 to 2035 and 60% from 2017 to 2050, while the rest of Metro Vancouver and Fraser Valley is projected to increase by only 24% from 2017 to 2035 and 39% from 2017 to 2050.

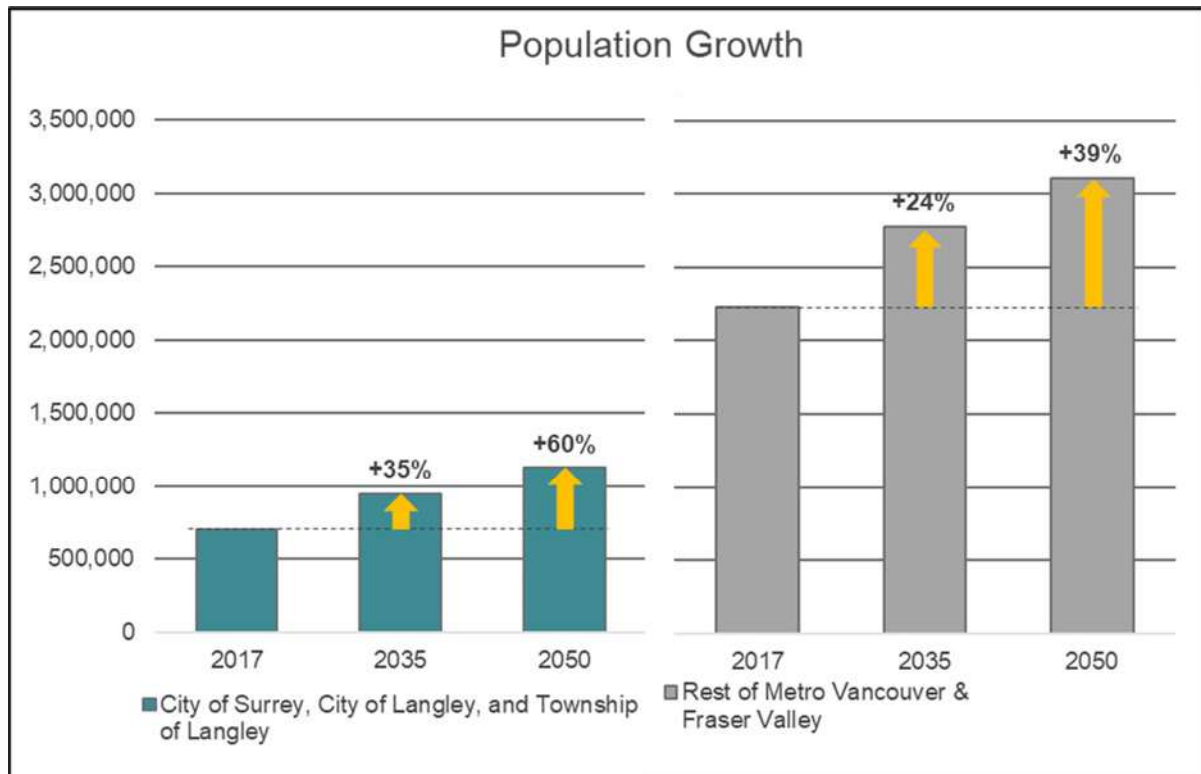


Figure 6 - Projected Population Growth in the Region by 2050

While this population growth presents a unique opportunity to shape the future, there is also a substantial risk if investment in rapid transit cannot be secured. Residents may increasingly rely on single occupancy vehicles as their primary means of travel, and thereby increasing congestion on road networks.

Figure 7 below present the Metro Vancouver Regional Growth Strategy population and employment density and projections in 2050.

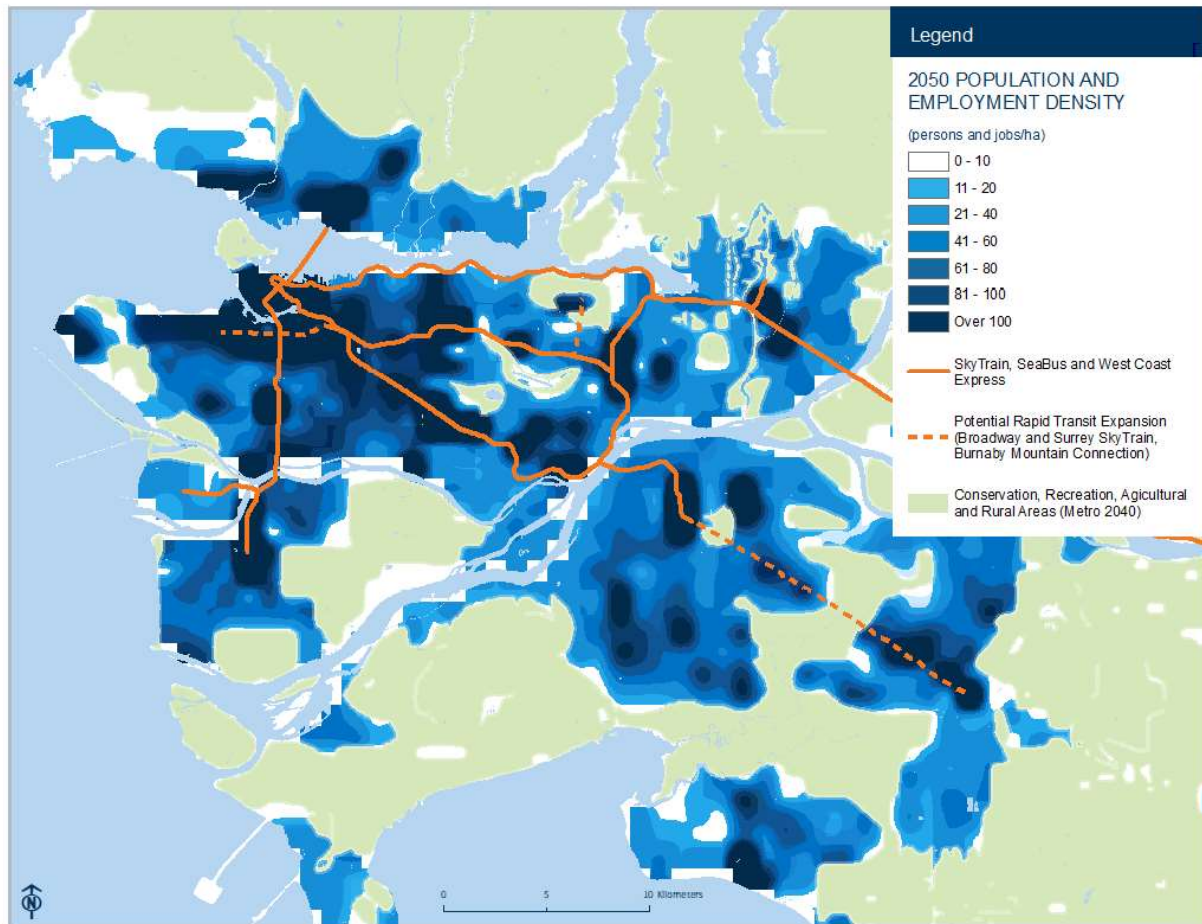


Figure 7 - 2050 Population and Employment Density Including the Current Planned Rapid Transit Network

In recognition of the significant anticipated population and jobs growth, TransLink’s Transport 2050 Regional Transportation Strategy identifies the Project as the highest regional priority¹².

2.4 TRANSLINK

Governed by the South Coast British Columbia Transportation Authority Act, the South Coast British Columbia Transportation Authority (TransLink) is Metro Vancouver’s regional transportation authority. TransLink is responsible for the regional transportation system, which includes regional transit, cycling, and commuting options.

TransLink is mandated to plan the regional transportation system to achieve sustainable growth targets as set out in the Regional Growth Strategy (RGS).

Major rapid transit investments in the past decades have been made possible with federal, provincial, and regional funding. These investments include the Expo Line (1985) and its extensions, Millennium Line

¹² TransLink (n.d.) TransLink 2050 Regional Transportation Strategy, British Columbia. Retrieved from: <https://view.publitas.com/translink/transport-2050-regional-transportation-strategy/page>.

(2002), Canada Line (2009), Evergreen Extension (2016), and Millennium Line Broadway Extension (under construction).

The rapid transit network is supplemented by an extensive network of express bus, local bus, and paratransit services, a commuter rail service extending east to Mission, and a SeaBus service providing a vital connection to the North Shore. Taken together, TransLink's service area encompasses more than 1,800 square kilometres, the largest transit service area in Canada.

TransLink will operate the SkyTrain and stations once the Project is complete through a line use agreement with the Province (BCTFA).

TransLink Memorandum of Understanding/Support Agreement

TransLink has developed memoranda of understanding (MOU) with the City of Surrey, City of Langley and Township of Langley, which address mutual support for the Project with consensus on Project Objectives, project scope, roles and responsibilities, as well as agreements to be developed including a Supportive Policies Agreement.

In addition, the City of Langley MOU addresses mutual support for a potential operations and maintenance centre in the City. The MOU affirms commitment from TransLink and the Three Municipalities to proceed in good faith to facilitate, expedite, and support the successful procurement, design, construction, operation, and maintenance of the Project. It also sets out the Project Objectives and project scope which are fully supported by both parties, details the roles and responsibilities and outlines the framework of all other agreements in the PPA.

3 EXISTING CHALLENGES

Investment in rapid transit is required to meet the vision that has been set out at the regional and municipal levels to create well-connected urban centres. Without investment into an expansion of the rapid transit network south of the Fraser, transit services in the Three Municipalities will continue under a Business as Usual (BAU) scenario that assumes bus service increases in a manner consistent with past trends and forecasted population and employment growth.

Under the BAU scenario, several key challenges are anticipated that will impact the quality of life for residents in the Three Municipalities. The challenges include:

- Population Growth – The Three Municipalities will experience a population growth of more than 424,000 new residents by 2050;
- Corridor Congestion – With a continual influx of new residents (and associated single occupancy vehicles), a growing workforce, and an increased demand for goods movement, the substantial strain on the local road network will continue to increase;
- Transit Overcrowding – Prior to the COVID-19 pandemic, transit users are experiencing more overcrowding on buses. The transit system along the Corridor is reaching its capacity during peak periods, and demand is expected to continue to grow;
- Sustainable Mode Share – Current sustainable transportation mode share (including biking, transit, and walking) is 18% in the Three Municipalities, which is much lower than the Region's target of 50%¹³; and

¹³ TransLink. (2013). *Regional Transportation Strategy: Strategic Framework*. Retrieved from: <https://www.translink.ca/>

- Access to Transit – The Corridor is generally underserved by transit, with a lower proportion of residents living or working within walking distance of rapid transit compared to other parts of the region.

3.1 POPULATION GROWTH

Currently, the Three Municipalities are facing challenges as a result of a continual influx of new residents (and associated single occupancy vehicles), a growing workforce, and increased demand for goods movement. Metro 2050, Metro Vancouver's Regional Growth Strategy, indicates that over the next thirty years, Metro Vancouver will need to accommodate approximately one million more residents¹⁴. This means that the Region will also require approximately 500,000 additional housing units and almost 500,000 additional jobs. Specifically for the Three Municipalities, a growth of 424,000 new residents and 150,000 new jobs is projected.

While this population growth presents a unique opportunity to shape the future, there is also a substantial risk if adequate transportation options are not provided.

3.2 CORRIDOR CONGESTION

The addition of more than 424,000 new residents will increase travel demand on the local road network. Key corridors are already becoming strained, resulting in additional congestion, and negatively affecting travel times for transit and auto users. As the road network becomes more congested, trucks require more time and resources to move goods. This will cause strain on the economy as goods will be more expensive for businesses and customers. Figure 8 and Figure 9 present the comparison of afternoon/evening road network congestion levels for the Three Municipalities in 2017 and forecasted in 2050 without rapid transit investment. Segments shown in red indicate high congestion corridors and a significant increase in network congestion is expected by 2050.

/media/Documents/plans_and_Projects/regional_transportation_strategy/rts_strategic_framework_07_31_2013.pdf?la=en &hash=0A459174FB44A8870D00EFCE54124A01078D0698

¹⁴ <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/DraftMetro2050.pdf>

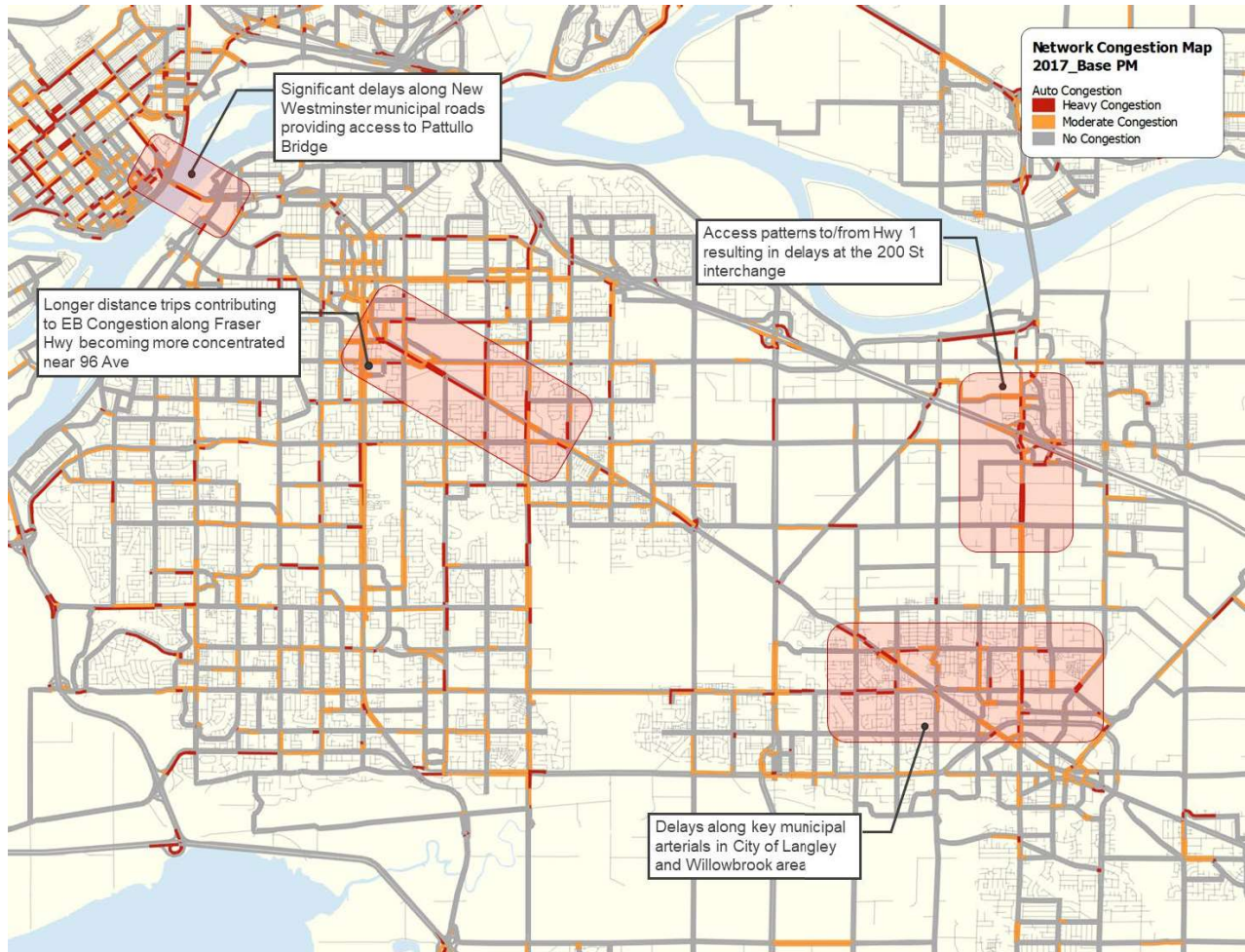


Figure 8 - Level of Road Congestion Forecast (2017) PM

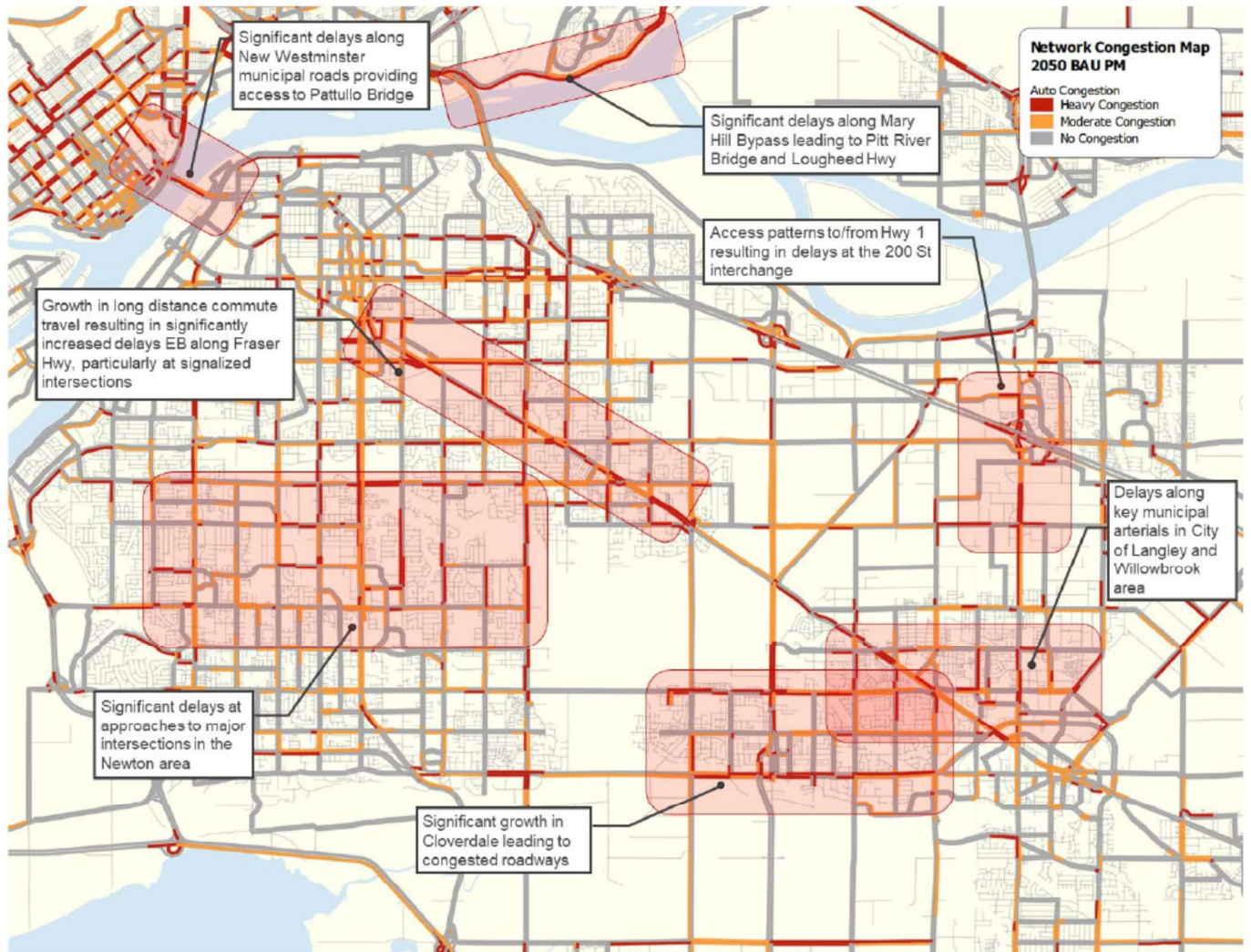


Figure 9 - Level of Road Congestion Forecast (2050) PM

Table 3 compares the ratio of modelled speed to posted speed on the road network in the City of Surrey, City of Langley, and Township of Langley with different projected congestion levels. These projections indicate a considerable increase in congestion by 2050.

Table 3 - PM Congestion Index in Three Municipalities

Level of Congestion Speed(s) / Posted Speed (ps)	Lane-kilometre of Roadways		Difference
	2017 – PM Peak	2050 Forecast – PM Peak	
Minimal: 0.7 < s/ps	2,579 km (84%)	2,254 km (70%)	-325 km (-14%)
Moderate: 0.5 < s/ps <= 0.7	378 km (12%)	609 km (19%)	232 km (7%)

Heavy: $0 < s/ps \leq 0.5$	110 km (4%)	339 km (11%)	229 km (7%)
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*s/ps = Ratio of modelled speed to posted speed

3.2.1 Transit Speed

An increase in road congestion will not only impact general traffic, but also the existing transit services in the Three Municipalities — making transit slower and less reliable. Table 4 compares the combined length of road network in the Three Municipalities with different projected bus speeds. These projections indicate a considerable reduction in bus speeds by 2050.

Table 4 - Distribution of Transit Speeds in the Three Municipalities

Projected Bus Speed	Bus-kilometre of Roadways		Difference
	2017 – AM Peak	2050 – AM Peak	
0 to 15 km/hr	286 km (8%)	715 km (12%)	+4%
15 to 25 km/hr	1,259 km (35%)	2,174 km (37%)	+2%
25 to 35 km/hr	1,070 km (30%)	1,480 km (25%)	-5%
35 to 40 km/hr	154 km (4%)	240 km (4%)	0%
> 40km/hr	820 km (23%)	1,317 km (22%)	-1%

3.2.2 Transit Reliability

The 502 and 503 bus routes share the Corridor with other vehicle traffic, which exacerbates congestion issues. The ability for buses to maintain a standard headway and consistent travel time along the Corridor is difficult, which results in bunching of buses and gaps in service. As an example, Figure 10 presents the average speed of the 502 bus route along the Fraser highway.

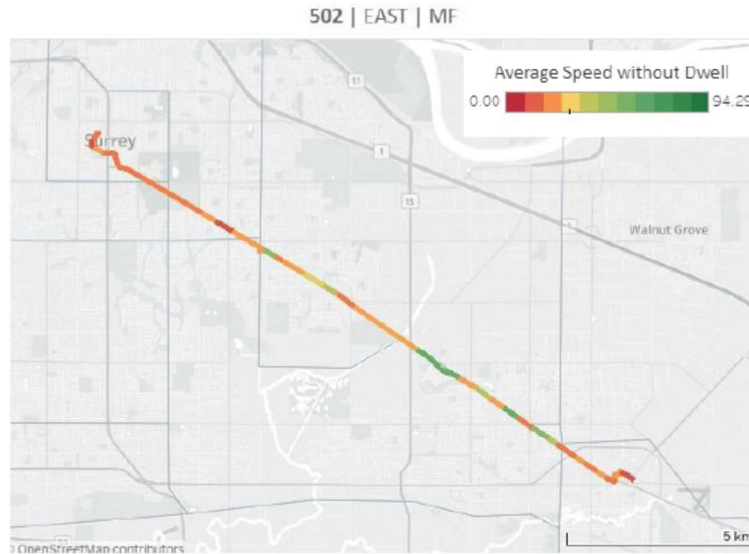


Figure 10 - Trip Segment Speeds for 502 Bus Route (“AM Peak” and Eastbound in 2017)

Furthermore, the accompanying delays, line-ups, and pass-ups dissuade people from taking transit. Added vehicle traffic will contribute further to congestion issues on the Corridor, and slow bus services even more.

3.3 TRANSIT OVERCROWDING

Annual boardings for bus routes on the Corridor were roughly 4,000,000 in 2018 and are projected to continue to increase. The demand for transit along the Corridor far exceeds capacity, with Route 502 and Route 503 serving two groups of riders. Local riders who wish to access points in-between Surrey Central and Langley Centre are frequently being passed up by buses full of commuter-oriented riders wishing to connect to the SkyTrain at Surrey Central. In September 2019, Route 503 had 33,800 annual service hours added to address the increasing demand for transit in the Corridor.

TransLink’s 2019 Transit Service Performance Review¹⁵ reports on ridership growth from 2018 to 2019, as presented below:

- Region reached a record of 452.9 million boardings, while ridership grew 3.6% systemwide;
- Bus boardings increased by 3.8%;
- SeaBus boardings increased by 1.2%;
- SkyTrain boardings increased by 3.2%;
- West Coast Express boardings increased by 4.9%; and
- HandyDART boardings increased by 5.7%.

¹⁵ 2019 Transit Service Performance Review. Retrieved from: https://www.translink.ca/-/media/translink/documents/plans-and-projects/managing-the-transit-network/tspr/tspr_2019_summary_tables.pdf

3.4 SUSTAINABLE MODE SHARE

TransLink regularly conducts comprehensive Regional Trip Diary surveys to better understand travel behaviours across the Region. The most recent survey was conducted in 2017. The 2017 survey, together with earlier surveys, identifies several trends that support the case for investment in rapid transit in the South of Fraser Sub-Region (the Sub-Region). The Sub-Region encompasses the King George Boulevard, Fraser Highway and 104 Avenue corridors, capturing the communities of Surrey Centre, Newton, Guildford, Fleetwood, Cloverdale/Clayton, South Surrey/White Rock and Langley Centre.

In 2013, TransLink set a 30-year target where 50% of daily trips in the Region were to be made by sustainable modes (walking, cycling, transit). In 2017, 18% of daily trips in the Three Municipalities were made this way, which is significantly lower than the regional average of 28%. Figure 11 presents the percent mode share breakdown for the Three Municipalities.

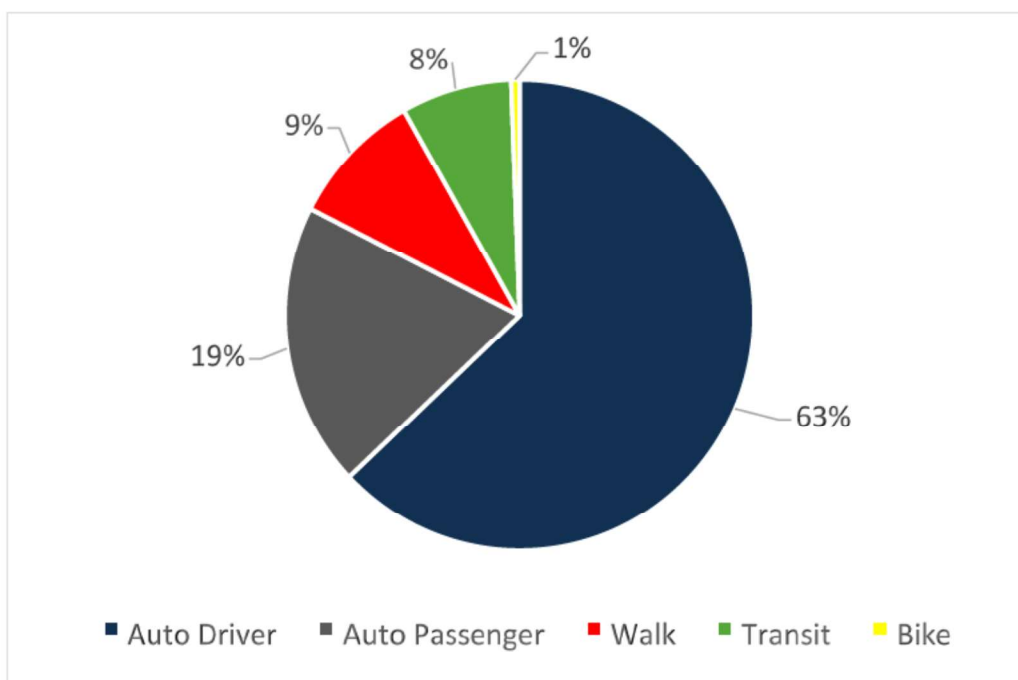


Figure 11 - Mode Share Percentage (TransLink Regional Trip Diary, 2017)

While mode share is trending in the right direction, aggressive policy actions and investments will be needed to reach the target of 50% sustainable mode share by 2043. Provision of a robust, permanent, and stable network of transit, cycling and pedestrian infrastructure is required to enable sustainable transportation choices.

3.5 ACCESS TO TRANSIT

The Three Municipalities are currently served by a transit network comprised of 52 bus routes (including conventional bus and community shuttle) and four SkyTrain stations. The Three Municipalities experienced a 10.9% increase (from 928,000 to 1,029,000) in annual service hours between 2014 and 2018. During the same period, the Sub-Region saw a 45.2% increase (from 34,500,000 to 50,100,000) in annual boardings, substantially outpacing the increase in transit service.

TransLink continues to adjust bus services to address growing ridership demand in the Three Municipalities. As the population continues to grow, residents will be looking for more frequent and reliable transportation alternatives.

Currently, residents in the Three Municipalities have limited access to rapid transit. With roughly 25% of the Region's population, the Three Municipalities are served by less than 8% of the Region's rapid transit network (six kilometers of SkyTrain and four stations). All four existing rapid transit stations are in North Surrey, limiting the number of residents that live or work within proximity to the rapid transit network. By comparison, communities North of the Fraser have nearly 74 kilometers of SkyTrain and 53 stations. Table 5 outlines population estimates of residents that live within 800 metres (distance used to estimate a 10-minute walk) of the existing SkyTrain network in the Sub-Region.

Table 5 - Portion of Population in the Three Municipalities Within Existing Station Catchment Boundary

	2017	2035	2050
Population within existing SkyTrain Stations Catchment (800m radius)	26,200 (3.73%)	58,600 (6.19%)	82,600 (7.34%)
Total Population of Three Municipalities	702,000	946,600	1,125,800

In 2017, only 3.73% of the population lived within 800 metres of one of the existing four SkyTrain stations in the Three Municipalities. Table 6 outlines employment estimates of individuals working within 800 metres of the existing SkyTrain network in the Sub-Region.

Table 6 - Portion of Total Employment in the Three Municipalities Within Existing Station Catchment Boundary

	2017	2035	2050
Employment within existing SkyTrain Stations Catchment (800m radius)	12,300 (4.29%)	18,800 (4.94%)	22,900 (5.24%)
Total Employment of Three Municipalities	287,000	380,200	436,800

Based on Table 6, in 2017, only 4.29% of individuals working in the Three Municipalities worked within 800 metres of one of the existing four SkyTrain stations.

The limited number of rapid transit stations in the Three Municipalities restricts residents' ability to use rapid transit to access new employment opportunities or to commute to post-secondary institutions on both sides of the Fraser River. The proposed Project would not only connect to the regional SkyTrain network, but also improve local connections necessary to support residential and employment growth in the rapidly growing municipalities, and improve access to local jobs, schools, housing, shopping, services and recreational facilities.

3.6 FUTURE DEMAND

3.6.1 Project Demand

Currently, the Three Municipalities are facing challenges as a result of a continual influx of new residents (and associated single occupancy vehicles), a growing workforce, and increased demand for goods movement. By 2050, the Metro Vancouver Region faces challenges to accommodate the significant projected employment and population growth.

Though the COVID-19 pandemic has negatively impacted public transportation ridership in recent years, the ridership modelling indicates there is need for a rapid-transit along the Corridor. See section 6.3.1 for the Sensitivity Analysis and Uncertainty Analysis, which includes an analysis of the COVID-19 pandemic impacts on ridership.

Investment in rapid transit is required to meet the vision that has been set out at the regional and municipal levels to create well-connected urban centres. Without investment in an expansion of the rapid transit network in the Sub-Region, transit services in the Three Municipalities will continue under a BAU scenario that assumes bus service increases in a manner consistent with past trends and forecasted population and employment growth.

SkyTrain will best meet the future needs of the Three Municipalities based on the population growth and current challenges with transit overcrowding. For example, SkyTrain would save approximately 22-25 minutes for transit riders compared to RapidBus for travel between Surrey Central and Langley City Centre terminus on opening day.

TransLink is currently evaluating the introduction of a fourth fare zone. Initial modelling indicates there would be no significant impact to ridership or revenue, but no decision has been reached at the time of this Business Case submittal.

3.6.2 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.

The economic impacts and inherent employment impacts generated by investment in the Project are predicted to be approximately 12,000 direct and 12,000 indirect Employment Impacts (Full Time Equivalents, or FTES). This forecast is based on the standard Transportation Classification in BC Input Output Model (I-O model) for Transportation, Engineering and Construction. It is important to note the estimates of the I-O model are for Person Years (FTES) and not jobs as they conform to the North American Industry Classification System (NAICS) Canada.

3.7 CAPITAL INVESTMENT NEED

The Project would provide opportunities to build housing and increase density in the region, in line with the Province's objectives on affordable housing. By developing transportation infrastructure, such as SkyTrain, GHG emissions are also reduced, supporting the CleanBC Plan. The Project would see an investment in urban infrastructure improvements that would help to build a strong, sustainable economy. During construction there will be opportunities to develop and grow the skilled labour workforce and prioritize opportunities for traditionally under-represented groups.

PART B: SERVICE DELIVERY ANALYSIS

This part of the Business Case describes the scope of the selected service delivery option for implementation and provides a cost estimate based on the reference concept.

4 BACKGROUND

Between 2009 and 2010 over 1000 combinations of technologies and routes were identified for the Project by TransLink. These options underwent a screening process using a Multiple Criteria Analysis (MCA) framework to highlight trade-offs and to assess which options best met the identified multiple accounts.

Three service delivery options were evaluated:

- **Business as Usual:** Fraser Highway RapidBus service, which is a continuation of the current Route 503 service;
- **Option 1: Consolidated Approach:** Construct the Project in one phase using SkyTrain technology with an advance works package to mitigate risk; and
- **Option 2: Phased Approach:** Construct the Project in two phases using SkyTrain technology: Stage 1 from King George to Fleetwood and Stage 2 from Fleetwood to Langley with an advance works package to mitigate risk.

The analysis concluded that:

- A consolidated approach could deliver the Project for \$3,950 million with an estimated completion date of 2028, which is approximately \$550 million less and two years sooner than a phased approach;
- There are opportunities, working with the Region and municipalities, organizations such as BC Housing, Indigenous groups and/or private sector developers to create integrated transit station developments that will be the core of transit-oriented communities; and
- There would be an opportunity to enhance active transportation infrastructure along the Corridor in partnership with TransLink and the local governments.

In October 2021, the Province proceeded with Business Case planning on the basis the Consolidated Approach option was optimal for the Project. A number of advance works were approved to proceed in parallel with Business Case planning to de-risk certain key elements and support the schedule in recognition of the Project's high priority. The advance works have begun, and include major utility relocation, project investigation and engagement, road widening, and property acquisition. For additional information on the Project status and advance works, see section 7.

For additional details see **Appendix A - Service Delivery Options Analysis**.

4.1 STAKEHOLDER AND PUBLIC ENGAGEMENT

Stakeholder and public engagement are key components of rapid transit planning and help to inform decision-making, including Project development and design work. Following direction from the Mayors' Council to proceed with planning for the Project, TransLink initiated a robust stakeholder and public engagement plan. The plan took the form of early outreach to diverse stakeholders, including local

community organizations, business associations, advocacy groups, institutions, and elected representatives from all levels of government.

TransLink planned for three stages of public engagement throughout the development phase of the Project. Between April 4 and 26 2019, the Project Team carried out the first stage of public engagement. A robust and multilingual awareness and marketing campaign helped to drive public interest and engagement. In the three-week engagement period, TransLink collected 21,267 completed surveys, with nearly 17,000 of them from residents in Surrey and Langley. The response rate was record-level as was attendance at four open houses (over 1,000 people).

Survey results indicated widespread support for the Project. In Surrey and Langley, 85% of respondents supported the proposed Project, and support was at 84% in the rest of the region. Key takeaways included:

- Strong support for improved transit in Surrey and Langley; and
- Strong support for the Project.

The most important considerations for rapid transit South of the Fraser were:

- Predictable transit travel times;
- Efficient use of public money;
- A comfortable and safe transit experience; and
- Increased transportation options.

The second stage of public engagement, which ran between November 1-17, 2019, and included public and market research surveys, five open houses, and a telephone townhall, focused on informing the public and seeking feedback on:

- The proposed placement of the SkyTrain guideway along Fraser Highway and station locations;
- Access to SkyTrain and integration with other modes of transportation; and
- The Environmental Screening Review (ESR) process (separate engagement was undertaken with Indigenous groups on the ESR).

This phase of public engagement resulted in 8,624 completed surveys, with the vast majority from Surrey/Langley residents. Five open houses in Surrey and Langley attracted over 2,000 attendees. A large percentage of comments indicated general support for the SkyTrain extension and agreed that TransLink adequately considered key factors in determining placement of the guideway on Fraser Highway. Moreover, a vast majority of survey respondents (93%) indicated that the proposed ESR was sufficiently thorough. A market research survey that was conducted during this same time period found that support for the proposed SkyTrain project remains high at 77% (more information on previous rounds of engagement is available through Summary Reports).

A third stage of public engagement was planned for Spring 2020 but was postponed due to the COVID-19 pandemic. It was then launched in September 2020 but was temporarily suspended during the provincial election period to ensure compliance with BC's election rules.

The Project Team has been working closely with its Project partners (the Three Municipalities and TransLink) through integrative working groups. There is also close collaboration with other key technical stakeholders, including utility companies.

4.2 PROJECT OBJECTIVES

The objectives and assessment criteria described in Table 7 have been established for the Project. The Project reviewed and added to the Project Objectives developed by TransLink in recognition of evolving government policies as described in section 2.1.4, such as active transportation, community benefits, and affordable housing. With the exception of the three aforementioned objectives, TransLink used the objectives to guide the evaluation of technology and alignment options.

Table 7 - Project Objective

Theme	Project Objective	Criteria
Customer Service/User Experience	Provide users with a positive experience	A service that is fast, frequent, reliable, comfortable, and safe, with a superior user experience
Transportation	Facilitate increased share of sustainable modes of transport	A service that attracts new transit riders, has the capacity to meet future transportation needs, increases sustainable mode share, and increases access to various opportunities such as employment and post-secondary education
	Support active transportation	A service that supports safe, convenient multi-modal travel options for pedestrians and cyclists and connects to existing community active transportation networks
Urban Development and Housing	Support increased density in the adjacent communities	A service that encourages mixed-use and higher density development, promotes an increase in a wider range of housing options including rental housing, and supports high-quality urban design around the Project stations
	Support affordable housing	A service that attracts net new affordable housing options adjacent to transit, that also supports new transit riders
Social, Community and Environment	Support a healthy environment	A service that supports healthy and accessible communities and contributes to a healthy environment by

Theme	Project Objective	Criteria
		reducing vehicle kilometers travelled
Economic Development	Enhance regional goods movement, commerce and job opportunities	A service that advances local and regional prosperity through job creation and enhances goods movement efficiency and reliability during operation
	Deliver community benefits	Support Indigenous and other Equity Groups by providing access to work and facilitating training and employment opportunities on select major infrastructure projects that ensures individuals, communities and businesses have full and fair opportunity to participate in the benefits of a project.
Financial	Provide a service that is good value for money	A service that provides good value for public money and is cost-effective
Deliverability and Acceptability	Provide infrastructure that meets the needs of the community	A service that is constructible, operable, and publicly acceptable

Performance measures related to the Project Objectives are described in section 10.6.

5 PROJECT SCOPE

The Project will extend the Expo Line 16 kilometers on an elevated guideway from King George Station to Langley City Centre along the Fraser Highway. Figure 12 below shows the proposed alignment of the Project's guideway.

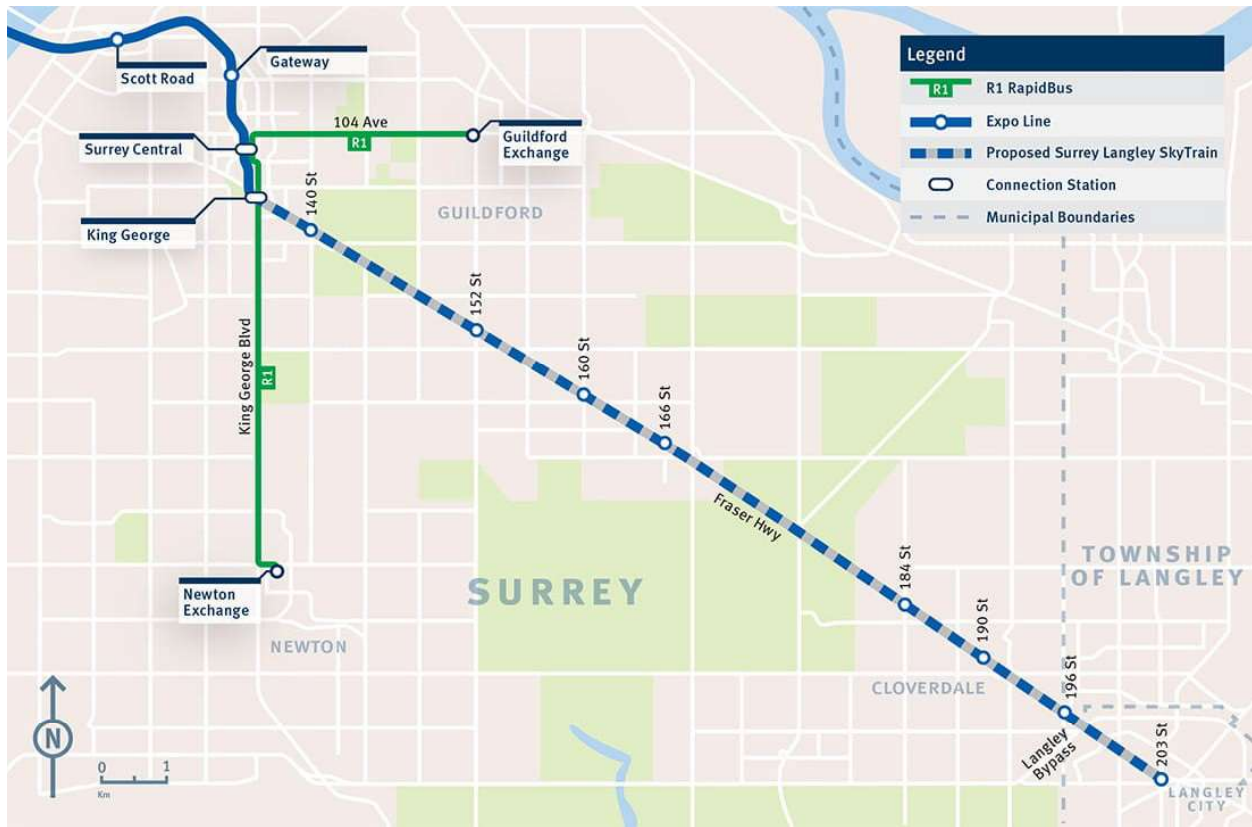


Figure 12 - Project Alignment

5.1 PROJECT SCOPE SUMMARY

The current scope of the Project includes the following:

- Construction of a 16 km elevated guideway with eight new stations for a seamless SkyTrain; extension of the Expo Line;
- Roadwork including widening and modifications to accommodate the Project;
- Right of way design to accommodate safe, user-friendly, and accessible facilities for pedestrians and cyclists;
- Utility relocation and protection;
- Purchase of 30 SkyTrain vehicles;
- Funding for the Project's share of the construction of a storage and maintenance centre for vehicles (which will be constructed as a separate project);
- Construction of three new transit exchanges and provision for parking;
- Power supply including power distribution and propulsion power sub-stations;
- Trackwork and all other integrated systems, including automated train control, communication, and power supply systems;

- Environmental Screening Review; and
- Property acquisition to accommodate the expanded right of way.

5.2 STATION SCOPE

Table 8 describes the specifications of the stations, however the Project's final design may vary from the reference case design configuration, within specified requirements.

Table 8 - Station Specifications

Station Specifications	
Platform Length	82.5 metres
Platform Width	3.0 metres or greater
Minimum Depth to Concourse	6.75 metres
Minimum Depth to Platform	7.9 metres
Maximum Depth of Platform	12.2 metres

The recommended station locations were determined based on the following criteria:

- Current population and employment distribution;
- Future opportunities for growth, including areas of growth under existing land use plans, zoning and policies as well as areas with the greatest potential for growth resulting from revised land use plans, and zoning and policies appropriate to development adjacent to a high capacity, high speed rapid transit line;
- Connections with the existing transit network; and
- Ensuring the Project will meet the following principles:
 - Respond to current and projected future ridership concentrations;
 - Respond to local context, development scale and community objectives;
 - Promote intermodal connectivity within the station area with the current bus routes and exchanges; and
 - Respond to municipal land use policies and zoning that encourage higher density town centers, TOD, and ridership growth.

Table 9 describes each recommended station and the underlying rationale for its inclusion in the Project.

Table 9 - Proposed Stations

Station	Rationale
140 Street	Located in Surrey City Centre and within proximity to mid-rise residential development and community amenities, such as Green Timbers Park, the Surrey Nature Centre, the Jim Pattison Outpatient Care and Surgery Centre, and the RCMP E-Division Headquarters.
152 Street	Located in west Fleetwood with a number of commercial developments nearby, such as: strip malls, gas stations and automobile dealerships. The area is designated as a Regional Frequent Transit Development Area (FTDA) and is a heavily utilized transfer point between existing 152 Street and Fraser Highway transit service.
160 Street	Located in the heart of Fleetwood Town Centre, this area is characterized by mid-density residential development and auto-oriented commercial and retail activity. The area is also served by key community amenities including the Fleetwood Community Centre, Fleetwood Library and Francis Park.
166 Street	Located in east Fleetwood within proximity to a growing density of housing and the Surrey Sports and Leisure Complex. A large office complex for Fortis BC is on the eastern edge of the station walkshed.
184 Street	Located in west Clayton and within proximity to a low-density rural neighborhood characterized by residential properties and farmlands. The area is also served by key community amenities such as the Clayton Hall Community Centre and Clayton Tennis Court. Just east of the station location is the Clayton Crossing Shopping Centre.
190 Street	Located in what currently a green field east of 189 St and Fraser Highway. The area is characterized by mid-density development, with a mix of townhomes and single-family homes.
196 Street	Located near Willowbrook Mall, this area experienced an increase in regional transit demand through a significant population growth and a rapid commercial development during the recent years. The area is also identified as a Transit-Oriented Core area by City of Langley.
203 Street	Located in Langley City Centre in Downtown Langley, the surrounding area is characterized by high-density mixed-use building as identified in the City of Langley Official Community Plan. The area is also identified as a Transit-Oriented Core area by City of Langley.

5.3 OPERATIONS AND MAINTENANCE CENTRE (OMC)

TransLink has indicated that a new OMC is required for the storage and maintenance of vehicles used for the Project. It will be located in an industrial area near the alignment to support the Project's additional operations and maintenance requirements. Similar to the existing OMC near Edmonds Station on the Expo Line, a new OMC will contain yard storage track, inspection and cleaning facilities, service pits, a power substation, and staff facilities. The new OMC will also have perimeter fencing, roadways, and a staff parking area.

The estimated cost of an OMC has been apportioned with an amount related to the Project included in the budget (based on 55 of the 155 vehicles to be using the site).

The Project will contribute a portion of funding towards the OMC, but construction of the OMC itself is not included as part of this Business Case.

5.4 OPERATION AND MAINTENANCE OF THE ASSET

The Project will fully integrate with existing SkyTrain systems and protocols. It will function as part of the Expo Line, which would extend from Waterfront Station to the new terminus station at 203 Street in Langley. Planned headways for the Project will vary as described in Table 10.

Table 10 - Assumed Peak Service Headways (minutes)

Year	Headway (Peak)
2028 (opening)	6-8 min
2035	5-6 min
2050	4-5 min

The BCR calculation conservatively assumes a more frequent service (i.e.: higher costs) at opening day, which is at the lower bound of the 6-8 min range. Future operations and maintenance will be the responsibility of TransLink, who will determine the actual headways on opening day.

6 PROJECT COST ESTIMATE

Table 11 presents the total Project cost estimate (in nominal dollars and including Interest During Construction) which covers design, construction and financing under a Multiple Contract procurement strategy as described in section 8.1. This total Project cost estimate was prepared based on the physical asset scope described in section 5 and detailed through the reference concept design drawings prepared by the Project Team.

Table 11 - Project Capital Cost Estimates

Components in the Capital Cost Estimates ^[1]	Allocation (\$million, nominal dollars)
Contractor's Construction Cost	████
Design and Construction	████
Contractor IDC	██
Transferred Risks	██
Owner's Cost	████
Project Management and Staff Costs, Vehicles, TransLink support, and other costs	██
Property acquisition	██
Advance works	128
Retained Risks and Contingencies	██
Provincial IDC	██
Total Capital Cost	3,939^[1]

[1] Total Capital Cost of \$3,939 million plus planning costs (Operating Expense) of \$11 million, for a total Project related costs of \$3,950 million.

For additional details, please see **Appendix B – Capital Cost Memo**.

6.1 BENEFIT COST ANALYSIS

The tables below outline the Benefit Cost Ratio (BCR) and the Net Present Value (NPV) of the Project. The values shown are relative to the BAU and are based on proceeding under the current project schedule.

For additional details on the assumptions and BCR calculation, see **Appendix C – Economic Analysis Memo**.

Table 12 - Benefit Cost Ratio Analysis

Stream	Account	Present Value in \$2021 Million
(\$million, NPV \$2021)		
Costs	Capital Cost	████
	O & M Cost	██

	Salvage Value	█
	Total Costs	\$3,048
Benefits	Transit Travel Savings	\$ 1,609
	Auto Travel Savings	\$496
	Reliability	\$259
	Wider Economic Benefits	\$254
	Fare Revenue	\$225
	Collision Cost Savings	\$137
	Bus O & M Savings	\$86
	Truck Travel Savings	\$40
	Other Revenue	\$ 8
	GHG Emissions Savings	\$14
	Construction Delay	-\$31
	Total Benefits	\$3,097

Table 13 summarizes the project benefit-cost-ratio and net-present-value. Overall, the Project generates good economic value as indicated by the positive NPV and the BCR exceeding 1.0.

Table 13 - Benefit Cost Ratio and Net Present Value

Lifecycle Economic Indicator	Value
Net Present Value (\$million, NPV \$2021)	\$49
Benefit Cost Ratio	1.02

6.2 PROJECT IMPACT

This section summarizes travel demand-related impacts of the Project, such as line ridership, shift in mode share, line utilisation and improved accessibility to job opportunities.

See **Appendix D – Ridership Memo** for additional information.

6.2.1 Ridership

Figure 13 summarizes the peak hour and daily ridership (weekday) for the Project compared to the BAU limited-stop bus service. Overall, the Project's ridership is forecasted to be five to six times greater than the limited-stop bus service, which reflects the speed, and reliability of the proposed rapid transit extension.

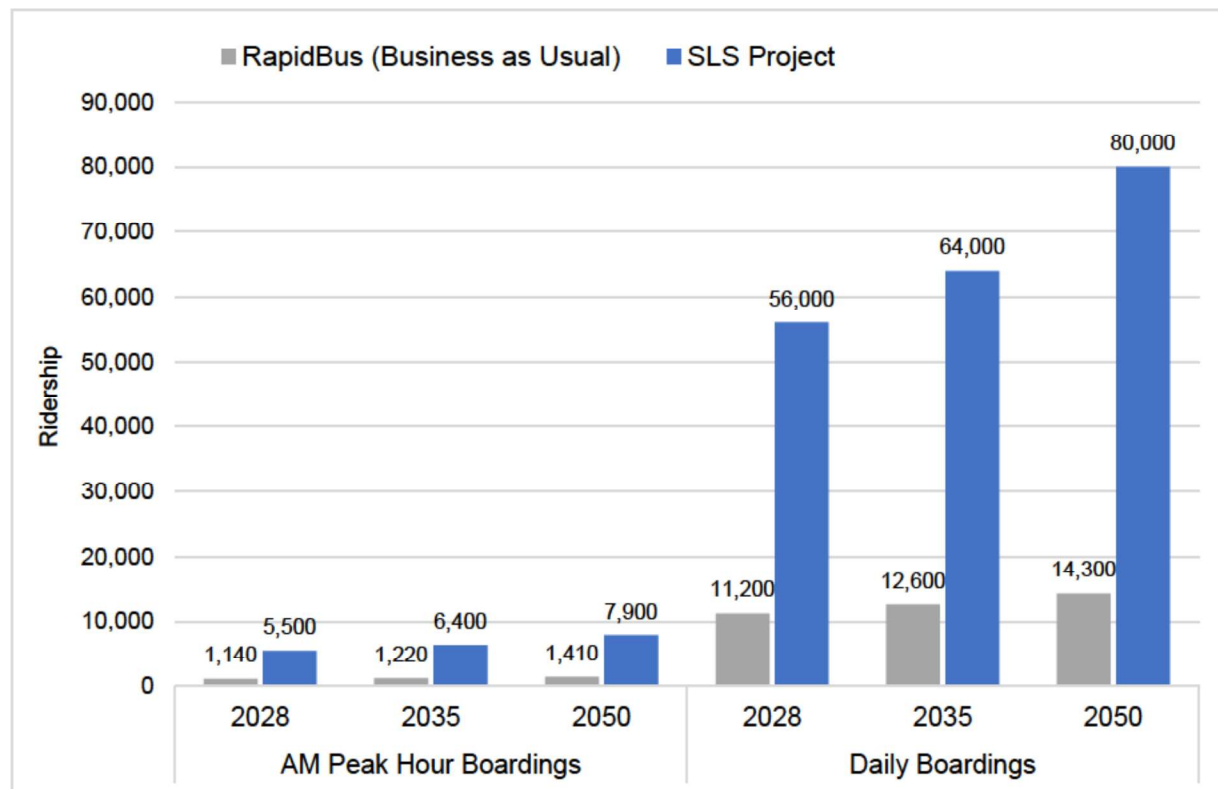


Figure 13 - AM Peak Hour and Daily (Weekday) Project Ridership

6.2.2 Transit Travel Times

Figure 14 compares the forecasted BAU and Project scenario travel times from Fleetwood to key destinations in the region in 2050, while Figure 15 makes the same comparison with Langley Centre as the origin. Overall, the Project improves transit travel times significantly. For people travelling to Surrey or Langley City Centre, transit travel times become comparable, or even faster, to those made by car. A trip from Fleetwood to downtown Vancouver is forecast to be half an hour shorter on the train (63 minutes) compared to auto (90 minutes). Travel times presented include access (walking) to platforms, wait time, and boarding time in addition to time spent on a train.

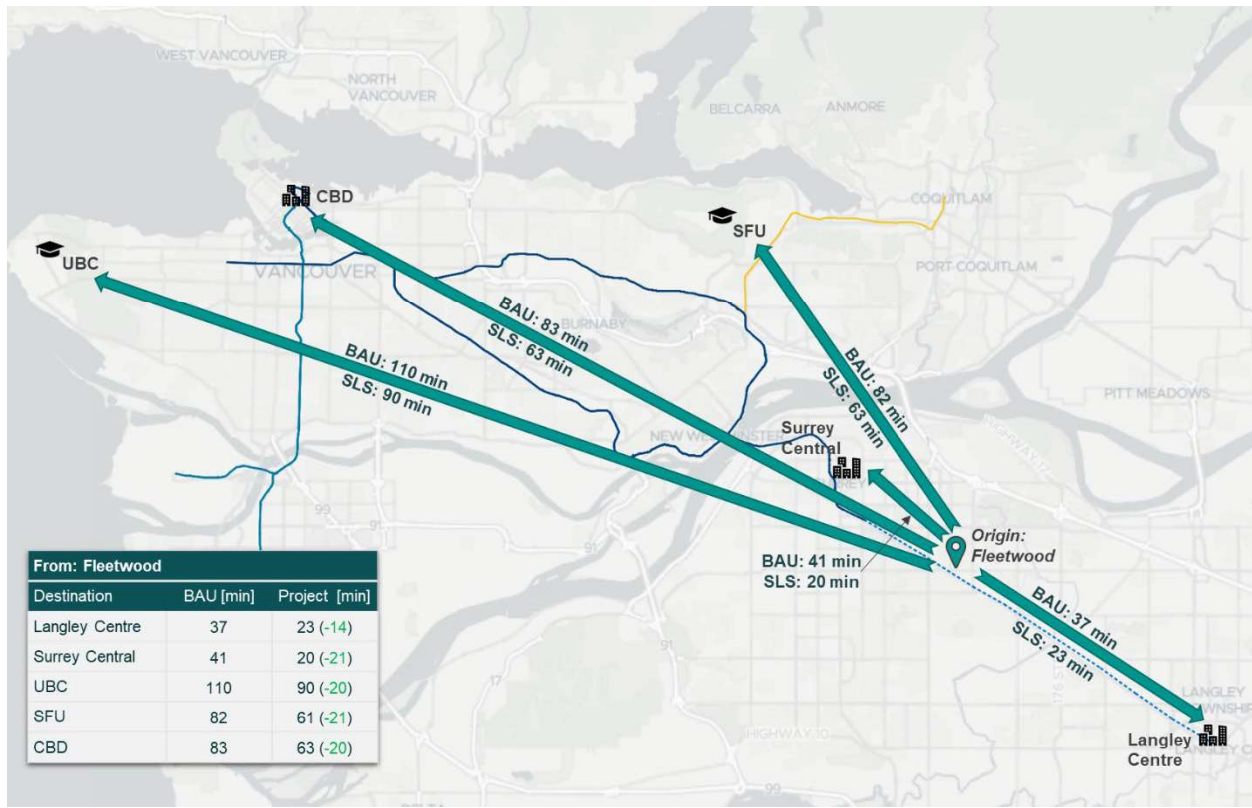


Figure 14 - 2050 Fleetwood Origin Transit Travel Times BAU and Project

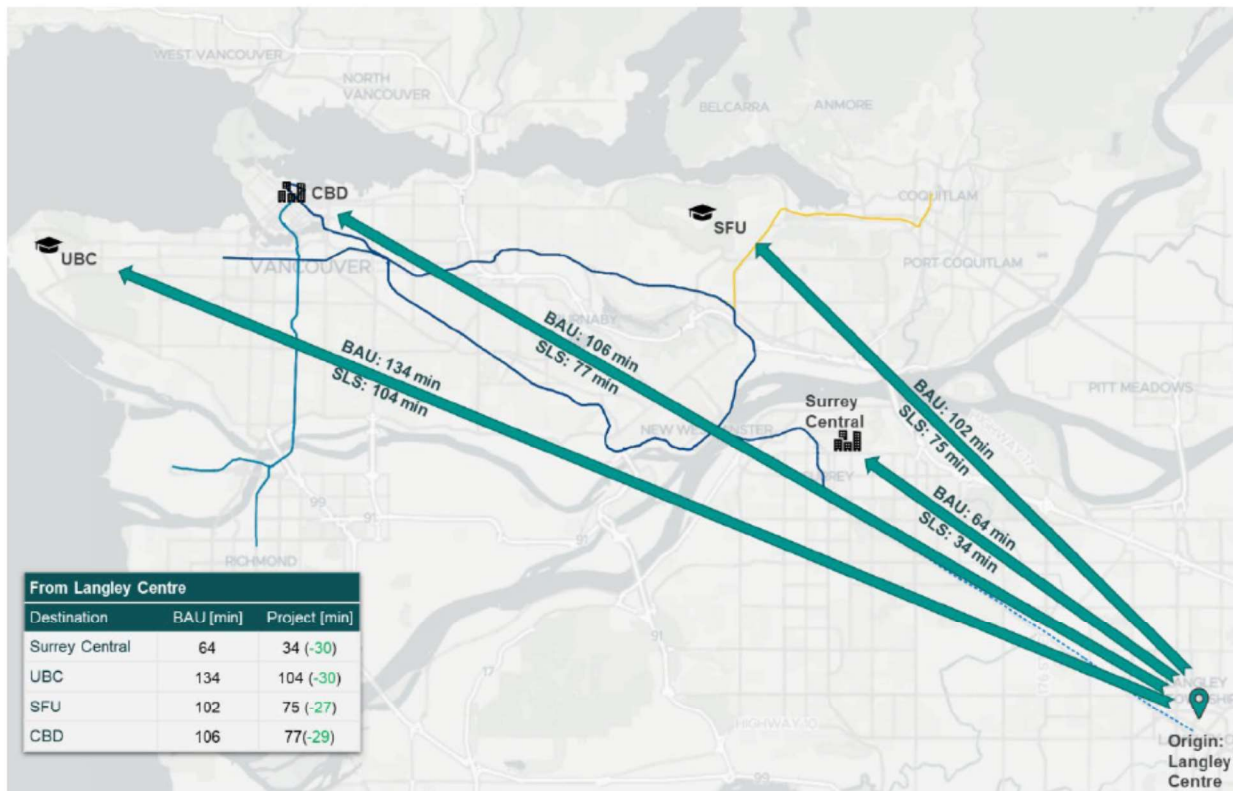


Figure 15 - 2050 Langley Centre Origin Transit Travel Times BAU and Project

6.2.3 Incremental Transit Trips and Reduction in Auto Trips

Table 14 summarizes the daily and annual incremental system-wide transit trips and reduction in auto trips (compared to the BAU scenario). By 2050, approximately 42% of the Project’s ridership (34,000 out of 80,000) will be comprised of trips that shifted from other modes (largely from automobile).

Table 14 - Incremental Transit Trips and Reduction in Auto Trips

Statistic	SLS Project		
	Year 2028	Year 2035	Year 2050
Daily Incremental Transit Trips	22,000	26,000	34,000
Daily Reduction in Auto Trips	20,000	24,000	31,000
Annual Incremental Transit Trips	6,500,000	7,790,000	10,320,000
Annual Reduction in Auto Trips	-6,780,000	-8,080,000	-10,350,000

6.2.4 Transit Mode Share

Table 15 shows a comparison of the BAU and Project transit mode shares for the Three Municipalities. Between opening year (2028) and 2050, the transit mode share is estimated to increase by 0.6% during the AM Peak and by 0.8% daily, largely due to background growth. By 2050, transit mode share is estimated to increase by 1.6% during the morning peak and 1.3% daily in the Project scenario. The

incremental impact of the Project increases over time as the road network becomes more and more congested.

Table 15 - Transit Mode Shares (the Three Municipalities)

Scenario	AM Peak			Daily		
	2028	2035	2050	2028	2035	2050
BAU	9.8%	10.0%	10.4%	7.9%	8.2%	8.7%
SLS Project	11.1%	11.4%	12.0%	9.0%	9.3%	10.0%

6.2.5 Accessibility Opportunities

Figure 16 maps the change in transit accessibility to jobs in 2050 as a result of the Project. The SkyTrain extension provides substantial improvement in transit accessibility for communities in the Three Municipalities, especially for Fleetwood and Langley neighbourhoods where the number of accessible jobs increases by more than 50,000 in some areas.

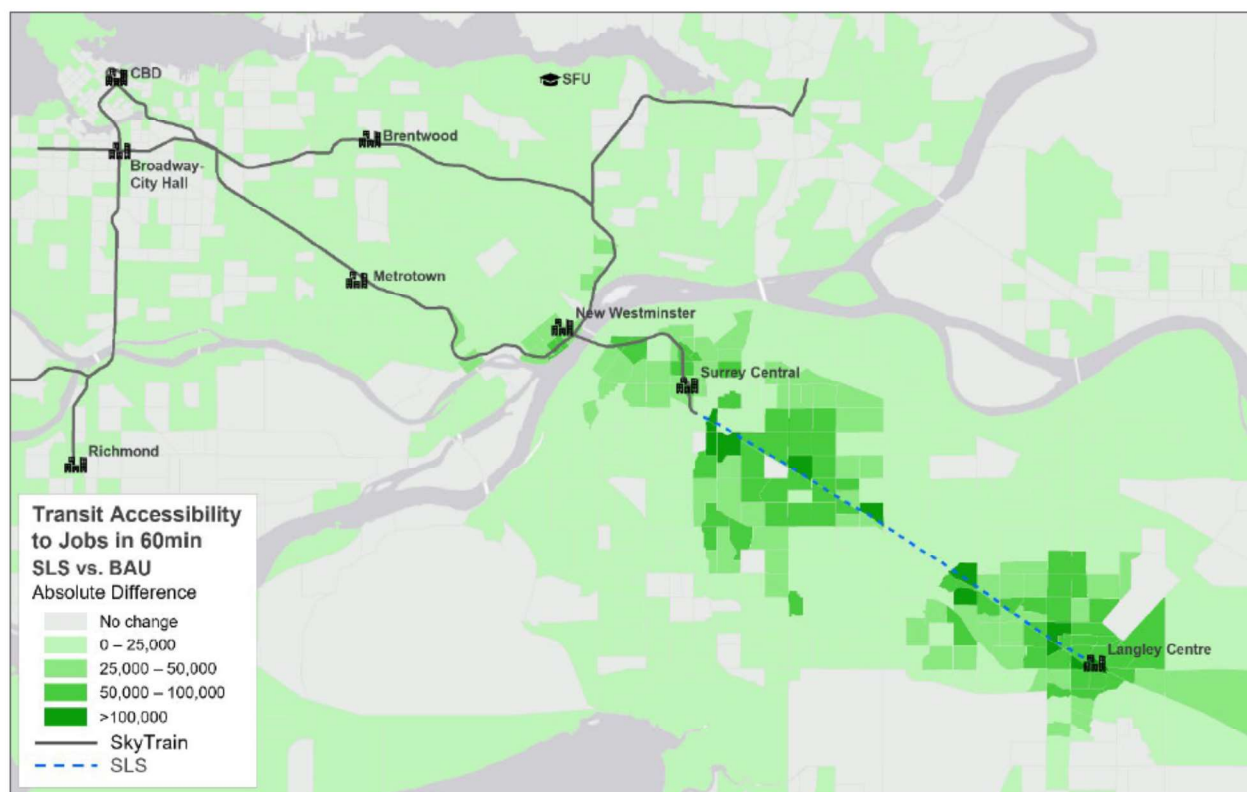


Figure 16 - Change in Transit Accessibility in 2050 – Project Compared to BAU

6.3 PROJECT BENEFIT COST RATIO SENSITIVITY ANALYSIS

Ridership estimates presented in Figure 13 provide a forecast based on informed assumptions and estimates of future demographic, economic, and travel behaviour conditions. Variations in these

assumptions and forecasts are anticipated and will result in uncertainty in the Project's ridership forecasts. To better understand the level of uncertainty, several sensitivity tests have been performed to identify the impact of various input assumptions (both positive and negative) on the Project's BCR calculation. The analysis undertaken is consistent with the sensitivity analysis parameters set in the BC MOTI Benefit Cost Analysis Guidebook¹⁶, which include the assumed discount rate, capital cost, and ridership growth rate. A range for each of these variables was tested with the results of the Project's Benefit Cost Ratio Sensitivity Analysis summarized in Table 16 below.

Table 16 - Sensitive Analysis, Presented in PV \$2021 (\$million)

Stream	Account	Base	Discount Rate		Capital Costs				Ridership Growth	
			-2% (4%)	+2% (8%)	-25%	-10%	+10%	+ 25%	- 0.5%	+ 0.5%
Costs	Construction Cost									
	O & M Cost									
	Salvage Value									
	Total Costs	3,048	3,338	2,786	2,400	2,789	3,307	3,695	3,048	3,048
Benefits	Transit Travel Savings	1,609	2,251	1,177	1,609	1,609	1,609	1,609	1,387	1,867
	Auto Travel Savings	496	704	357	496	496	496	496	388	644
	Reliability	259	372	185	259	259	259	259	193	359
	Wider Economic Benefits	254	359	184	254	254	254	254	205	315
	Fare Revenue	225	314	165	225	225	225	225	198	257
	Collision Cost Savings	137	189	102	137	137	137	137	124	138
	Bus O & M Savings	86	117	64	86	86	86	86	86	86
	Truck Travel Savings	40	56	29	40	40	40	40	31	51
	Other Revenue	8	12	6	8	8	8	8	8	8
	GHG Emissions Savings	14	20	10	14	14	14	14	11	18
	Construction Delay	(31)	(33)	(29)	(31)	(31)	(31)	(31)	(31)	(31)
	Total Benefits	3,097	4,361	2,252	3,097	3,097	3,097	3,097	2,602	3,713
Economic Indicators	BCR	1.02	1.31	0.81	1.29	1.11	0.94	0.84	0.85	1.22
	NPV	49	1,023	(534)	696	308	(210)	(598)	(446)	666

In all of the sensitivity analysis parameters tested, the minimum BCR is 0.83 and the maximum is 1.31. It is important to note the current project evaluation framework and monetization of benefits does not include other non-quantifiable benefits such as health effects, access to jobs and affordable housing for lower income households, increased development, community livability, and other equity impacts. Considering these, the project presents a strong Business Case that will provide a broad range of community and regional benefits.

6.3.1 Additional Uncertainty Analysis

The COVID-19 pandemic is a globally significant event that has negatively impacted public transportation ridership in recent years and has changed the way some people work and learn in the Region today. The change and uncertainty resulting from the COVID-19 pandemic has emphasised that, despite an

¹⁶ https://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/planning/tools/benefit_cost_analysis_guidebook.pdf

understanding of future demand levels and sophisticated forecasting techniques. The future cannot be predicted with absolute certainty. Forecasts of future travel patterns are still largely based on past observed behaviour. As such, the Project has elected to undertake an additional and comprehensive Uncertainty Analysis to generate a range of ridership outcomes based on possible upside and downside factors that could materially impact the Project's ridership forecasts. This includes an analysis to better understand the impacts of potential long-term changes to the Sub-Region's post-COVID-19 travel behaviour, specifically an increase in remote work.

This additional Uncertainty Analysis was supported by TransLink's Forecasting Team, who undertook the majority of the analytical work using the state-of-the-art Exploratory Modelling Analysis Tool (EMAT)¹⁷.

The additional Uncertainty Analysis considers the following four factors¹⁸ that could significantly impact the Project's ridership through to 2050:

- **Work / Learn from Home:** This factor is a legacy impact of the COVID-19 pandemic that considers a permanent increase in working / learning from home. This results in fewer commuting trips on both the road and transit networks across the Region.
- **Commute Length:** Similar to above, this factor is a legacy impact of the COVID-19 pandemic that considers how an increased adoption of remote work can result in some employees being willing to travel longer to work given they only need to commute part of the week. Some people have decided to seek more affordable housing in outlying areas of the Region and will need to commute longer distances to their place of employment.
- **University Employment and Enrolment (Satellite UBC Campus near King George Station):** This factor examines potential impacts of the recent announcement that the University of British Columbia has purchased a parcel of land in Central Surrey with the intention of building a future satellite campus¹⁹. This new campus would have convenient access to the King George station for students, faculty and staff.
- **Increased Corridor Development:** This factor examines potential uncertainty in the level of development along the Corridor and considers both higher and lower levels of development (compared to the baseline) in the study Sub-Region than is currently estimated in existing Land-Use plans. This effect has been observed in regional town centres such as Brentwood, Lougheed and Marine-Gateway, which have all grown more quickly than previous land use plans as a result of rapid transit investment.

The results of the Uncertainty Analysis, when modelling the factors above, indicate the Project's forecasted weekday ridership is expected to range between 64,000 (5th percentile) and 86,000 (95th percentile) in 2050. As previously mentioned, the Project's baseline ridership estimate is 80,000 daily boardings in 2050 (see Figure 13), which falls within the Uncertainty Analysis range (at the 73rd percentile). This demonstrates that even the lower-bound ridership forecast of the Uncertainty Analysis still indicates significant ridership in the year 2050 and supports investment in the Project.

¹⁷ <https://tmip-emat.github.io/>

¹⁸ While other uncertainty factors could influence project outcomes these four were taken to be the most likely given current knowledge

¹⁹ <https://news.ubc.ca/2021/11/02/ubc-expanding-presence-in-surrey-with-70m-land-acquisition/>

7 PROJECT STATUS

7.1 ADVANCE WORKS

In October 2021, \$128 million of advance works were approved to proceed in parallel with the Business Case planning to de-risk certain elements and support the schedule in recognition of the Project's high priority. The advance works include major utility relocation, project investigation and engagement, road widening and property acquisition.

7.2 TECHNICAL

In 2021, work began on updating the Project's Reference Concept Design (RCD). This phase consisted of further refinement of the RCD for delivering the Project through a Consolidated Approach, from the existing King George Station to Langley City Centre. The RCD has developed a conceptual 16-km long alignment, layouts of the eight stations and the three transit exchanges, conceptual relocation plans, road features in discussion with the Three Municipalities along the Corridor, as well as review of the Project's constructability and risks.

In addition, work on the regional transportation model was advanced to provide ridership calculations in support of the development of this Business Case.

7.3 UTILITIES

Discussions have been initiated with BC Hydro, Metro Vancouver, and municipal and utilities agencies to identify potentially impacted utility assets and define the requirements for their relocation and accommodation when applicable.

BC Hydro has been commissioned to start the transmission crossing relocations and the distribution and associated telecom parallel and crossing relocations design. Other utilities relocation and investigation advance works to de-risk the project and allow for more efficient construction of the Project are being planned for completion prior to construction commencement.

7.4 GEOTECHNICAL

Several geotechnical investigations have been completed along the Corridor to characterize the ground conditions and to support the current and previous design activities. Additional boreholes were drilled in 2021 in the ALR, as well as various locations east of the ALR to support the refinement of the RCD. Geotechnical investigations revealed the ground conditions near the ALR and the Corridor approaching the terminus in Langley require more extensive substructures support. Geotechnical design reports have been prepared as part of the RCD to determine the type of conceptual foundation required for the guideway along the corridor.

7.5 ENVIRONMENTAL

The Project's scope of work will not require an Environmental Assessment process. However, the Project has undertaken a voluntary ESR to better understand and mitigate environmental risks and sensitivities. A separate engagement was undertaken with Indigenous Groups under the ESR process.

The Project has sought feedback from residents within the Three Communities about the ESR and the results indicated there is strong support for the process. A vast majority of survey respondents (93%) indicated that the proposed ESR was sufficiently thorough for the Project.

7.6 ARCHAEOLOGY

Archaeological assessments on the Project have been conducted from 2019 to date, and consist of:

- an Archaeological Overview Assessment (AOA), which consisted of a desktop review and preliminary field reconnaissance); and
- a series of field programs to inform an Archaeological Impact Assessment (AIA).

The AOA identified 31 areas of archaeological interest along the Corridor. The AIA field programs were conducted within areas of archaeological interest on land where Project ground disturbance may occur and is accessible to the public, or where the landowner has permitted access. The field programs involved shovel testing and monitoring of geotechnical investigations and daylighting for utility locates.

Between August 17, 2020, and August 4, 2021, 327 subsurface tests took place between King George Station and 166 Street. In December 2021, an additional 187 shovel tests took place within three areas of archaeological interest between 166 Street and 203 Street. Of the areas investigated to date, one newly identified archaeological site, which consists of a low-density lithic scatter (stone tool waste flakes), was recorded.

Additional AIA field assessments will be conducted when access to property has been granted.

7.7 ENGAGEMENT WITH INDIGENOUS GROUPS

The Ministry has a legal duty to consult with Indigenous groups where it proposes to take actions that could impact asserted interests of Indigenous groups. To uphold the Province's commitment to reconciliation with Indigenous groups, the Project has developed its Indigenous engagement approach based on meaningful actions.

TransLink had completed significant engagement with the Indigenous groups for the Project's (then) first stage, up to 166 St. station, before the Province assumed responsibility for the Project. Since spring of 2021, the Ministry has been continuing engagement with Indigenous groups on the entire length of the Project, up to Langley Town Centre.

In June 2021, based on the Province's database, the Project identified 10 Indigenous communities who may be impacted by the Project. The Project sent a referral letter to each community informing them the Project would be delivered in a single phase, that responsibility for the Project has been assumed by the Province and sought feedback and opportunities to meet.

The Project is currently engaging with the following six First Nations, whom the Project occurs within or near to their core asserted traditional territory (and in the case of Tsawwassen First Nation, their recognized territory):

- Katzie First Nation;
- Kwantlen First Nation;
- Matsqui First Nation;
- Musqueam Indian Band;

- Semiahmoo First Nation; and
- Tsawwassen First Nation.

The Project's approach is consistent with TransLink's Indigenous engagement, which began in 2019 up to when the Province assumed responsibility for the Project. TransLink entered Capacity Funding Agreements with all six of the Indigenous groups for the eastern part of the Project (then called Stage 1) and had completed significant engagement. The Project continues to update and share information with all other identified Indigenous groups, including the Seabird Island First Nation and the Shxw'ow'hamel First Nation, as well as the Skawahlook First Nation and the Soowahlie First Nation (via Sto:lo Resource and Research Centre), and the Kwikwetlem First Nation.

The Project's engagement with Indigenous groups includes the following methods and elements:

- Meetings to discuss the Project, listen to/understand views and interests, address questions, and bring technical experts to meetings where necessary;
- Consultation on the Reference Concept Design;
- Capacity Funding Agreements to support engagement and participation in the Project (currently three of the six Indigenous groups have entered Capacity Funding Agreements, with the remaining three Indigenous groups anticipated to sign in spring 2022);
- Engagement in the Environmental Screening Review (ESR) process, which summarizes environmental factors and considerations, and makes recommendations/mitigations for construction; and
- Coordination with the Project Consulting Archaeologist, including provision of opportunities for the six Indigenous groups to participate in archaeology works, sharing of archaeological studies, and providing opportunities for pre-reviews of interim report submissions to the Archaeology Branch.

The Project's current focus is engaging with Indigenous groups on the environmental studies and procurement planning.

7.8 STAKEHOLDER AND PUBLIC ENGAGEMENT

Stakeholder and public engagement is underway. The Province is working closely with communications and engagement staff at the Three Municipalities and TransLink to coordinate efforts on messaging and activities. In January 2022, the Province delivered fulsome Project updates to Mayors and Council and the Three Municipalities at public meetings. The same briefings are being delivered to key stakeholders, such as community groups, business associations, and institutions in advance of a public engagement opportunity in Spring 2022. The Project Team is working closely with the integrated development and active transportation teams to ensure an integrated approach to Project information, including:

- Objectives;
- Project design, including the alignment and stations as well as potential opportunities for active transportation and integrated development;
- Advance works;
- Environmental Screening Review; and
- Indigenous engagement.

Following the completion of the public engagement opportunity, a summary report will outline key features and feedback from the engagement.

The Project has also developed a project website and email inbox to receive public queries and respond accordingly. The tracking of stakeholder interactions is managed through a stakeholder management database system called Jambo.

Stakeholder and public engagement is key to the success of the Project and will continue throughout each phase of Project's delivery.

7.9 LABOUR OBJECTIVES

The Project will be delivered using the Province's Community Benefits Agreement (CBA). The CBA is an agreement to help close BC's skilled trades gap and maximize the local social and economic benefits that come from infrastructure investment.

The CBA was reached between the Allied Infrastructure and Related Construction Council (AIRCC), an alliance of 19 building trades unions, and the Ministry of Finance Crown corporation BC Infrastructure Benefits Inc. (BCIB). Under the CBA, BCIB recruits and employs skilled trades workers and supplies workers to contractors.

Priorities in the CBA include:

- Priority hiring for Indigenous peoples, locals, and workers traditionally underrepresented in the construction trades;
- Growing apprenticeship opportunities and increasing the number of successful trades certifications;
- Cultural safety training for all workers and ongoing support to create safe and respectful jobsites to better recruit and retain underrepresented workers;
- Transparent wages and equal pay for equal work; and
- Building a network of training and upskilling pathways to help British Columbians build a career in construction.

BCIB will lead the recruitment, hiring and co-ordination of skilled labour for the Project and will also manage and process payroll functions and other responsibilities.

7.10 PROPERTY ACQUISITION

A desktop review that evaluates the scope and outlines the approach for acquiring the property required for the Project has been completed. This review was prepared in consideration of conceptual property impacts, which outline the temporary and permanent impacts required along the length of the Corridor. Cost estimates for the property acquisitions and compensation associated with property acquisition have been prepared based on the same assumptions. The scope of the property acquisitions and associated impacts will continue to be reviewed and updated as the design process progresses.

7.11 INTEGRATED DEVELOPMENT

The current RCD has made provisions for future integration with developments surrounding [REDACTED] [REDACTED] which have been identified with development potential for integrated development by the Ministry. Design provisions include entrance reconfiguration to better enhance future accessibility and connectivity to developments as well as potential future connections to station platforms where appropriate.

7.12 ACTIVE TRANSPORTATION

Active transportation opportunities include the provision of dedicated bike lanes, multi-use paths and end-of-trip facilities at stations. The Province will work with the municipalities to ensure Project active transportation elements align with the regional and municipal active transportation plans.

The Province will also support the incorporation of further enhancement of the Project's active transportation elements into regional and municipal active transportation network planning initiatives that are co-funded by the municipalities and TransLink. This will support the Region's active transportation goals and to achieve efficiencies.

PART C: PROCUREMENT

This part of the Business Case presents the analysis and results of the detailed assessment undertaken to determine the optimal approach to procure the Project.

This section concludes that the recommended procurement method for the Project is a Multiple Contracts strategy.

8 PROCUREMENT MODEL OPTIONS

8.1 PROCUREMENT OPTIONS IDENTIFICATION

The procurement analysis begins with identification of the procurement objectives, followed by a review of different procurement options. The goal is to identify the two most relevant options for detailed consideration as a traditional public-sector procurement approach and alternative approach. Objectives and considerations were developed collaboratively with key members of the Project Team, including Transportation Investment Corporation (TI Corp), Ministry of Transportation and Infrastructure, Infrastructure BC, and other advisors.

Recent large, single contract transportation projects have attracted only a small number of competitors, with only two or three multi-national contractors pursuing each project. Market feedback provided by a number of large contractors indicated they have concerns, based on their past experiences, with risk allocation, and their perceived competitive disadvantage relative to large, international contractors. During procurement and implementation, the Province has experienced heightened difficulties in realizing risk transfer, schedule achievement, and gaining access to the depth of available local relevant experience, leading to claims, and resulting in significant negative impact to contractor relations on projects.

As a result of the anticipated limited interest in the Project, two procurement strategies were identified for consideration. The first strategy would be a large, single contract approach (One Contract) and the second would be to break the scope into smaller contracts (Multiple Contracts).

One Contract Strategy

Given the history of procuring similar projects under a single contract in British Columbia, for example, Evergreen Line Project and Broadway Subway Project, this strategy is considered the traditional approach.

Multiple Contracts Strategy

In the Multiple Contracts strategy, the Project would be broken into the following three smaller subprojects based on the technical analysis identified in the Procurement Options Report.

- Contract 1 includes Guideway Substructures and Guideway Superstructures;
- Contract 2 includes Stations & Propulsion Power Substations (PPS); and
- Contract 3 includes Trackwork & Systems components.

The Multiple Contracts strategy provides the Owner with an increased level of influence and involvement. This approach also allows for smaller and/or more specialized contractors to participate in the Project.

Procurement Options

Each of these two strategies was further assessed to select the best procurement option (or procurement model) for each strategy. The detailed assessment of these procurement options is summarized in **Appendix E – Procurement Options Report**.

Based on this assessment, a recommendation was made to further evaluate both strategies using the following procurement options:

- One Contract Strategy:
 - DBF;
- Multiple Contracts Strategy:
 - Contract 1 – DBF;
 - Contract 2 – DB; and
 - Contract 3 – Target Price.

DBF – Similar to the DB model, but with the addition of a portion of private financing, invested early in the construction phase and repaid at one or more completion milestones. Private finance provides a liquid form of performance security and the owner benefits from lenders' due diligence both during procurement and implementation.

DB – A fixed price, performance-based contract with commercial terms based on precedent agreements for projects where financing is not practical, or the risk transfer does not warrant the added security of private financing. The competitive selection process selects up to three qualified proponents to prepare preliminary designs and a price proposal based on a definitive Design Build Agreement (DBA).

Target Price – A collaborative, risk sharing delivery model with commercial terms based on collective responsibility of the Owner and Contractor for full delivery of the Project. The competitive selection process selects up to two proponents to prepare preliminary designs and a target price proposal based on the terms and conditions set out in a project agreement. Rather than fixing price and risk allocation as with a DB contract, a Target Price contract involves costs and risks being shared between the Owner and the contractor, as well as a pre-determined painshare/gainshare mechanism applied in relation to the Target Price.

9 PROCUREMENT OPTIONS ANALYSIS

9.1 ANALYSIS TYPES

The objective of the procurement strategy options analysis is to identify the optimal strategy to procure the Project, given the procurement options identified, in terms of which strategy offers the greatest value on both a qualitative and quantitative basis. The methodologies, process and results of the procurement strategy options analysis undertaken for the Project are presented in this section.

The shortlisted procurement strategies described above were analyzed and contrasted using both quantitative and qualitative assessment techniques. Under the Multiple Contracts strategy, the analysis of

all three procurement options were taken together and then compared to the One Contract strategy. The comparative analyses included the following:

9.1.1 Qualitative Analysis

- **Market Sounding** – This activity includes a series of interviews held with contractors chosen based on their previous involvement with various relevant transportation project procurements in Canada and internationally. An abbreviated summary of the market sounding process and results is found in section 9.7.1; and
- **Multiple Criteria Analysis** – A qualitative evaluation method that compares the relative merits of each strategy in terms of how well the strategy meets the procurement objectives of the Project and provides value to taxpayers. This process is summarized in section 9.3.

9.1.2 Quantitative Analysis

- **Financial Modelling** – With inputs including the quantified risks, project financing assumptions, timing assumptions and project costs, a financial model is developed to simulate how a potential contractor would be expected to price their submission under each procurement strategy. The financial modelling allows for differences in timing and costs associated with each strategy to be evaluated and compared. Key financial modelling assumptions are summarized in section 9.5.2; and
- **Risk Analysis** – A comprehensive list of risks is identified for each phase of the Project. For procurement strategy options analysis, a select subset of these risks is quantified for each of the procurement strategies, highlighting the differences in value and allocation of risk inherent in each approach. This subset of risk is an input to the financial modelling for comparative analysis and assists in determining an appropriate overall contingency for delivery of the Project. A summary of the “Risk Report” for the Project is provided in section 9.4.5;
- **Value for Money (VFM) Calculation** – The value for taxpayers’ dollars is estimated by comparing the nominal cost for the Project under the traditional strategy versus the alternative strategy. This calculation and results are set out in section 9.6.

9.2 PROCUREMENT OBJECTIVES

The procurement strategy should support the effective implementation of the Project. The procurement objectives identified by the Project Team were developed based on precedent transportation projects in the province, the Project goals and objectives, and the specific needs of the Project. The procurement objectives for the Project are described below:

1. **Timely project delivery:** The Project is delivered within a specific time frame.
2. **Cost-effective implementation (design and construction) & attainable within fiscal constraints:** Provides a cost-effective method to deliver the Project within the approved budget.
3. **Allocate key risks to the party best able to manage and mitigate them:** Ensure key risks are allocated in the most cost-effective way to the party that is best suited to manage them.
4. **Owner’s Level of Involvement and Ability to Influence:** Support the Owner’s corporate goal to build internal capacity for delivery of major projects.
5. **Ensure strong competition providing innovation and efficient approaches:** The procurement strategy should consider an approach that optimizes competitive tension, providing innovation, and best value.

6. **Minimizing disruption to the operation of the existing rapid transit (RT) network:** Ensure integration of the RT network expansion has the least impact to the current and future British Columbia Rapid Transit Company (BCRTC) operations.

9.3 MULTIPLE CRITERIA ANALYSIS

The Multiple Criteria Analysis (MCA) approach is a qualitative assessment that evaluates how well each procurement option, and ultimately each strategy, meets the procurement objectives based on the scoring framework below. The following scoring framework, presented in Table 17, was used to indicate the absolute and relative merits of each procurement option in relation to each criterion.

Table 17 - Qualitative Assessment Scoring Framework

Scale	Description
✓	Partially effective in satisfying the criteria.
✓✓	Substantially effective in satisfying the criteria.
✓✓✓	Fully effective in satisfying the criteria.

The procurement strategy and options assessment summary is reflected in Table 18.

Table 18 - Qualitative Assessment Summary

Assessment Criteria	One Contract	Multiple Contracts		
	DBF	Contract 1 DBF	Contract 2 DB	Contract 3 Target Price
Timely project delivery	✓✓✓	✓✓✓	✓✓	✓✓
Cost effective implementation (design and construction) & attainable within fiscal constraints	✓✓✓	✓✓✓	✓✓	✓✓
Allocate key risks to the party best able to manage and mitigate them	✓✓	✓✓✓	✓✓	✓✓
Owner's Level of Involvement and Ability to Influence	✓	✓✓	✓✓	✓✓
Ensure strong competition providing innovation and efficient approaches	✓	✓✓✓	✓✓✓	✓✓

	One Contract	Multiple Contracts		
Assessment Criteria	DBF	Contract 1 DBF	Contract 2 DB	Contract 3 Target Price
Minimizing disruption to the operation of the existing rapid transit (RT) network	✓✓	✓✓	✓✓	✓✓

The One Contract strategy scored slightly better in the Timely project delivery and Cost-effective implementation categories. The cost and schedule risk transfer are more effective for the DBF option due to commitments to financiers, with the contractor liable for incremental interest costs associated with late delivery. The Multiple Contracts strategy scored more favourably in Risk allocation, Owner's involvement, and Strong Competition categories. The market sounding confirmed that breaking a project into Multiple Contracts should attract significantly more interest and allow the Owner to be more involved in day-to-day decisions.

9.4 RISK ANALYSIS

Project risk is defined as the chance of an event or condition happening which could cause the actual project circumstances to differ from those assumed when forecasting project outcomes or objectives. Risk is an inherent part of any project, and to ensure a successful project outcome, risk must be effectively managed. The identification, allocation, measurement, and treatment each form a key part in the quantification of project risks. The goal is to identify and allocate project risks to the party best able to manage them. An efficient or optimal allocation of risk between the Province and the contractor(s) on this basis will ultimately provide the best value.

The following subsections summarize the process and results of the risk analysis and quantification undertaken for the Project. A comprehensive risk report and a risk matrix and quantification are attached in the **Appendix F – Project Risk Report**

9.4.1 Risk Approach and Methodology

The Project Team undertook a comprehensive assessment of risks specific to the Project. This assessment was conducted in accordance with the Province's risk management guidance developed in conjunction with the Province's Risk Management Branch (RMB) of the Ministry of Finance. These guidelines are generally consistent with the principles, framework and process described in the ISO 31000:2009 Risk Management Principles and Guidelines.

This risk management guidance takes a systematic approach to risk, estimating the range of potential impacts on a risk-by-risk basis through the planning, procurement, design and construction, and operating phases of the Project. As stated in section 5.4, the operations and maintenance of the Project will be conducted by TransLink and are therefore not included as part of the risk analysis process. Risk analysis is dynamic and should be revisited throughout the lifecycle of the Project.

9.4.2 Risk Identification and Allocation

The risk assessment process began with the identification of potential material risks and consequences that could impact the Project during its life cycle. This was completed through a series of risk workshops involving members of the Project Team and a variety of subject matter experts. The identified risks were then categorized into either capital or procurement risks depending on when they were expected to occur.

Subsequently, each identified risk was evaluated to determine which party (the Owner or the contractor) would be responsible under each procurement option. From the perspective of the Province, a risk can be retained, shared, or transferred to the contractor. Each specific risk is viewed through the lens of which party is best able to manage or mitigate the risk. This allocation was completed for both the One Contract and the Multiple Contracts strategies.

9.4.3 Quantified Risks

During risk quantification, selected risks are valued to ensure sufficient risk reserve is included in the total budget for the Project. This risk adjustment included within the budget must account for both transferred risks, which the contractor will include within its competitive financial proposal, and retained risks, which will form part of the Province's project reserve. If a risk is transferred, it is quantified from the perspective of the contractor and what the Project Team estimates would be included in a reasonable and competitive financial proposal. If a risk is retained, it is quantified from the perspective of the Province and the cost impact the risk would have on the budget of the Project. Risk estimates are made assuming potential mitigation measures have been applied (i.e., post-mitigation), and cost estimates take into account the cost of these measures.

Risks were selected for quantification based on:

- Differences in quantified value amongst procurement options;
- Materiality;
- Ability to quantify;
- Risk rating; and
- Consideration of precedent projects.

For each of the risks identified, best, worst, and most likely outcomes should each risk materialize, were estimated to produce an expected value for each quantified risk. Once the expected values were calculated, these impacts were then grouped by the phase in which they are likely to occur (procurement, design/construction, or operations) and ultimately incorporated into the financial analysis as described below.

9.4.4 Incorporation into Financial Analysis

For each procurement strategy, an amount of transferred and retained risk was added as a cost item to the financial model as a contractor or Project Owner's cost. In this analysis, the 67th percentile of total risk was added to the model to reflect a prudent level of risk aversion given the stage of Project planning and number of unknowns related to the Project. Selecting the 67th percentile is equivalent to saying that the Project has sufficient risk money included in the budget approximately two of out every three times.

9.4.5 Summary of Risk Analysis Results

The results of the risk analysis are provided in Table 19, which presents the probabilistic values for the selected key risks under both delivery models.

Table 19 - Summary of Risk Values (at 67th percentile)

Financial Model Risk (Capital Period) (\$million, nominal dollars)	One Contract	Multiple Contracts
Value of Transferred Risk included in the private sector's cost	■	■
Value of Retained Risk held by the Province	■	■
Total	■	■

The Multiple Contracts strategy has a lower level of quantified risk relative to the One Contract strategy. Both One Contract and Multiple Contracts strategies include some private finance at-risk which incentivises schedule and performance of the contractor. In the One Contract approach, the prime contractor manages the interfacing across sub-contracts and the financing incentivizes the contractor to complete the project on time. In the Multiple Contract strategy, the financing incentivizes the Contract 1 contractor, and the Owner manages the remaining contractors and integration across contracts. In the Multiple Contract strategy, the Owner is retaining more of the integration risk.

9.5 FINANCIAL MODELLING

9.5.1 Quantitative Methodology

The value for money (VFM) analysis involves a detailed quantitative analysis that compares the risk-adjusted costs of the Project under each of the procurement strategies being analyzed. The VFM methodology involves selecting a base case scenario (the One Contract procurement strategy) and layering on costs that differentiate between the other scenario(s) (the Multiple Contracts procurement strategy) to ascertain the relative costs of each as compared to the base case. The analysis provides a means of comparison but is not intended to provide a basis for building a project budget. The project budget, which includes scenario-specific risk values, should be developed independently of the VFM analysis.

Value for money is expressed quantitatively as the difference in the nominal, risk-adjusted Project costs between two options.

The financial modelling methodology is summarized in Figure 17 - Overview of VFM Approach.

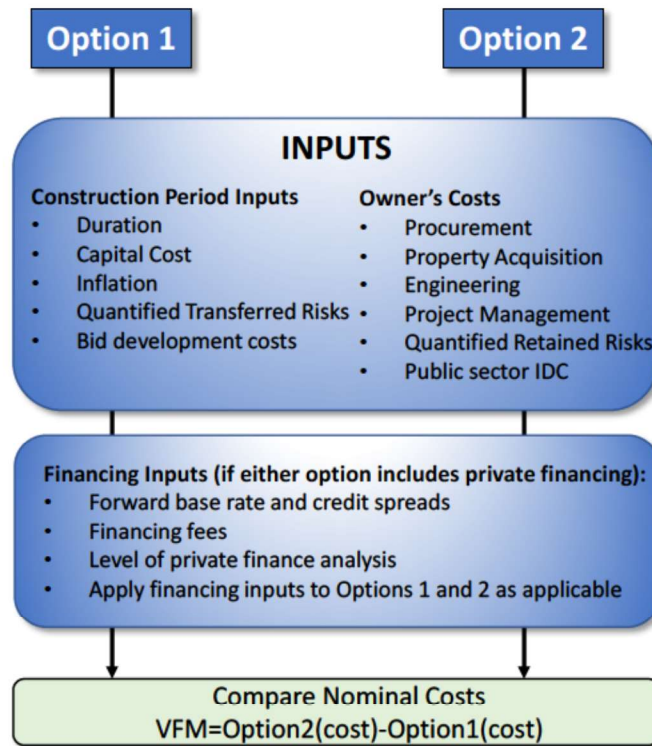


Figure 17 - Overview of VFM Approach

The nominal costs of both public sector financing and private finance are included in the cost of the Project. The base rate, spreads and fees used to calculate these costs were provided on a forward-looking basis.

The VFM analysis also involved a comprehensive risk analysis, as described in section 9.4. Risk-adjusted cash flow models were prepared for the One Contract and Multiple Contracts options. In addition, the Province's costs, including project management, were estimated for each procurement strategy. Both strategies are required to be delivered to the same specifications and performance expectations.

The results of these quantitative comparisons, together with the qualitative criteria, are considered when recommending the procurement method that provides the best overall value for money.

9.5.2 Project Financial Assumptions

In addition to the costing assumptions described in Section 6, the following presents Financial Assumptions that have been used to develop both options.

Table 20 - Summary of Financial Assumptions

Assumption	
Private Financing Assumptions	
Debt/Equity Ratio*	100:0

Assumption	
Timing of Private Finance	Private finance is injected at a 90:10 ratio with public finance, until the cumulative amount of private finance is 20% of the total capital costs, at which time the project funding becomes 100% public.
Total Amount of Private Finance	20% of contract value
Private Sector Debt Type and Amount	
Type	Construction Bank Debt
Base Interest Rate	1.95%
Interest Rate Spread	150 bps
Swap Credit Spread	Included in interest rate spread
All-in rate	3.45%
Arrangement Fee	2.00%
Commitment Fee	0.45% (30% of credit spread)
Public Sector Borrowing Interest Rate	1.93% FY2022, 2.39% FY2023, 2.75% FY 2024, 2.92% FY 2025, 2.96% FY 2026 onwards

* Equity is not anticipated in the DBF.

GST is not included in the capital cost estimate and the financial model does not consider GST movements since it is a working capital item and the value is immaterial to the analysis (for purchases, GST is paid on items and is subsequently refunded; for billings, GST is collected and then remitted).

This section identifies the key financing assumptions included in the financial model. The DBF procurement options assume that the private sector will finance 20 percent of the capital costs during the construction period.

For the One Contract option the design and construction cost is [REDACTED] and the [REDACTED] in private finance is invested largely upfront to provide sufficient security in the form of unfunded value in the ground in the event construction challenges are encountered prior to substantial completion. The [REDACTED] is fully repaid once the Project has achieved final completion. Private financing drawn and utilized ahead of public sector contributions provides adequate protection for construction period risks, based upon the analysis of significant risks.

For Contract 1, the DBF portion of the Multiple Contracts strategy, the design and construction cost is [REDACTED] and [REDACTED] in private finance is invested upfront.

For more information on risks, project security and the amount and timing of private finance, please see **Appendix G – Level of Private Finance Memo.**

9.5.3 Capital Costs

Table 21 presents the estimated capital costs of the Project, including planning, construction, and private financing, in the order of \$3,951 million under the One Contract and \$3,939 million for the Multiple Contracts.

The construction period is 51 months for One Contract and 57 months for Multiple Contracts. The Project cost breakdown is as follows:

Table 21 - SLS Project Capital Costs

Project Budget (\$million, nominal dollars)	One Contract	Multiple Contracts
Costs paid to Project Co (No IDC)	█	█
Contractor IDC	█	█
Retained Risk	█	█
Property ^[1]	█	█
Vehicles	█	█
TransLink Support Agreement Costs	█	█
Advanced Works ^[1]	128	128
Other Owner's Costs	█	█
Provincial IDC	█	█
Total Capital Cost^[2]	3,951	3,939

[1] Funding for the advance works (including a portion of the other Owner's costs) has already been approved and includes █ of property acquisition.

[2] Total Capital Cost of \$3,939 million plus planning costs (Operating Expense) of \$11 million, for total Project related costs of \$3,950 million

9.5.4 Construction Inflation

Construction inflation accounts for the fluctuations in the prices of labour, equipment, and materials during the period from the date of RFP submission through the Implementation period. The rate of inflation per annum is outlined in Table 22. These rates are taken into account in the Financial Model Assumptions.

Table 22 - Construction Inflation Rates

Construction Inflation (annual)	
Year	Rate
2022	2.50%
2023	2.80%
2024	3.00%
2025	3.00%
2026	3.50%
2027	3.50%

2028	3.50%
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9.6 VALUE FOR MONEY CALCULATION

The different timing, risk and financing cost assumptions of each procurement model were compared on a nominal basis. The results of the VFM assessment are summarized in Table 23.

Table 23 - Value for Money Comparison

Value for Money Comparison (\$million, nominal dollars)	One Contract	Multiple Contracts
Total Construction Cost		
Progress Payments		
Substantial Completion Payment		
Total Owner's Costs		
Retained Construction Period Risk		
Additional Contingency		
Owner's Costs (ex IDC)		
Provincial IDC		
Total Cost	3,951	3,939
	Value for Money (\$)	12
	Value for Money (%)	0.29%

[1] Total Capital Cost of \$3,939 million plus planning costs (Operating Expense) of \$11 million, for total Project related costs of \$3,950 million.

9.6.1 Value for Money – Sensitivity Analysis

To assess the value for money's sensitivity to the interest rate, the financial model was re-run for the increase and decrease of the interest rate by one per cent, as presented in Table 24.

Table 24 - Interest Rates Used in VFM Sensitivity Analysis

Interest Rate Sensitivity (\$million, nominal dollars)	Value for Money
+1% to Project Co / Provincial Interest Rate	8.6
Base Project Co / Provincial Interest Rate	11.6
-1% to Project Co / Provincial Interest Rate	13.5

To assess the value for money's sensitivity to construction escalation, the financial model was re-run for the increase and decrease of the construction escalation rate by one per cent, as presented Table 25.

Table 25 - Construction Escalation Used in VFM Sensitivity Analysis

Construction Escalation Sensitivity (\$million, nominal dollars)	Value for Money
+1% to Construction Escalation	8.0
Base Construction Escalation	11.6
-1% to Construction Escalation	14.9

9.6.1.1 VFM Updating

In accordance with Infrastructure BC practice and as demonstrated on various past projects, the Project Team will undertake a new capital cost estimate, risk assessment and VFM refresh whenever new information is available regarding the scope, design, stakeholders, funding and risks associated with the Project. The following are points in time that a VFM refresh is recommended:

- Prior to issuance of procurement documents using new information derived from development and advance work that will be obtained prior to procurement as discussed in previous sections of this report;
- Once a preferred proponent has been selected, considering the proponent's technical and financial proposals as well as any preliminary comments they may have provided on the draft Project Agreement;
- Immediately after contract execution based on the signed contract and finalized price for the Project; and
- At the completion of the competitive selection process, a report may be produced describing the selection process, the outcome and the final VFM results. As with Infrastructure BC standard practice, this report will be available to the public on the Infrastructure BC website.

9.7 MARKET SOUNDING

Market sounding is a structured interaction with market participants, undertaken during the planning stages of the Project, to both generate interest and gather specific feedback on Project attributes and proposed contracting strategy and methodology. Market sounding for the Project was undertaken from October to December 2021. During this period, the market sounding occurred in two segments. The first involved a discussion of the entire Project. The second focused on meeting with Participants with expertise pertinent to the Systems and Trackwork component of the Project. The market sounding methodology is described in greater detail in **Appendix H – Market Sounding Report**.

9.7.1 Market Sounding Findings

A series of market sounding interviews was undertaken with market sounding participants by Infrastructure BC, the Province, and BCIB. The objectives of the market sounding exercise were to:

- Provide information about the Project to the market and raise market awareness and interest; and
- Obtain market feedback in procurement matters including:

- Market interest and capacity,
- Procurement models,
- Key procurement-related challenges,
- Competing projects,
- Project schedule,
- Bonding and financial capacity, and
- Community Benefits.

Comments and feedback provided by market sounding participants were generally positive and supportive of the Project as envisioned by the Project Team. The market sounding confirmed that the design and construction portion of the Project is considerable and creates capacity problems in the construction market where only large multinational companies would be capable to respond and lead the Project. Due to the nature of the project scope, it will require multiple specialized contractors to come together to deliver the Project. Through market soundings, contract options and procurement models considered in this report were discussed with key market participants including national and multi-national contractors, as well as specialised contractors. The indication from the market is that different aspects of the Project would interest different groups of contractors. The reduced size of the individual projects would also allow mid-size contractors to pursue the opportunities.

Some participants that are unable to pursue fixed price contracts welcomed the opportunity of the collaborative model for Contract 3 (Trackwork and Systems).

Furthermore, market participants provided valuable feedback that will be considered to further the development of documentation and processes related the Project. Feedback received included views on potential procurement models, honorarium size, risk allocation between Province and the contractor(s) awarded the contract(s), and potential interface requirements between packages for the Multiple Contract strategy.

The results of the two market soundings for the entire Project and the Systems and Trackwork component (of the Multiple Contract strategy), are summarized in **Appendix H – Market Sounding Report**. This summary includes discussion of issues that will be considered during preparation for procurement and contracting.

9.8 DUE DILIGENCE

The Due Diligence Advisors (DDA) team was comprised of three members with expertise on major projects in both planning and design and construction areas. The DDA members, have been engaged to provide an independent review.

From January to March 2022, DDA provided independent input to the review of the Multiple Contracts strategy, specifically the following:

- Structure (# and type of contracts)
 - Contract 1 (DBF) – Substructure and superstructure
 - Contract 2 (DB) – Stations and PPS
 - Contract 3 (Target price) – Systems and trackwork
- Schedule – procurement and construction phasing and durations
- Procurement options analysis for Multiple Contract strategy including the risk assessment and quantification

The purpose of the due diligence review was to ensure that the need for investment, as well as the procurement recommendation were supported by a rigorous review. The review concluded that the approach implemented by the Project Team to develop the procurement recommendation and risk analysis is in accordance with Capital Asset Management Framework methodology.

9.9 RECOMMENDED PROCUREMENT MODEL

Based on the analysis, the Multiple Contracts Strategy procurement model is recommended for the Project as it was deemed more efficient by:

- Managing and mitigating key project risks;
- Maximizing competition, providing innovation and efficiencies; and
- Increasing the Owner’s level of involvement and influence.

9.10 AFFORDABILITY CEILING

The Provincial Affordability Ceiling is calculated as the nominal value equal to the total Project costs including the cost of private finance and the notional cost of public financing. The Affordability ceiling in nominal dollars totals [REDACTED] and meets affordability requirements.

Table 26 - Affordability Ceiling

Contract	Affordability Ceiling (\$million, nominal dollars)
Contract 1 - Guideways	[REDACTED]
Contract 2 - Stations	[REDACTED]
Contract 3 - Systems	[REDACTED]
Total	[REDACTED]

PART D: IMPLEMENTATION PLAN AND FUNDING ANALYSIS

This section describes the plan to execute the procurement and implementation of the of the Project, including the governance structure and details on the Project’s funding.

10 PROJECT DELIVERY STRUCTURE

The Project will be delivered by TI Corp on behalf of the Ministry. TI Corp is a wholly owned subsidiary of the BC Transportation Financing Authority (BCTFA), the Provincial owner of the transportation assets, with a mandate to:

- Provide cost effective and flexible delivery for assigned major projects;
- Apply strong and consistent risk management, project and financial processes and control; and
- Be accountable and report out to the BCTFA as the owner of the assigned project.

The relationship between BCTFA, the Ministry, and TI Corp is managed through the Master Major Project Delivery Agreement, and delivery directives are issued for TI Corp to deliver specific projects. This delivery directive specifies key project parameters, including budget, completion date and key scope items, which are defined by the Project’s Business Case.

10.1 PROJECT GOVERNANCE

The Project will be delivered by TI Corp as an assigned project from the Ministry and BCTFA. The TI Corp Board will be accountable for delivery within the approved project parameters for this work. It is envisaged that some Ministry staff will support the work. The Executive Project Director for TI Corp will be responsible for providing regular status reporting to the TI Corp Board and Project Steering Committee. A high-level governance structure for the Project is shown in Figure 18.

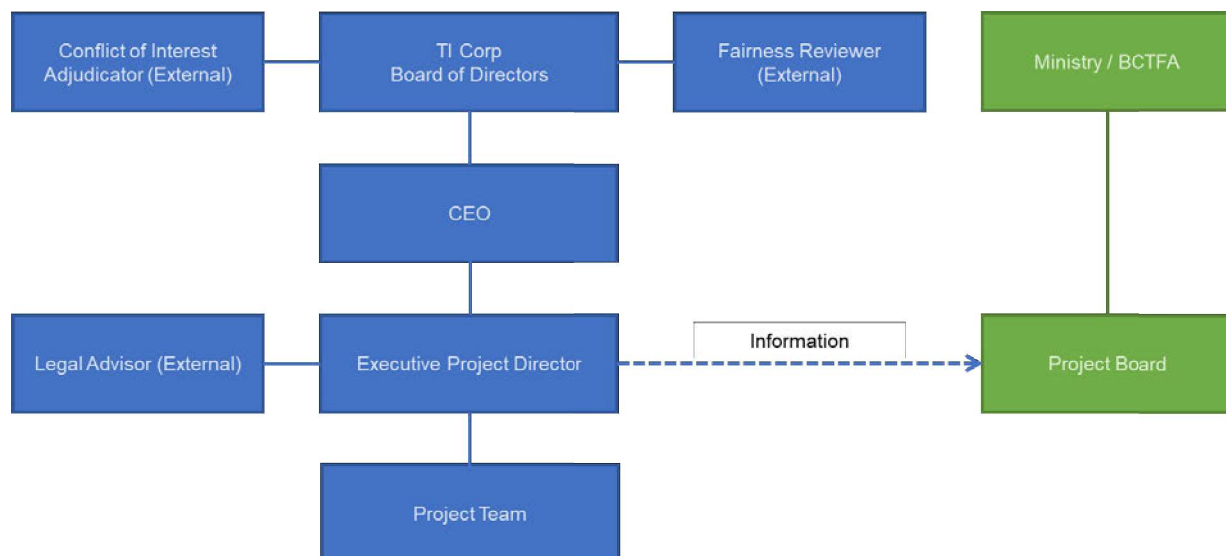


Figure 18 - Project Governance Structure

10.2 RECOMMENDED PROCUREMENT PROCESS

10.2.1 Request for Qualification (RFQ)

The RFQ is the first phase of the competitive selection process. RFQ respondents are expected to demonstrate their experience, qualifications, capacity and capability to undertake the Project. They are evaluated on their experience and technical capability in design, construction, project management, quality management, environmental management, and communications management. Based on this evaluation, a shortlist of up to three respondents will be invited to participate as proponents in the RFP phase of the selection process.

10.2.2 Request for Proposals (RFP)

For Contract 1 (DBF) and Contract 2 (DB) the second stage of the procurement process is the RFP. The RFP package includes a detailed description of the Project, a draft contract, proposal submission requirements and details relating to how the proposals will be evaluated. The Project Team anticipates implementing an interactive, two-stage RFP evaluation process such that proponents submit a technical proposal, which is evaluated based on the Province's stated performance requirements set out in a draft contract, in advance of their financial proposal. All proponents submitting technical proposals satisfying the RFP requirements will be invited to submit a financial proposal including a fixed price for the proposed solution.

For Contract 3 (Target Price), the proponents will submit a technical proposal, followed by a target price for the proposed solution. The Target Price contract will detail requirements for open book cost reporting, accompanied by a painshare/gainshare mechanism designed to incentivize the proponents to develop a sound price proposal.

Throughout each of these procurement processes, a Fairness Reviewer will be retained to monitor the selection process and provide a written report at the conclusion.

10.2.2.1 Request for Proposals Alternative Evaluation

For this Project, the Owner is developing an evaluation process that includes qualitative elements that support key objectives of the procurement, in addition to evaluating the comparative pricing of the proposals relative to the affordability requirement. Competitive pricing is expected to account for up to one third of the points, technical items bearing the majority of points, and a smaller portion of the total points attributed to strategies for Indigenous engagements.

The major benefit of this approach is to maintain pricing competition while allowing the Owner to select contractors on the basis of other key priorities, identified in the procurement, to improve the opportunity for selecting the best overall contractor and proposal for a particular contract.

10.3 PROJECT SCHEDULE

Figure 19 illustrates the anticipated procurement and design and construction periods for the Project, assuming a Multiple Contract procurement strategy. This schedule assumes Treasury Board approval to proceed is received by mid-2022.

Key assumptions listed below:

- RFQ issuance for the Contract 1 DBF is planned for mid-2022, immediately following the Treasury Board approval, and with a proponent shortlist expected by the end of 2022.

- The RFP for the Contract 1 DBF is planned for issuance in late 2022/early 2023, with a preferred proponent selected and the first contract awarded by late 2023.
- The procurement of the other contract packages will follow progressively, with consideration of the design and construction interface between each contract.
- Based on the current schedule, it is anticipated that construction works will begin in 2024, with target opening scheduled by fall 2028.

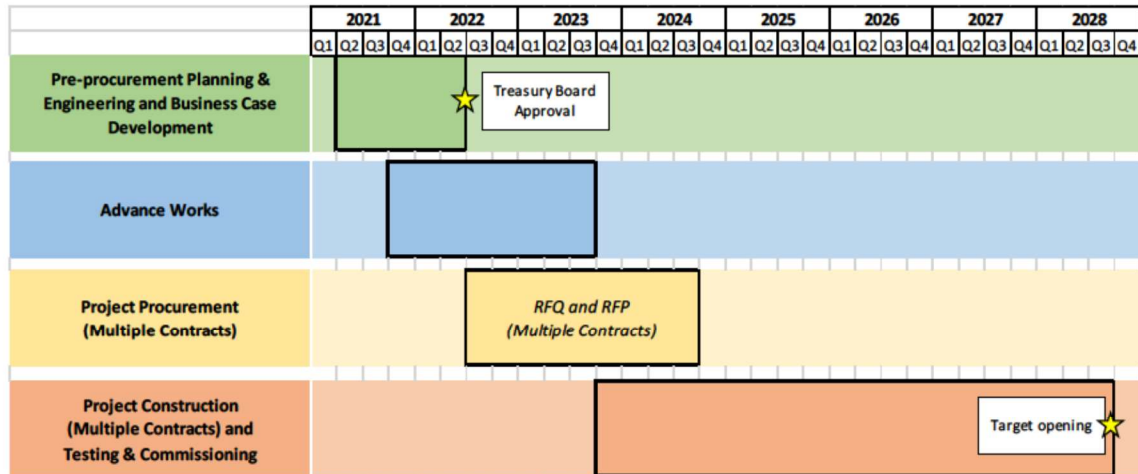


Figure 19 - Project Schedule

10.4 INDIGENOUS GROUPS ENGAGEMENT

The approach to Indigenous engagement was to build on TransLink’s engagement while also ensuring the Indigenous relations approach is consistent across other major projects. There are opportunities for improving efficiencies when Indigenous groups are engaged in multiple major projects simultaneously.

The Project has offered Capacity Support Agreements to each of the six Indigenous groups with whom the Project is engaging on a deep level to support their participation in the engagement process and has regularly occurring meetings regarding the Project. As noted in section 7.6, Indigenous groups have reviewed the Reference Concept Design, the draft ESR report, and the draft interim Archaeological Impact Assessment reports to help determine the Project’s impacts on their interests and explore options for mitigation (where possible), and/or accommodation through project opportunities.

Key elements of the engagement through Project delivery include ongoing engagement by the Project and establishing relationships with its design and construction partners (the Contractor). The Contractor will be required to meet all the Indigenous requirements as per Section 12 Indigenous Requirements in the Project Agreement. These requirements will likely include the development of an Indigenous Participation Plan, delivering minimum Indigenous contracting, employment, and training opportunities, and delivering cultural recognition opportunities. Finally, the Project will engage with Indigenous groups on the application of a labour agreement.

10.5 STAKEHOLDER AND PUBLIC ENGAGEMENT

A communications and engagement plan will be developed for the procurement and construction phases of the Project. The plan will outline communications and engagement objectives and tactics for specific audiences, including Project partners, key stakeholders, and the Public. It will highlight milestones and engagement activities, including opportunities for stakeholders and the public to provide feedback, as appropriate.

10.6 PERFORMANCE MEASUREMENT

Performance measurement is the process by which completed projects are measured to determine whether the Project's intended objectives and expected benefits have been realized. The Project Team has developed an evaluation framework in Table 27 that includes tailored performance measures based on data currently collected by the Ministry and TransLink and representative of the Project Goals. A detailed Performance Measurement Plan will be developed through the delivery phase of the Project.

Table 27 - Project Objectives and Performance Measures

Project Objective	Performance Measure	Method of Measurement
Provide users with a positive experience	Reduce travel time by transit from King George Station to 203 Street Station.	Measure average SLS transit times, which are anticipated to be 21.5 minutes.
	Provide frequent rapid transit service and reduce transit journey travel time variability.	Measure the number of trips that arrive within 3 minutes of the scheduled headway.
Facilitate increased share of sustainable modes of transport	Achieve forecasted ridership.	Measure of actual ridership on SLS line.
	Boardings at each station location (reflecting activities around the stations).	Measure of daily boardings at each station.
Support active transportation	Provide a service that supports safe, convenient multi-modal travel options for pedestrians and cyclists.	Achievement of design criteria
Support increased density in the adjacent communities	Increased number of population and jobs within 800m of the SLS Project's stations.	Population and employment monitoring within 800m of the SLS Project stations.
Support affordable housing	Increased number of housing units within 800m of the SLS Project's stations.	Number of housing units approved by type (e.g.: condo, townhouse, supportive, etc.).
Support a healthy environment	Increased number of walking trips to access transit.	Station Intercept Survey
	Accommodate riders with accessibility needs	Achievement of design criteria.

Enhance regional goods movement, commerce and job opportunities	Number of new direct and indirect jobs created (person-years of employment).	BC Input Output Model (I-O model) for Transportation, Engineering and Construction ^[1]
Deliver community benefits	Number of Indigenous and other Equity Groups employed by BCIB/Contractor, training and apprenticeship statistics.	BCIB/Contractor to provide annual statistics.
Provide a service that is good value for money	Deliver Project within approved budget.	Comparison of actual to approved budget.
Provide infrastructure that meets the needs of the community	A project that is accessible and inclusive.	Completion and Implementation of GBA+ Plan.

^[1] The coefficients are based on the standard Transportation Classification in BC Input Output Model (I-O model) for Transportation, Engineering and Construction. The coefficients are very similar to the StatsCan multipliers.

11 FUNDING ANALYSIS

11.1 FUNDING SOURCES

The total Project capital cost is \$3.939 billion, in addition to planning costs (Operating Expense) of \$11 million, resulting in total Project spend of \$3.95 billion. The expected allocation of capital funding is shown in the Table 28 below.

The Project has already secured funding of \$128 million for the advance works from the Province and the Government of Canada under the Investing in Canada Infrastructure Program (ICIP). The approved advance works is being funded through \$112 million in Provincial funding and \$16 million in Federal funding.

The Project's planning costs (Operating Expense) is \$11 million, with \$8 million funded by the Province and \$3 million funded through a Federal contribution.

The additional funding requested is \$3.811 billion, to be funded as follows:

- \$2.296 billion of Provincial funding;
- \$1.287 billion of Federal funding;
- \$198 million of TransLink funding; and
- \$30 million of City of Surrey in-kind contributions of properties and rights.

Table 28 - Funding Allocation by Source

Funding Source [1] <i>(\$million, nominal dollars)</i>	Allocated Funding	Additional Requested	Total Allocation
Provincial Government	112	2,296	2,408
Government of Canada	16	1,287	1,303
TransLink		198	198
City of Surrey Contribution of Properties & Rights		30	30
Total Capital Budget	128	3,811	3,939

[1] Total Capital Cost of \$3,939 million plus planning costs (Operating Expense) of \$11 million, for total Project related costs of \$3,950 million. Of the planning costs, \$8 million is Provincial funding and \$3 million is Federal funding.

11.1.1 Federal Funding

On July 9, 2021, the Government of Canada announced a contribution of \$1.306 billion to the Project and is to be allocated accordingly:

- \$3 million of planning expenses;
- \$16 million of advance works; and
- \$1.287 billion to be secured upon approval of the Project's Business Case.

11.1.2 TransLink and City of Surrey Funding

TransLink is expected to contribute \$198 million to the Project, as a component of TransLink's 2022 Investment Plan. The City of Surrey is expected to provide in-kind contributions of properties and rights in the amount of \$30 million.

11.1.3 Provincial Funding

The Province, through the BC Transportation Financing Authority (BCTFA), will borrow \$2.296 billion, during the construction of the project and has already approved \$112 million for the advance works. Total provincial debt on completion of the project is expected to total \$2.408 billion.

11.2 PROJECT CASH FLOWS

The total capital Project cost estimate is \$3.939 billion. The estimated cash flow by cost category and fiscal year is outline in Table 29, and by funding source and fiscal year in Table 30. Further details on the costs are provided in **Appendix B – Capital Cost Memo**.

Table 29 – Capital spend by Cost Category by Fiscal Year

Cost Category (\$million, nominal dollars)	2021/ 22	2022/ 23	2023/ 24	2024/ 25	2025/ 26	2026/ 27	2027/ 28	2028/ 29	Total
Proponent Costs incl Contingency	■	■	■	■	■	■	■	■	■
Private Finance IDC	■	■	■	■	■	■	■	■	■
Eligible Owner's Cost incl Contingency	■	■	■	■	■	■	■	■	■
Ineligible Owner's Cost	■	■	■	■	■	■	■	■	■
Property Acquisition	■	■	■	■	■	■	■	■	■
City Properties and Rights	■	■	■	■	■	■	■	■	■
Province IDC	■	■	■	■	■	■	■	■	■
Total	-	238	364	512	824	922	638	441	3,939 ^[1]

[1] Total Capital Cost of \$3,939m plus planning costs (Operating Expense) of \$11m, for total Project related costs of \$3,950m.

Table 30 – Cashflow (Debt) by Funding Source by Provincial Fiscal Year

Funding Source (\$million, nominal dollars)	2021 /22	2022/ 23	2023 /24	2024/ 25	2025 /26	2026/ 27	2027/ 28	2028 /29	Total
Provincial Government ^[1]	■	■	■	■	■	■	■	■	2,408
Government of Canada	■	■	■	■	■	■	■	■	1,303
TransLink	■	■	■	■	■	■	■	■	198
City of Surrey	■	■	■	■	■	■	■	■	30
Total	-	238	264	383	814	1,127	641	472	3,939 ^[2]

[1] Provincial Government cashflows reflect timing of repayment of private financing.

[2] Total Capital Cost of \$3,939 million plus planning costs (Operating Expense) of \$11 million, for total Project related costs of \$3,950 million.

PART E: RECOMMENDATION

This Business Case demonstrates the need for the Project to address transportation challenges along the Corridor. The Project will provide significant user benefits and support transportation options and economic development potential in the region.

This Business Case recommends proceeding with the Project at an estimated total cost of \$3.95 billion using the recommended Multiple Contracts procurement strategy and associated procurement models.

11.3 DECISION REQUESTS FOR THE CAPITAL PROJECT

- a. Approval of the Project and of the Project Scope;
- b. Approval for the Project to proceed immediately under a Multiple Contracts strategy described in the Business Case; and
- c. Approval of the Project's total capital cost of \$3.939 billion, including:
 - i. Previously approved advance works funding of \$128 million
 - ii. Additional funding request of 3.811 billion, to be funding as follows:
 - Provincial funding of \$2.296 billion;
 - Federal funding of \$1.287 billion;
 - TransLink funding of \$198 million; and
 - City of Surrey in kind contribution of \$30 million.