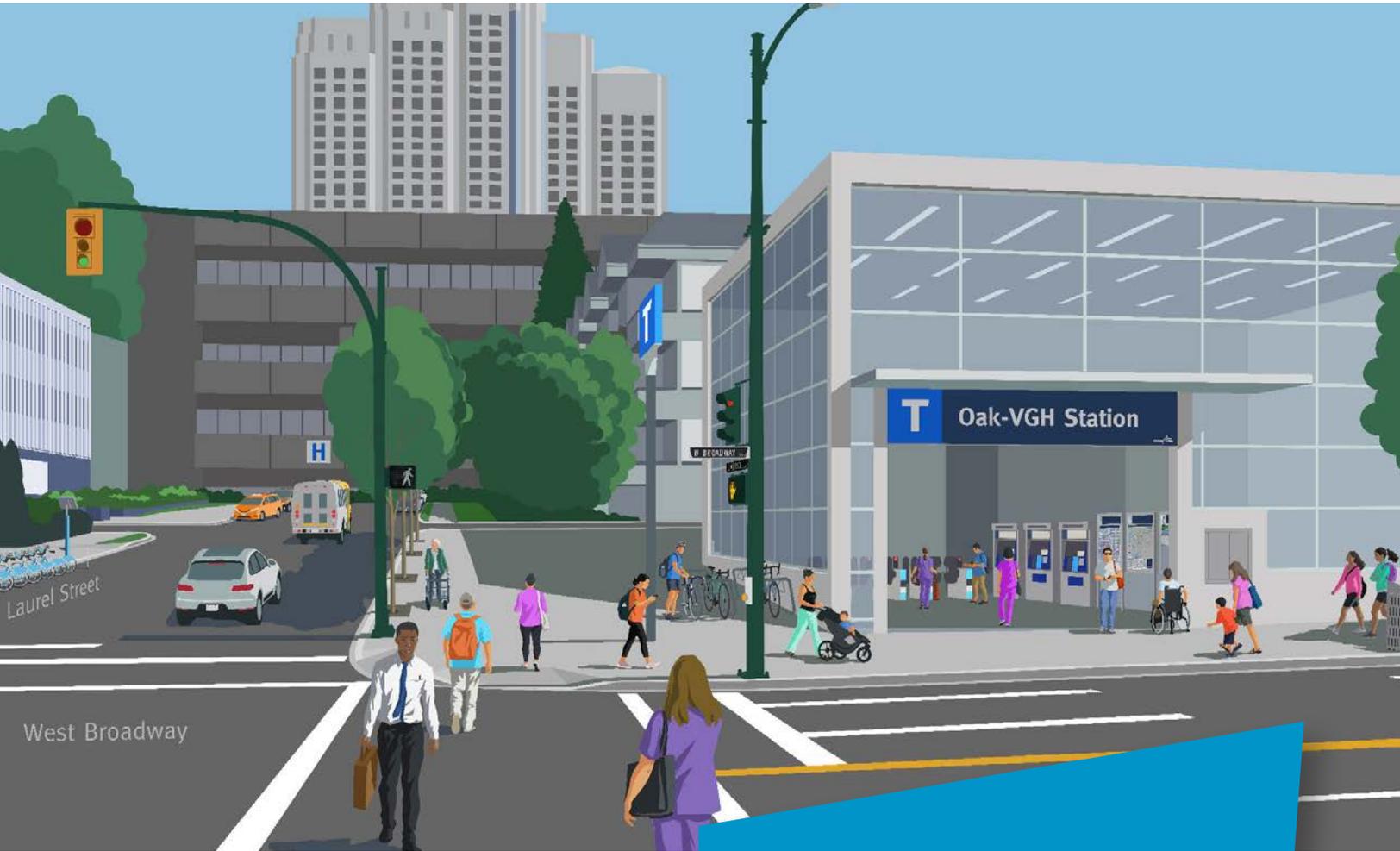




transportation  
investment  
corporation



Project Report:  
**Broadway Subway  
Project**  
January 2021

## Purpose of this Report

The purpose of this report is to provide key information to the public about the Broadway Subway Project (the Project). This report describes the need for the Project and how it will be delivered. The report also explains how different procurement delivery methods were analyzed and how Project benefits and innovations are expected to be achieved. A summary of the key aspects of the Project Agreement, a comprehensive contract to deliver the Project, is also provided.

The Province of B.C. (the Province) is committed to a high standard of disclosure as part of its accountability for the delivery of public projects. Ministries, Crown Corporations, and other government agencies are publicly accountable for projects through regular budgeting, auditing, and reporting processes.

The Ministry of Transportation and Infrastructure (MOTI), Transportation Investment Corporation (TI Corp), and Infrastructure BC (formerly known as Partnerships BC) are accountable for the contents of this report.

## Abbreviations

**Capitalized terms are defined in the glossary at the end of this report. Abbreviations are defined in Table 1 below:**

**TABLE 1: ABBREVIATIONS**

AGJV	Acciona-Ghella Joint Venture
ATC	Automatic Train Control
BCIB	British Columbia Infrastructure Benefits
BCTFA	B.C. Transportation Finance Authority
BSPC	Broadway Subway Project Corporation
CBA	Community Benefits Agreement
DB	Design-Build
DBF	Design-Build-Finance
DBFM	Design-Build-Finance-Maintain
DBFOM	Design-Build-Finance-Operate-Maintain
MOTI	The Ministry of Transportation and Infrastructure
RFP	Request for Proposals
RFQ	Request for Qualifications
TBM	Tunnel Boring Machine
TI Corp	Transportation Investment Corporation
TIDS	Track Intrusion Detection System

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# 1. Executive Summary

The Broadway Subway Project (the Project) represents a key extension to the Millennium Line of Metro Vancouver's SkyTrain network.

The current 99 B-Line express and other local bus services can no longer meet transit demand along the Broadway Corridor (the Corridor) as thousands of passengers are passed up every year by full buses. The Broadway Subway Project will improve reliability and travel time for commuters with three times the current capacity of the 99 B-Line bus service and room to grow in the future. Completing the Project using a tunneled extension garnered the highest level of support from the public and businesses and was ultimately endorsed by the Mayors' Council. The Project will:

- provide significant transit user benefits;
- effectively integrate into the existing Corridor; and
- best support economic and urban development within the Metro Vancouver region (the Region) by providing an effective transportation solution without negatively affecting congestion, access to businesses, and livability along the Corridor during operations.

The Project is scheduled to be complete in 2025.

The Project budget is \$2.827 billion and is funded by the Province (\$1.83 billion), the Government of Canada (\$896.9 million), and the City of Vancouver (\$99.8 million in-kind contribution). TI Corp will be responsible for managing the delivery of the Project on behalf of the Province, who will own the asset. The completed SkyTrain line will be operated by the South Coast British Columbia Transportation Authority (TransLink).

TI Corp is a provincial Crown Corporation with a mandate to provide procurement, delivery, and commercial oversight of major capital transportation projects. Major projects currently assigned to TI Corp include the Broadway Subway Project, the Pattullo Bridge Replacement Project and the Kicking Horse Canyon Phase 4 Project.

The Project will be delivered under the Community Benefits Agreement (CBA). BC Infrastructure Benefits is the provincial Crown Corporation responsible for implementing the terms and conditions of the CBA, as the progressive employer of the qualified and diverse workforce on select public infrastructure projects.



Artist's rendering of preliminary conceptual station design. Final streetscape and potential development will be subject to the City of Vancouver's Broadway Plan.

Mount Pleasant Station.

The CBA prioritizes hiring of local workers, including indigenous peoples, women, people with disabilities and other underrepresented groups who are qualified to do the relevant work in a safe, welcoming work environment. The Project will help diversify and grow B.C.'s skilled workforce by providing opportunities for Red Seal apprentices to work on site and gain the experience they need to launch good careers in the trades.

The decision to procure the Project using a Design-Build-Finance (DBF) delivery model was based on an analysis of procurement options, including Design-Build (DB), Design-Build-Finance-Maintain (DBFM), and Design-Build-Finance-Operate-Maintain (DBFOM) models. The DBF model was chosen as it best meets the procurement objectives and provides cost-effective risk transfer related to scope and schedule, as well as opportunities for innovation, particularly through construction methodology.

The Project's RFP included an affordability requirement, which reflected the maximum budget available for proponents to deliver the scope of the Project. The competitive selection process resulted in a fixed-price, fixed-schedule commitment from the preferred proponent to deliver the Project scope within the approved Project budget.

In August 2020, the Province entered a performance-based, fixed-price contract (the Project Agreement), with the successful proponent, the Broadway Subway Project Corporation (BSPC), an Acciona-Ghella Joint Venture to design, build, and partially finance the Project. The term of the contract is approximately 5 years, with a fixed price of \$1.728 billion.

At the time the Project Agreement was signed, BSPC also entered into a BCIB-Contractor Agreement ("BCA") with BCIB for the supply of the construction workforce for the Project.

BSPC was responsible for arranging \$450 million in private financing for the Project. During construction, the Province will pay BSPC 10 percent of the monthly progress payments, with BSPC contributing the balance from the private financing until it is invested in the Project. The Province will then pay the full amount of progress payments for the remainder of the contract. The Province will repay the private financing amounts to BSPC once substantial completion of the Project is achieved, less applicable holdbacks, which will be released once certain performance criteria are met.

The Project Agreement includes a range of performance measures and incentives which target delivering the Project on budget and on schedule as well as other objectives such as those related to traffic management and business access.



South Granville Station.

## 2. Project Background, Objectives and Scope

The Corridor is the second largest employment centre in British Columbia. It is the most densely developed area in the Region not served by rail rapid transit and is facing significant affordability and transportation challenges in its attempt to address projected growth over the next 30 years.

Transit demand within the Corridor has exceeded the capacity of existing transit services and traffic congestion is significant. This impacts the reliability of existing transit services and creates bottlenecks for local transportation and commercial traffic which relies on the Corridor to serve local businesses.

Through its implementation, the Project will support development within the Region, provide more people with a sustainable transportation choice, connect urban centres, and increase rapid transit mode-share.

Project objectives were established during the planning and public consultation processes to guide the Project and evaluate technology and alignment options; these are listed in Table 2 below.

**TABLE 2: BROADWAY SUBWAY PROJECT OBJECTIVES**

TYPE	PROJECT OBJECTIVES
<b>Deliverability</b>	A service that is constructible and operable, and publicly acceptable.
<b>Economic Development</b>	A service that encourages economic development through construction related (direct and indirect) job creation and tax revenue and minimizes impacts on goods movement during operations.
<b>Environment</b>	A service that contributes to meeting wider environmental sustainability targets and objectives by attracting new riders, supporting changes to land use and reducing vehicle kilometers travelled.
<b>Financial</b>	An affordable and cost-effective service.
<b>Social and Community</b>	A safe, secure, and accessible service that also improves access to rapid transit for all and brings positive benefit to the surrounding communities, while managing impacts of rapid transit on heritage and archaeology.
<b>Transportation</b>	A fast, reliable and efficient service that meets current and future capacity needs, supports achieving transportation targets, and integrates with and strengthens the regional transit network and other modes.
<b>Urban Development</b>	A service that supports current and future land use development along the Corridor and integrates with the surrounding neighborhoods through high quality urban design.

The Project's Business Case<sup>1</sup> involved an in-depth analysis of the rapid transit options which were deemed as the best fit to meet the Project's objectives. The qualitative and quantitative analysis conducted included a relative evaluation of customer service, cost-benefit analysis, environmental, social, and community factors. The approved option, a tunneled extension, was ranked highest at the Business Case stage in quantified user benefits and benefit-cost ratio among all of the options evaluated. This option addressed key transportation, economic, urban development, and environmental challenges facing the Corridor and the Region.

<sup>1</sup> Available online at <https://www.broadwaysubway.ca/app/uploads/sites/626/2020/08/Business-Case-FINAL-March-2018.pdf>

The extension:

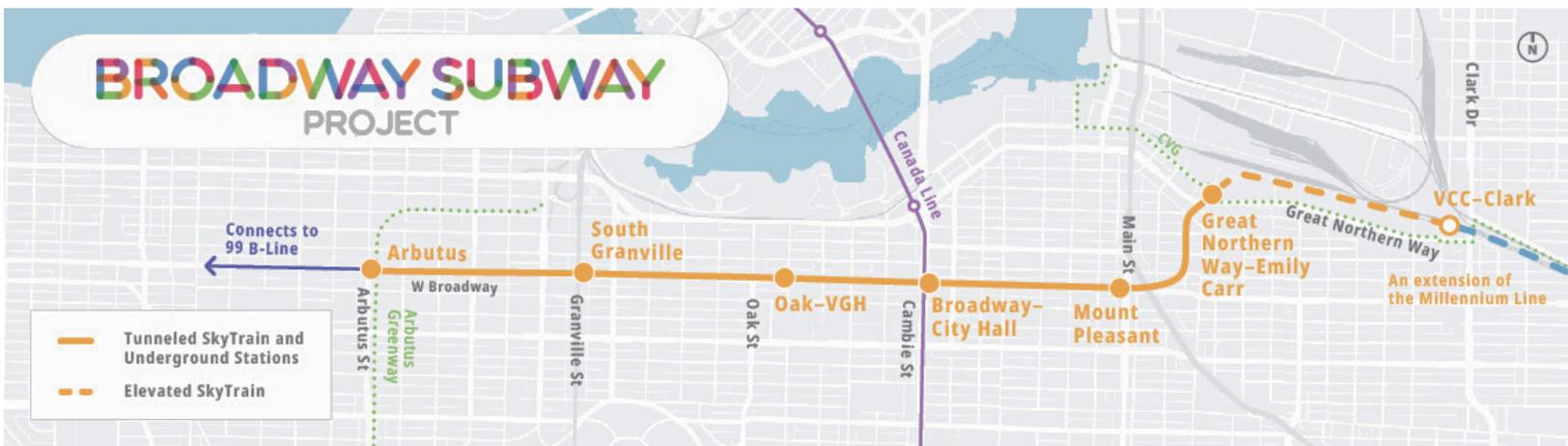
- provides significant transit-user benefits and most effectively integrates into the existing Corridor;
- best supports economic and urban development within the Region by providing an effective transportation solution that reduces congestion, while improving access to businesses, and increases livability along the Corridor during operations;
- has the highest level of support from the public and businesses; and
- is endorsed by the Mayors' Council.

With a capital budget of \$2.827 billion, the Project includes a 5.7-kilometre extension to the existing Millennium Line SkyTrain system from the VCC-Clark station to Arbutus Street. Five (5.0) kilometers of the SkyTrain will be built underground, including six new underground stations, as shown in Figure 1 below. Stations are also listed from east to west, below:

- Great Northern Way – Emily Carr Station will be located near the tunnel entrance, within proximity of the Great Northern Way Campus, Emily Carr University of Art and Design, and the high tech and new media hub envisioned as part of the False Creek Flats Plan.

- Mount Pleasant Station will be located on Main Street, in the Mount Pleasant neighbourhood.
- Broadway-City Hall Station will be located at Cambie Street and will integrate with the existing Canada Line station at this location.
- Oak Street – VGH Station will be located near Oak Street, within close proximity to Vancouver General Hospital (VGH), BC Cancer Agency, Canadian Cancer Society, and BC Cancer Research Centre.
- South Granville Station will be on the intersection of Granville Street and Broadway, within proximity of the second most densely populated residential neighborhood along the Corridor, South Granville shopping district, and Granville Island.
- The Arbutus Station terminus and 99 B-Line bus loop will be designed to allow for future rapid transit expansion to UBC.

FIGURE 1: BROADWAY SUBWAY ALIGNMENT AND STATIONS



## 3. Project Benefits and Key Features

### 3.1 Enhanced Transit Network

The commute from VCC-Clark to Arbutus Station on the new Broadway Subway extension will take 11 minutes, saving almost 30 minutes per day for regular commuters on this route, while the mostly underground service will reduce congestion along Broadway.

The Project will:

- provide significant benefits to transit riders in the form of increased capacity (moving three times as many people as the current 99 B-Line), travel time savings, greater reliability, and improved customer experience with integrated transfers to the Canada Line at Broadway-City Hall station. The 99 B-Line route will link Arbutus Station and the University of British Columbia;
- improve transportation options and economic development potential;
- fill a critical gap in the regional transit network, thereby easing congestion at other transfer points; and
- connect to bus, HandyDART, walking and cycling for a complete multi-modal experience.

### 3.2 Environmental Impacts and Improvements

During Project planning, engagement with the Canadian Environmental Assessment Agency and the BC Environmental Assessment Office confirmed that the Project did not exceed regulatory thresholds that would require an environmental assessment under federal or provincial environmental legislation.

The Project completed an Environmental and Socioeconomic Review<sup>2</sup> to provide a clear and transparent approach for involving Indigenous groups, the public, stakeholders, and government agencies in identifying potential Project-related effects, and approaches to avoiding or mitigating such effects. It concluded that any adverse environmental impacts during construction and operations could be mitigated through proven measures and best practices.

Once operational, the Project will reduce greenhouse gas emissions by reducing automotive vehicle kilometers travelled (VKT) and replacing diesel bus B-Line service with electric SkyTrain service.



Arbutus Station looking southeast.

<sup>2</sup>Available online at <https://www.broadwaysubway.ca/about/documentation/>

### 3.3 Economic Activity and Affordability

Throughout all its phases and particularly during construction, the Project will create economic activity. This is expected to benefit existing businesses throughout the local area, Metro Vancouver, and elsewhere in BC.

Once operational the new extension will support economic activity by reducing transit times and congestion along the Corridor. It will also improve affordability by enabling greater mobility at reduced cost for residents across the region and encouraging transit-oriented urban development and housing availability.

### 3.4 Employment and Training

The Project is being delivered under the Province's Community Benefits Agreement, which prioritizes hiring local workers, including Indigenous Peoples, women, people with disabilities and other under-represented groups who are qualified to do the work, in a safe, welcoming work environment. The Project will help diversify and grow B.C.'s skilled workforce by providing opportunities for Red Seal apprentices and trainees to work on site and gain the experience they need to launch good careers in the trades.

The Project is expected to generate approximately 13,450 direct and indirect jobs (person years of employment), as calculated by the Construction Employment Estimates calculator provided by BC Stats. The overall apprentice ratio is set at a range of 16-19 percent for all apprentice trades working on the Project. Direct jobs are directly related to the Project, such as engineering, station construction, tunnelling, and project management. Indirect jobs represent those who benefit from the Project within the supply chain; for example, local coffee shop workers, restaurant workers, and construction clothing stores.



Great Northern Way Station looking northeast.

## 4. Project Delivery Procurement Options

The procurement approach for the Project was determined following an extensive procurement options analysis, undertaken by the Province and Infrastructure BC. Infrastructure BC supports the public sector by working with project owners to deliver complex public infrastructure. Procurement options are evaluated to identify a method of delivery that delivers value for taxpayer money and reduced risk to taxpayers, while ensuring Project objectives are met. Project characteristics such as size, complexity, opportunity for innovation and the nature of project risks influence the selection of a preferred procurement model.

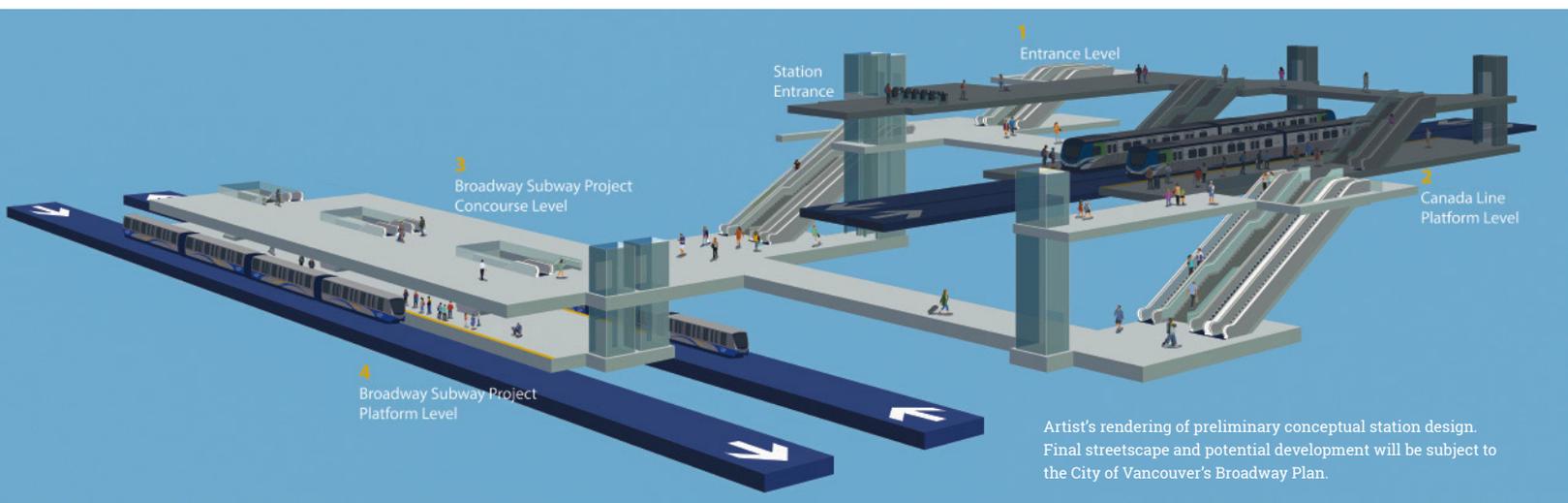
### 4.1 Procurement Options Analyzed

#### 4.1.1 Preliminary Procurement Options Assessment

A number of options were considered to determine which delivery models would form the basis for more extensive quantitative and qualitative analysis.

A preliminary assessment of partnership options concluded that the use of a long-term Design-Build-Finance-Maintain (DBFM) or Design-Build-Finance-Operate-Maintain (DBFOM) model were not appropriate for the Project, largely due to the inter-operability and physical interface between the Project and the existing SkyTrain network operated by TransLink. A seamless integration between the new line and the existing SkyTrain system, resulting from a single operator, was considered beneficial in maximizing user benefits and more cost effective.

The preliminary assessment did, however, indicate that a partnership model involving some amount of private finance offered benefits relating to scope and schedule risk transfer. The Project team therefore determined that a Design-Build-Finance (DBF) model should be advanced as the preferred partnership model for further study.



Broadway-City Hall Station.

The Project team undertook a similar preliminary assessment to determine which procurement model to use as a comparator to the DBF model. The Project team identified two possible Design-Build (DB) options, each involving either a single, or two separate DB contracts. Internal analysis and outreach with the market indicated that Project risks could be managed better under a single DB contract. With a single DB contract, the sole contractor would have the required flexibility to manage key construction interfaces, including with municipalities and utility providers. The contractor would be required to assume the full risk for managing those interfaces, which would be expected to provide the Province with greater cost and schedule certainty than under a multiple contract scenario.

Following this preliminary assessment, the DB and DBF models were taken forward for a more detailed analysis.

#### 4.1.2 Detailed Procurement Analysis

A detailed procurement analysis<sup>3</sup> compared the following models:

**1. Design-Build:** The Province engages designers and engineers to develop a concept design for the Project. The Province then conducts a competition to select a DB team to undertake the detailed design and construction of the Project, based primarily upon the performance specifications prepared by the Province's technical team. The successful proponent enters into a fixed price contract with payments made by the Province to the contractor at specific progress milestones.

In this model, design and construction risk, including cost and schedule, is transferred to the design-builder, while the Province retains life cycle and maintenance risks. The benefits of a DB procurement model include enhanced risk transfer and innovation that comes from integrating design and construction.

**2. Design-Build-Finance:** The DBF model is similar to DB, with the addition of private financing for a portion of the capital requirements during construction. The private finance is typically repaid to the contractor at substantial completion, with the potential for holdbacks during a performance demonstration period post-substantial completion.

The DBF option includes enhanced security for achieving the intended risk transfer related to cost and schedule. Performance incentive payments owed to the Province as a result of non-conforming performance by the contractor are payable by the contractor if the issues are not rectified. Consequently, lenders and their advisors maintain a keen interest in the contractor's performance throughout the project. Additional benefits include lender due diligence, enhanced enforceability of the contract terms and a lower likelihood of owner scope changes.

Both the DB and the DBF delivery models are undertaken as two-stage procurements, involving a Request for Qualifications (RFQ) stage and a Request for Proposals (RFP) stage. During the RFQ stage respondent teams submit qualifications for evaluation resulting in a shortlist of qualified teams. Shortlisted teams are then invited to participate in the RFP stage. In both models, the Preferred Proponent is eligible to enter into a contract with the Province to design and build the project, with the DBF delivery model requiring the private partner to partially finance the Project.

## 4.2 Results of the Procurement Options Analysis

Based on the analysis carried out, the DBF model was determined to be the preferred procurement option and is expected to best meet the Province's procurement objectives and overall Project objectives. The inclusion of private finance provides the Province with enhanced performance security to manage the Project's unique risks, size, and complexity. While private finance is typically more costly than public financing, the extra financing costs are expected to be more than offset by the resultant private industry due diligence and enhanced risk transfer.

<sup>3</sup> Available online at <https://www.broadwaysubway.ca/app/uploads/sites/626/2020/08/Procurement-Options-Report-March-2018.pdf>.

## 5. Competitive Selection Process

A two-stage competitive selection process was undertaken for the Project<sup>4</sup>. During the RFQ stage, respondents were asked to present their qualifications for the Project. Four teams responded to the RFQ. Respondents were evaluated on their strength and demonstrated experience and capability in managing, designing, and constructing similar large, complex projects. Respondents were also required to demonstrate their experience and capabilities with indigenous involvement, apprenticeships, and developing and implementing mechanisms to integrate, train and develop a diverse workforce.

A shortlist of three teams, referred to as proponents, was selected and invited to participate in the RFP stage. The proponent teams are listed in Table 3 below.

**TABLE 3:: PROPONENT TEAMS**

PROPONENT	TEAM MEMBERS
<b>Acciona-Ghella Joint Venture</b>	<ul style="list-style-type: none"> <li>• Acciona Infrastructure Canada Inc</li> <li>• Corporacion Acciona Infraestructuras, S.L.</li> <li>• Ghella Canada Ltd</li> <li>• IBI Professional Services (Canada) Inc.</li> <li>• DIALOG BC Architecture Engineering Interior Design Planning Inc.</li> <li>• Mott MacDonald Canada Ltd.</li> <li>• Ingenieria Especializada Obra Civil e Industrial, S.A.</li> <li>• Parsons Inc.</li> </ul>
<b>Broadway Connect</b>	<ul style="list-style-type: none"> <li>• Dragados Canada, Inc.</li> <li>• Aecon Infrastructure Management Inc.</li> <li>• ACS Infrastructure Canada, Inc.</li> <li>• Aecon Concessions, a division of Aecon Construction Group Inc.</li> <li>• Dragados, S.A.</li> <li>• Aecon Group Inc.</li> <li>• Hatch Ltd.</li> <li>• WSP Canada Inc.</li> <li>• Dr. G. Sauer &amp; Partners</li> <li>• VIA Architecture</li> <li>• Wood Environment &amp; Infrastructure Solutions, a Division of Wood Canada Ltd. and SENER.</li> </ul>
<b>Urban Transit*</b>	<ul style="list-style-type: none"> <li>• Salini-Impregilo S.p.A.</li> <li>• Astaldi Canada Design &amp; Construction Inc.</li> <li>• Jacobs Engineering Group Inc.</li> <li>• Colas Rail Canada Inc.</li> <li>• COWI Holding A/S</li> <li>• IDOM Consulting, Engineering, Architecture, S.A.U.</li> <li>• Kasian Architecture Interior Design and Planning</li> <li>• Urban Strategies Inc.</li> </ul>

\* Although not initially shortlisted to participate, Urban Transit was invited after a proponent withdrew from the competitive selection process shortly after the release of the RFP.

<sup>4</sup> The RFQ and RFP procurement documents are publicly available at <https://www.infrastructurebc.com/projects/projects-under-construction/broadway-subway-project/>

During the RFP stage, workshops and topic meetings were conducted providing each proponent team an opportunity to discuss questions, issues or concerns related to commercial, legal, design, and construction matters. Special workshops were also held between proponents and Thales<sup>5</sup> to discuss a supply contract for Thales' involvement in the project. Additionally, a series of workshops were held with British Columbia Infrastructure Benefits (BCIB) to discuss the contractual arrangements with BCIB and the Project workforce provisions.

The Project is the largest project to implement the BCIB contractor and subcontractor agreements to date. These workshops provided an opportunity to discuss the forms of agreement and identify opportunities for improvement for the benefit of all parties. An all-proponent meeting was held between BCIB and proponent subcontractors that explained BCIB-subcontractor contractual arrangements.

The RFP also encouraged proponents to explore contracting and employment opportunities with local indigenous communities. The Province hosted a business-to-business networking event to facilitate an introduction between the proponents and the Indigenous Groups.

The timeline of the competitive selection process is outlined in Table 4 below.

**TABLE 4: TIMELINE OF THE COMPETITIVE SELECTION PROCESS**

PROCUREMENT STAGE	TIMING	OUTCOME
<b>Request for Qualifications</b>	February 2019 to June 2019	The Project was marketed locally, provincially, nationally, and internationally. Submissions from four respondents were evaluated and a shortlist of three teams was announced in June 2019.
<b>Request for Proposals</b>	June 2019 to July 2020	Two of the shortlisted teams submitted proposals.
<b>Selection of Preferred Proponent</b>	July 2020	After evaluation of the proposals, AGJV was selected as the Preferred Proponent.
<b>Execution of Project Agreement and BCA</b>	August 2020	The Project Agreement was executed by the Province, BC Transportation Financing Authority (BCTFA), and BSPC.

## 5.1 Evaluation of Proposals

The overall objective of the RFP evaluation was to select the highest ranked proposal that:

- met the technical evaluation criteria;
- included a contract price proposal at or below the affordability requirement (\$1.730 billion) as set out in the RFP; and
- delivered a plan to achieve substantial completion of the Broadway Subway Project by November 30, 2025.

If all of the above criteria were met by all proponents, the highest ranked proposal would be the one offering the lowest contract price proposal.

In order for a proposal to be ranked, proponents must have first met the following evaluation criteria in its technical submittal:

- substantially satisfied the requirements of the RFP and the definitive Project Agreement;
- demonstrated to the satisfaction of the Province that the proponent would be capable of performing the obligations and responsibilities of the contractor and deliver the Project in accordance with the Project Agreement; and
- demonstrated a good understanding of the Project and the work.

<sup>5</sup> Thales is the sole supplier for the proprietary SELTRAC™ automatic train control (ATC) system, and associated services, used on the existing SkyTrain network.

Once these criteria were deemed to be satisfied, an invitation to submit financial submittals was issued. The financial submittals were evaluated, and the proposals were ranked. The ranking process considered whether a proponent had elected to accept or share the tunnel geotechnical risk, as well as the anticipated cost of any additional approved land requests by a proponent. Adjusting for these items, the lowest adjusted contract price proposal was ranked the highest.

The Province appointed an evaluation committee to evaluate the proposals based on the criteria and the ranking process set out in the RFP, and to recommend a Preferred Proponent. The evaluation committee made, in accordance with both its mandate and the provisions of the RFP, its recommendation to the TI Corp Board of Directors. Based on that recommendation, the AGJV was identified as the Preferred Proponent for the Project.

AGJV, the highest ranked proponent, proposed a contract price that was lower than the affordability requirement and its substantial completion milestone is scheduled to be achieved by the substantial completion target date of November 30, 2025. At the time of contract execution with BSPC (the corporation created by AGJV to deliver the Project), the value of the contract was \$1.728 billion. The difference between the affordability requirement and the final contract price will be retained in the Project budget as Province-held risk contingency if needed during implementation.

Ultimately, the competitive selection process was successful by committing BSPC to a fixed-price, fixed-schedule delivery of the Project scope within the approved Project budget and within the Province's schedule requirements.

## 5.2 Fairness Reviewer

A Fairness Reviewer was retained for the project throughout the competitive selection process. Their responsibility was to assess whether or not the selection process was carried out fairly and in accordance with the RFQ and RFP. The Fairness Reviewer was provided access to all documents, meetings and information related to the competitive selection process. The Fairness Reviewer issued reports for both the RFQ and the RFP stages of the competitive selection process<sup>6</sup>. In their final report, the Fairness Reviewer confirmed that they were satisfied that the procurement process was fair and reasonable, and that the project team fairly and reasonably implemented and complied with that process.

## 5.3 Competitive Selection Costs

The total competitive selection cost for the Project from approval of the Business Case to contract execution is \$6.0 million (including \$3.0 million for a stipend paid to unsuccessful proponent that met the eligibility criteria). The decision to offer a stipend is made on a case-by-case basis and can be used to:

- encourage competition;
- ensure the quality of proposals submitted;
- secure access to intellectual property; and
- mitigate costs incurred by proponents in developing their proposals.

In the case of the Project's competitive selection process, the conditions to be eligible for a stipend were set out in the Proponent Agreement, released publicly with the RFQ.

<sup>6</sup> The Fairness Reviewer's reports are publicly available at <https://www.infrastructurebc.com/projects/projects-under-construction/broadway-subway-project/>

## 6. The Final Project Agreement

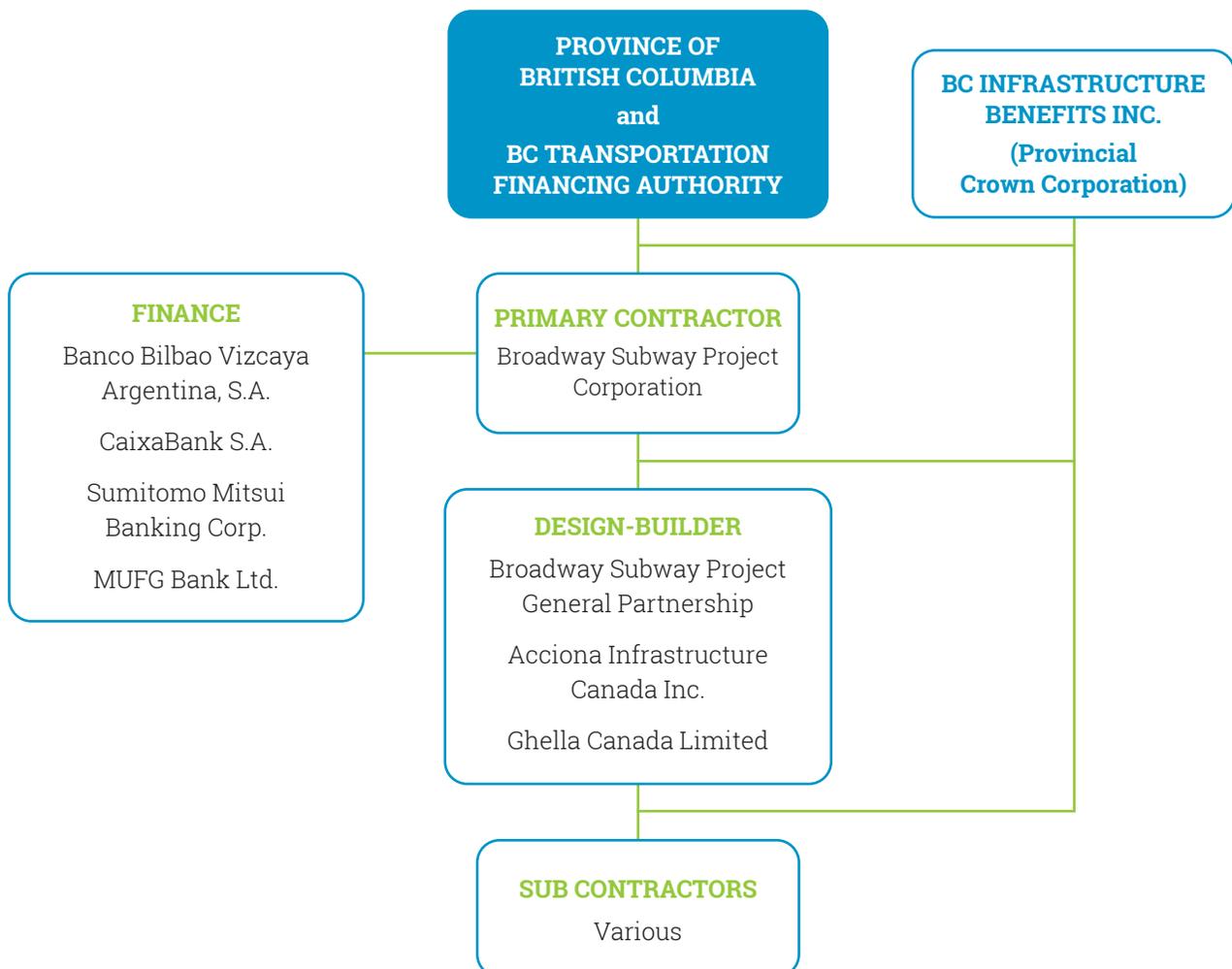
QUICK FACTS	
<b>Private Partner</b>	Broadway Subway Project Corporation
<b>Public Partner</b>	Province of British Columbia and the BCTFA
<b>Facility Owner</b>	Province of British Columbia and BCTFA
<b>Project Agreement Execution Date</b>	August 28, 2020
<b>Substantial Completion</b>	2025

### 6.1 Profile of the Private Sector Partner

The Private Partner for the Project is BSPC, a joint (60/40) venture between Acciona Infrastructure Canada Inc. (Acciona) and Ghella Canada Ltd (Ghella).

BSPC will deliver the Project through a series of subcontracts, with key aspects of the Project being either delivered by specialist providers or self-performed by Acciona and Ghella. The contractual structure is illustrated in Figure 2 below.

FIGURE 2: CONTRACTUAL RELATIONSHIPS



## 6.2 Key Terms of the Project Agreement

Under the terms of the Project Agreement, BSPC has an obligation to design and construct the Project and to partially finance the Project during construction, in accordance with the requirements set out in the Project Agreement. Key features of the Project Agreement include:

- the design and construction of the Project will be completed for a fixed price of \$1.728 billion, excluding GST and any potential costs associated with risks retained by the Province;
- \$450 million of private financing will be arranged by BSPC and used to finance construction;
- the Province will pay BSPC 10 percent of the monthly progress amounts with BSPC contributing the balance from private finance until the full \$450 million private financing has been deployed. Thereafter, the Province will pay 100 percent of the progress amounts;
- the Province will repay the private financing through a milestone payment at substantial completion to ensure that BSPC meets the Project's requirements, with the following holdbacks and withholdings that are tied to asset performance and subcontractor payment:
  - deficiency holdback (200 percent of the agreed remedy amount for identified deficiencies);
  - warranty holdback (1 percent of the contract price);
  - builder's lien holdback (10 percent of contract price);
  - \$30 million for On-Time Performance Demonstration Completion<sup>7</sup>; and
  - \$10 million for the Track Intrusion Detection System (TIDS) Performance Demonstration Completion Amount.
- the payment mechanism includes payments from BSPC if it fails to meet performance requirements in the Project Agreement, such as requirements to effectively manage traffic during construction and meet environmental requirements; and,
- requirements for BSPC to provide meaningful employment and contracting opportunities for Indigenous Groups and report progress on a monthly basis to the Province.

- requirements for BSPC to enter into a BCIB-Contractor Agreement and for its subcontractors to enter into BCIB-Subcontractor Agreements for the provision of the construction workforce.

Once the Project is complete, TransLink will be responsible for maintaining the new SkyTrain as part of the broader Metro Vancouver SkyTrain network.

## 6.3 Key Features of the BCIB Contractor Agreements

BCIB, under an agreement with the MOTI and the BCTFA, will be the progressive employer for the majority of the skilled workforce for the Project. The terms and conditions of the provision of workforce will be in accordance to the CBA, to BSPC and all subcontractors who will perform work or provide services in respect of the Project. The Project Agreement requires each of BSPC and its subcontractors engaged on the Project to enter into an agreement directly with BCIB for the provision of the labour force. BCIB employees will be dispatched to the project based on the needs and requests from BSPC and its subcontractors, in accordance with the hiring process and priority hiring regimes set out in the CBA. BCIB provides an on-site presence to support contractors and employees in the implementation of CBA objectives. Site representatives address employee issues, assist with payroll questions, and manage possible grievances.

## 6.4 Key Features of the Thales Base Supply Agreement

During the competitive selection process, the Province undertook discussions with Thales for the supply of the Automatic Train Control (ATC) system for the Project. The Project RFP included a draft supply contract which set out fixed terms and requirements for all proponents, as well as some variable terms that each proponent could negotiate further with Thales. The terms of the draft supply contract formed the basis of the final supply contract between Thales and BSPC for the Project's ATC system, allowing for seamless integration of the new and existing SkyTrain lines.

<sup>7</sup> On-Time Performance Demonstration and Track Intrusion Detection System (TIDS) Performance Demonstration are defined in this report's glossary on page 18.

## 6.5 Key Features of the BSPC Proposal

BSPC submitted a technical submittal that met the requirements of the Request for Proposal, including the requirements set out in the Project Agreement. The proposal demonstrated the consortium has the expertise and capacity to perform the obligations and responsibilities set out in the Project Agreement, and has a good understanding of the Project.

BSPC's technical proposal featured the use of the tunnel boring method for tunnelling. Using this method, two tunnel boring machines (TBMs) will be deployed in parallel along the alignment to excavate the tunnel. Their proposal also included the use of a phased, temporary traffic decking approach to ensure traffic lanes are maintained during the construction of the station boxes. BSPC has significant experience with this methodology.

## 6.6 Risk Allocation Summary

The Project Agreement includes detailed risk allocation provisions. The approach transfers key risks to the contractor, such as construction, cost, and schedule, and adds value through design and construction integration and private sector innovation.

Key project risks and their allocation in the Project Agreement are summarized below.

**FIGURE 3: RISK ALLOCATION BETWEEN THE PROVINCE AND BSPC**

RISK	TRANSFERRED TO BSPC	RETAINED BY THE PROVINCE
Design	✓	
Construction	✓	
Schedule	✓	
Geotechnical	✓	
Traffic management	✓	
Utilities – known	✓	
Utilities – unknown	✓	✓
Contamination – known	✓	
Contamination – unknown	✓	✓
Availability and performance of labour	✓	✓
System installation & integration	✓	
Testing & commissioning	✓	
Performance before and after substantial completion	✓	
Private financing	✓	
Operations and maintenance associated with the Project site during construction	✓	
Disruptions to existing SkyTrain network	✓	
Base interest rate movement until contract execution		✓
Operations and maintenance once the Project is complete		✓
Province initiated scope changes		✓
Supervening events (including COVID-19)	✓	✓

The risk allocation is supported by the following provisions in the Project Agreement:

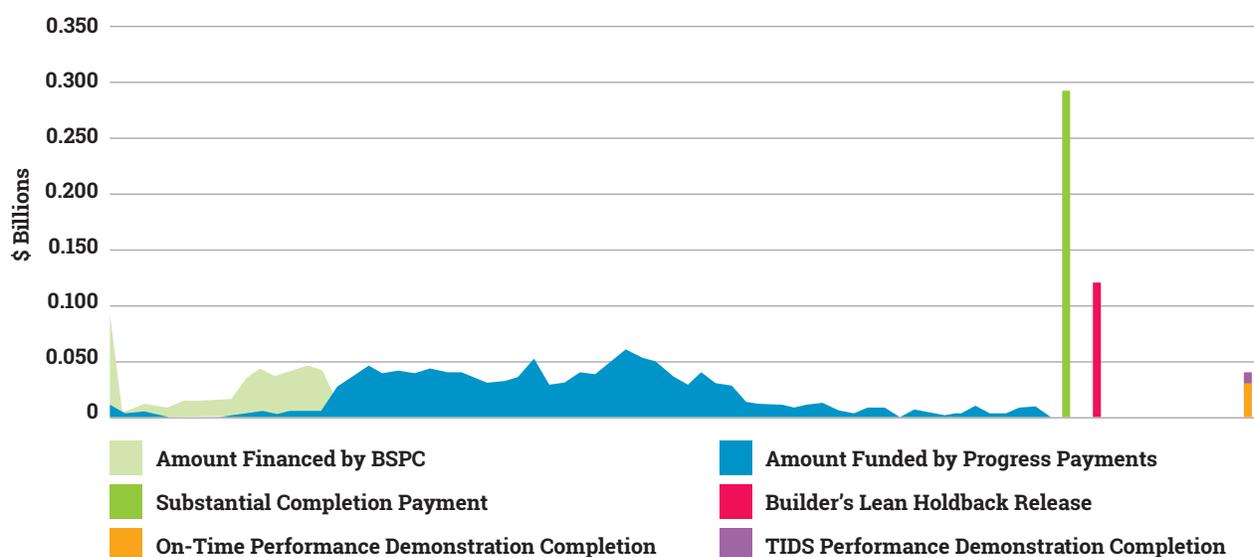
- the repayment of the private finance through the substantial completion payment will be made only once specified completion criteria have been satisfied;
- the Project Agreement and the lending agreements also include liquidated damages for delayed completion, providing a strong incentive for BSPC to complete the Project on time; and
- provisions are in place for a payment from BSPC to the Province if the Project does not meet the performance standards established in the Project Agreement.

## 6.7 Financial Summary

The Project Agreement between the Province, BCTFA, and BSPC includes a fixed price of \$1.728 billion.

The graph below illustrates the cash flow of the payments that are expected to be made to BSPC under the Project Agreement. The graph is expressed in nominal dollars and includes an inflation adjustment. Payment projections assume no payments from BSPC or deductions.

**FIGURE 4: PROJECT CASH FLOWS**



## 6.8 Accounting Treatment

B.C.'s Office of the Comptroller General, responsible for the overall quality and integrity of the government's financial management and control systems, has established accounting guidelines for partnership projects. Based on accounting guidelines, the capital cost for the construction of the Broadway Subway Project has been estimated at \$1.728 billion.

**TABLE 5: TOTAL PROJECT BUDGET, IN BILLIONS**

DBF Contract with BSPC	\$1.73
Owner's Costs <sup>8</sup> and Contingency	\$1.01
BCTFA Interest During Construction (IDC)	\$0.09
<b>Total Project Budget</b>	<b>\$2.83</b>

Note: Due to rounding, numbers presented do not add up precisely to the totals provided.

<sup>8</sup> Includes things such as land acquisition, procurement expenses, project implementation, etc.

## 7 Project Agreement and Performance Monitoring

The Project Agreement includes specific provisions to ensure that project delivery, performance, and quality standards are met. Thorough monitoring will be conducted in every phase of the Project by the TI Corp project team, from contract execution, through design and construction, to project completion.

### 7.1 Design and Construction Phase

The Project Agreement stipulates that both the Province and BSPC must appoint design and construction representatives. The Province has also appointed an Independent Engineer to certify payments in accordance with the Project Agreement. In addition, both the Province and BSPC will jointly appoint an Independent Certifier who will provide certification that the conditions for substantial completion have been met.

In addition to monitoring under the Project Agreement, the Project team will use the performance measurement framework to assess how well Project objectives are being met. The Project has developed a framework for evaluation that includes specific performance measures for each project criteria and objective as shown in the table below. Project team activities will include baseline data collection for operations phase performance measures, as well as collecting data and reporting on construction phase performance measures. This reporting will result in the development of a performance measurement report following the Project's completion. Baselines and performance measures are fundamental to the monitoring and accountability of the Project when assessing whether goals and objectives are being achieved. Following issuance of the Performance Measurement Report, MOTI will continue to collect data on operations phase performance measures.

**TABLE 6: PERFORMANCE MEASUREMENTS**

ACCOUNT	CRITERIA	OBJECTIVES	PERFORMANCE MEASURE
<b>Financial</b>	Affordable	Achieve schedule and cost certainty.	Actual Project cost vs budget.
<b>Transportation</b>	Risk Management/ Allocation	Risks are allocated to party best able to manage them.	Actual vs Planned.
	Transportation User Effects	Reduce travel time on the corridor.	Average transit travel times: <ul style="list-style-type: none"> <li>• VCC-Clark Skytrain station to City Hall: 6 mins</li> <li>• VCC-Clark Skytrain station to Arbutus: 11 mins</li> </ul>
	Reliability	Ensure speed and reliability of the system.	System availability as good as or better than existing SkyTrain system.
	Ridership	Increase ridership on the BSP SkyTrain in line with forecasted ridership by providing an efficient and reliable mode of transportation.	Annual Trips, Average Daily Ridership vs ridership projections within business case.
	Transit Mode-Share	Increasing transit mode share.	Annual mode share change.
	Operational Safety	Meet all applicable safety requirements (e.g. BC Railway Safety Act).	Receive operating certificate.

Table 5 continued on page 17

Table 6 continued from page 16

**TABLE 6: PERFORMANCE MEASUREMENTS**

ACCOUNT	CRITERIA	OBJECTIVES	PERFORMANCE MEASURE
<b>Economic Development</b>	Job Creation During Construction	Project will create jobs during construction.	Labour reports during construction period.
	Employment Creation	The opening of an efficient transit option along the Corridor will encourage further economic development.	Change in employment within 400m and 800m of Skytrain station, as measured every five years.
<b>Urban Development</b>	Encourage Development within Corridor	Increase access to transit for residents within the Corridor, and residents travelling to/from the Corridor.	Number of residents and jobs located within 400m and 800m of a Skytrain station measured every five years.
	Access to Transit	Increase the number of people that live or work within walking distance of Skytrain station/stops.	The change in number of residents that live within 400m and 800m of a SkyTrain station.
<b>Environment</b>	Reduce Greenhouse Gases (GHG)	By encouraging mode change from vehicles to transit, reduce greenhouse gas emissions.	Annual vehicle-kilometers-travelled (VKT) removed and GHG saved.
<b>Social and Community</b>	Station Locations Optimized	Project stations are positioned near major locations within the Corridor for health, education, and technologies sectors.	Assessment of trip diary and travel between key educational, health care, and technological centres.
	Accessibility	Rapid transit network within the Project corridor will be accessible for individuals with disabilities.	Increase in number of riders with accessibility needs.
	Residential Impacts - Safety within Stations	Skytrain stations provide appropriate security, lighting, Crime Prevention Through Environmental Design.	Skytrain stations are built to this standard.
<b>Deliverability</b>	Project Engagement with Stakeholders	Minimize the impact of transit on traffic congestion and impact on businesses during construction.	Stakeholder feedback during construction.
	Project Schedule	Achieve schedule certainty.	Operating date vs planned.

## 7.2 Quality Management

The Project Agreement is designed to incentivize BSPC to ensure delivery, performance, and high standards of quality. BSPC is required to implement a quality management system that complies with the requirements and principles of ISO 9001 Standard, as well as other specified standards. Contractual performance measures require the achievement of a range of quality related requirements. The Project team will conduct quality audits as construction progresses to provide assurance to the Province that quality requirements are being met.

## 7.3 Project Governance

The Province has assembled, through TI Corp, an integrated project management team that will be responsible for overseeing the Project through design and construction. The Project team reports through the executive project director to the TI Corp Board.

## 8. Glossary of Terms

**Business Case:** Document prepared in British Columbia by a project owner demonstrating the need, costs, and benefits of a project. Additionally, the Business Case is supported by a procurement method and provides an overview of the accounting impacts that a project may have.

**Indigenous Group:** Refers to each of Musqueam Indian Band, Squamish Nation, and Tsleil-Waututh Nation.

**Independent Certifier:** Independent, third-party certifier engaged jointly by the owner and the Private Partner to verify and certify whether substantial completion has been met.

**Independent Engineer:** Independent, third-party certifier engaged by the owner to certify payments based on reviews and confirmation of construction activity progress.

**On-Time Performance Demonstration:**

Demonstration by the Primary Contractor that the cumulative delay Minutes for all delay Events on the Broadway Subway over 120 consecutive days, does not exceed 120 delay minutes per million service train-kilometres.

**Preferred Proponent:** A proponent selected from a shortlist of bidders to enter into negotiations with a project owner to reach contract execution and deliver a project.

**Private Partner:** The private sector proponent selected to deliver a project.

**Project Agreement:** Sets out the requirements for the delivery of an asset under a partnership delivery model in terms of cost, schedule and performance that typically governs the performance-based payment to a private partner.

**Province:** The Province means the Province of British Columbia.

**Request for Proposals (RFP):** Document issued by an owner for qualified proponents to submit formal proposals to deliver a project.

**Request for Qualifications (RFQ):** Document issued by an owner inviting parties interested in participating in an RFP, to submit their qualifications for delivering a project.

**Track Intrusion Detection System (TIDS)**

**Performance Demonstration:** Demonstration by the Primary Contractor that the number of false trips on the Broadway Subway over 120 consecutive days, does not exceed 18. The Track Intrusion Detection System detects intrusions into the trainway and emergency walkways at the ends of each station platform.



transportation  
investment  
corporation

