Reviewed by the GVTA Finance and Audit Committee – June 28, 2006

To: GVTA Board of Directors

From: Fred Cummings, Project Director, Golden Ears Bridge Project

Date: June 16, 2006

Subject: Golden Ears Bridge: Value for Money Report

PURPOSE

To provide the Board of Directors with the *Value for Money Report* appended to this information report. The *Value for Money Report* has been prepared by the Golden Ears Bridge (GEB) project team, and summarizes the value achieved by entering into a DBFO Contract with the Golden Crossing General Partnership.

BACKGROUND

A new crossing of the Fraser River has for many years been part of the long-term plans of the Greater Vancouver Regional District and the province. The GEB has been planned to respond to the high population growth rate in the northeast sector of the region. The area is not currently well served and the GEB will provide much-needed capacity to address the north-south travel demand. The GEB will help reduce congestion on existing roads and bridges and improve accessibility to and from industrial and commercial areas.

The GEB project is expected to meet the following objectives and service needs:

- Reduce travel times and traffic congestion for commuters and goods movement;
- Promote residential and industrial development;
- Improve accessibility to and from residential and industrial developments;
- Minimize impacts on green space and agricultural land;
- Improve transit connections across the Fraser River;
- Link existing pedestrian and cycling networks; and
- Connect Highways 1, 7 and 15.

In October 2004, the GVTA Board approved the following business model for the GEB project:

- TransLink will enter into a DBFO agreement for the design, construction, financing, operation, maintenance and rehabilitation of the GEB;
- TransLink will enter into a separate design-build-operate-maintain contract with a tolling equipment and system supplier;
- TransLink by By-Law will set the toll rates and tolling structure, and TransLink will receive all net revenues and carry the revenue risk; and
- The DBFO Contractor will be paid directly by TransLink and the costs will be recovered through toll revenues and the redirected annual indexed Albion Ferry subsidy.

Subsequently, the Board approved a further recommendation whereby TransLink will be responsible for the direct financing of TransLink's incurred costs, including property acquisition, project planning and development and third party commitments (e.g. municipal road improvements; Katzie First Nation agreement) not to exceed $166 million when offset by a $50 million licensing fee provided by the DBFO Contractor to TransLink upon contract close.

TransLink has entered into a contract with the Golden Crossing General Partnership for the design, construction, financing, operations, maintenance and rehabilitation of the GEB for an approximately 35.5-year period (assuming 3.5 years to reach substantial completion followed by a fixed 32-year operations period). This 35.5-year term began in 2006 with the execution of the agreement on March 3, and terminates 32 years after substantial completion is attained – in 2041.

DISCUSSION

The *Value for Money Report* provides an understanding of the decisions and competitive selection process undertaken by TransLink to achieve value for money in the implementation of the GEB project. TransLink has successfully negotiated the transfer of considerable risk to its private partner, resulting in capital cost certainty in a construction market that is experiencing capacity challenges as competition increases in an overheated construction market fuelled by the 2010 Olympics. The value of obtaining a fixed price, cost certain contract in this market, cannot be overstated.

Comparing the total costs of the DBFO contract with a risk adjusted reference case, on a net present value basis, has shown the estimated value of the DBFO delivery in measurable terms. The reference case provided a hypothetical, risk-adjusted estimate of the cost of procuring the GEB project using traditional, or recently used public sector procurement strategies and financing methods, assuming a level of management responsibility and allocation of risks that are typical under such methods. Risk is appropriately allocated reflecting the reference case procurement scenario.

The quantified value is likely underestimated in this report. The inflation factors used in determining the construction costs of the reference case were the source of much debate and have been conservatively estimated. Industry experts have indicated that labour, material and equipment costs are likely to exceed the 6% inflation rate adopted by TransLink in the reference case.

The innovative financing structure for this project, successfully achieves TransLink's objectives by:

- Providing a stream of Capital and OMR payments that over the life of the project are affordable;
- Protects TransLink at a time when the project is at its most vulnerable – the early years of operation by deferring payments to a time when toll revenues are more certain;
- TransLink does not make a single payment to the DBFO Contractor until the bridge goes into service;
- TransLink has capped capital payments over the first five years to allow the redistribution of traffic to build as users discover the advantages that the GEB will afford; and
- TransLink has the ability to independently effect a refinancing of the project, if more favourable terms can be leveraged.

The resultant user benefits are the main reason for completing the GEB, and have been estimated to total $3.6 billion over the life of the project.

In conjunction with the *Value for Money Report,* TransLink has posted the *Golden Ears Bridge Reference Case Report, November 4, 2005,* the report of the Fairness Monitor and the Project Agreement executed on March 3, 2006, to TransLink's GEB website at www.translink.bc.ca/goldenearsbridge. The reports are available in the Project Information section of the website.

CONCLUSION

Comparing the total costs of the contract between TransLink and the Golden Crossing General Partnership with a risk adjusted reference case, on a net present value basis, has shown the estimated value of the DBFO delivery for the GEB in measurable terms. The *Value for Money Report* describes the process TransLink undertook to achieve the measurable value and summarizes the financial benefits to the region.

Golden Ears Bridge Value for Money Report

June 2006

TRANSLINK

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Executive Summary

A new crossing of the Fraser River has for many years been part of the long-term plans of the Greater Vancouver Regional District and the province. The Golden Ears Bridge (GEB) has been planned to respond to the high population growth rate in the northeast sector of the region. The area is not currently well served and the GEB will provide much-needed capacity to address the north-south travel demand. The GEB will help reduce congestion on existing roads and bridges and improve accessibility to and from industrial and commercial areas.

The GEB project is expected to meet the following objectives and service needs:

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TransLink has entered into a single contract with the Golden Crossing General Partnership to design, construct, finance, operate, maintain and rehabilitate the GEB for an approximately 35.5-year period (assuming 3.5 years to reach substantial completion followed by a fixed 32-year operations period). Based on the projected toll revenues and a redirection of the current Albion Ferry subsidy, the project is anticipated to achieve full recovery of initial capital costs, operations, maintenance and rehabilitation costs, and the costs of financing, over 35.5 years. This 35.5-year term began in 2006 with the completion of the agreement with the DBFO Contractor on March 3, and terminates 32 years after substantial completion is attained – in 2041.

This *Value for Money Report* provides an understanding of the decisions and competitive selection process undertaken by TransLink to achieve value for money in the implementation of the GEB project. TransLink has successfully negotiated the transfer of considerable risk to its private partner, resulting in capital cost certainty in a construction market that is experiencing capacity challenges as competition increases in an overheated construction market fuelled by the 2010 Olympics. The value of obtaining a fixed price, cost certain contract in this market, cannot be overstated.

Comparing the total costs of the DBFO contract with a risk adjusted reference case, on a net present value basis, has shown the estimated value of the DBFO delivery in measurable terms. The reference case provided a hypothetical, risk-adjusted estimate of the cost of procuring the GEB project using traditional, or recently used public sector procurement strategies and financing methods, assuming a level of management responsibility and allocation of risks that are typical under such methods. Risk is appropriately allocated reflecting the reference case procurement scenario.

The quantified value is likely underestimated in this report. The inflation factors used in determining the construction costs of the reference case have been conservatively estimated. Industry experts have indicated that labour, material and equipment costs are likely to exceed the 6% inflation rate used by TransLink,

The innovative financing structure for this project, successfully achieves TransLink's objectives by:

- Providing a stream of Capital and OMR payments that over the life of the project are affordable
- Protects TransLink at a time when the project is at its most vulnerable – the early years of operation by deferring payments to a time when toll revenues are more certain
- TransLink does not make a single payment to the DBFO Contractor until the bridge goes into service
- TransLink has capped capital payments over the first five years to allow the redistribution of traffic to build as users discover the advantages that the GEB will afford
- TransLink has the ability to independently effect a refinancing of the project, if more favourable terms can be leveraged

The resultant user benefits are the main reason for completing the GEB, and have been estimated to total $3.6 billion over the life of the project.

1. Report Objectives

A. Purpose of Value for Money Report

The Golden Ears Bridge (GEB) will provide a vital new link between communities on the south side of the Fraser River (Surrey and Langley) and the north side communities (Maple Ridge and Pitt Meadows). Implementation of the much-needed GEB will yield many social and economic benefits to the users, the communities the project serves, and the region as a whole. The GEB represents a significant investment in the region, but the direct and indirect benefits that will result, far outweigh the costs of the project.

The purpose of this *Value for Money Report* is to provide the public with an understanding of the decisions and competitive selection process undertaken by TransLink to achieve value for money in the implementation of the GEB project. The estimated value presented in this report is a result of TransLink making the decision to enter into a design-build-finance-operate (DBFO) agreement with the Golden Crossing General Partnership (GCGP), the successful consortium recently awarded a 35.5-year DBFO contract for the GEB.

Partnerships BC describes "Value for Money" as a broad term that captures both quantitative factors, such as costs, and qualitative factors such as service quality and protection of public interests. In this report, both the quantitative and qualitative factors that TransLink considered prior to the decision to enter into a long-term agreement with the GCGP are presented. The report also forecasts the outcome if TransLink were not to enter into a DBFO agreement, and deliver the project in a more tradition fashion.

B. Summary of Ensuing Sections

This report presents the assessment of value for money and documents the approach and assumptions in five subsequent sections:

Section 2: Project Background - Business Case

Section 3: Selection Process

Section 4: Agreement Summary

Section 5: Project Schedule

Section 6: Reference Case Analysis

Section 7: Achieving Value for Money

2. Project Background – Business Case

A. Project Description

A new crossing of the Fraser River has for many years been part of the long-term plans of the Greater Vancouver Regional District (GVRD) and the province. The GEB has been planned to respond to the high population growth rate in the northeast sector of the region. The area is not currently well served and the GEB would provide much-needed capacity to address the north-south travel demand. The GEB would help reduce congestion on existing roads and bridges and improve accessibility to and from industrial and commercial areas.

The new crossing is proposed to consist of a six-lane toll bridge over the Fraser River. Located approximately 45 kilometers east of the City of Vancouver, the project includes a number of controlled access arterial roads connecting the bridge to the existing road network on both sides of the Fraser River. The project also includes municipal road upgrades to improve traffic flows and facilitate the integration of the new crossing into the existing road network.

The Golden Ears Bridge (GEB) Project will connect the north side communities of Pitt Meadows and Maple Ridge with Langley and Surrey on the south side and will provide an alternative fixed crossing of the Fraser River to the Pitt River/Port Mann and Mission Bridges. The Albion Ferry, operated by the Fraser River Marine Transportation Ltd., a subsidiary of TransLink, currently provides the only direct link between Langley and Maple Ridge. It is a low volume operation with a capacity of 100 vehicles/hour/direction. Users preferring to use the Albion Ferry, instead of driving the circuitous routes and long distances to reach their destinations, are often faced with the inconvenience of long line-ups and delays, particularly in the peak hours, as demand is far in excess of capacity. Upon completion of the GEB, operation of the Albion Ferry will be discontinued, as users will have a far more convenient, reliable and quicker option.

The project's general location and alignment is shown in Exhibit 1. Consisting of approximately 40 lane-km of grade-supported roadway and 20 lane-km of roadway on bridge structures, the GEB Project is a significant component of TransLink's Three Year Plan and Ten Year Outlook. It supports the regional growth strategy, air quality and economic development objectives of the Greater Vancouver Regional District (GVRD)'s Livable Region Strategic Plan. The GEB Project is expected to meet the following objectives and service needs:

- Reduce travel times and traffic congestion for commuters and goods movement
- Promote residential and industrial development
- Improve accessibility to and from residential and industrial developments
- Minimize impacts on green space and agricultural land
- Improve transit connections across the Fraser River
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Exhibit 1: Golden Ears Bridge General Alignment

B. Business Case for the Golden Ears Bridge

User and transportation benefits

The GEB Project will provide a new travel route that is much shorter than the current Pitt River/Port Mann route, reducing travel distances and times between Pitt Meadows/Maple Ridge and Surrey/Langley. It will also help reduce congestion on existing routes, particularly the Pitt River and Port Mann Bridges.

The GEB Project is expected to serve more than 20 million one-way vehicle trips (passenger cars, commercial vehicles, transit buses) annually by 2012. Travel distances will be reduced by approximately 12 kilometres on average, resulting in trip-time savings of approximately 20 to 30 minutes. Vehicle operating cost savings[1] and safety benefits[2] will also be significant. The benefit-cost analysis is very favourable, with user benefits outweighing project costs by about 3.3 to 1 (see Exhibit 2).

USER BENEFITS	*FINANCIAL VALUE*
Travel Time Savings[3]	**$1.6 billion**
Vehicle Operating Cost Savings	**$1.4 billion**
Safety Benefits	**$ 0.6 billion**
TOTAL User Benefits (35 years NPV)	**$3.6 billion**

Exhibit 2: Financial Value of User Benefits based on 35-year Net Present Value Analysis

The travel time isochrones (contours) shown in Exhibit 3 provide an indication of the challenges that Pitt Meadows and Maple Ridge residents have travelling in the morning peak hour. Each coloured contour line represents a travel time of ten minutes from the asterisk point shown near Dewdney Trunk Road and Lougheed Highway. Exhibit 4 shows the effect on travel times with the addition of the GEB. The dramatic change in north-south accessibility, provided by the GEB, will significantly reshape the north-south travel patterns in the region.

[1] Fuel and maintenance
[2] Less congestion and newer safer roads resulting in fewer accidents
[3] Quantified by multiplying the total travel time savings by the users' value of time (see Model Development Report: Steer Davies Gleave; February 2004 for value of time classification and calculations)

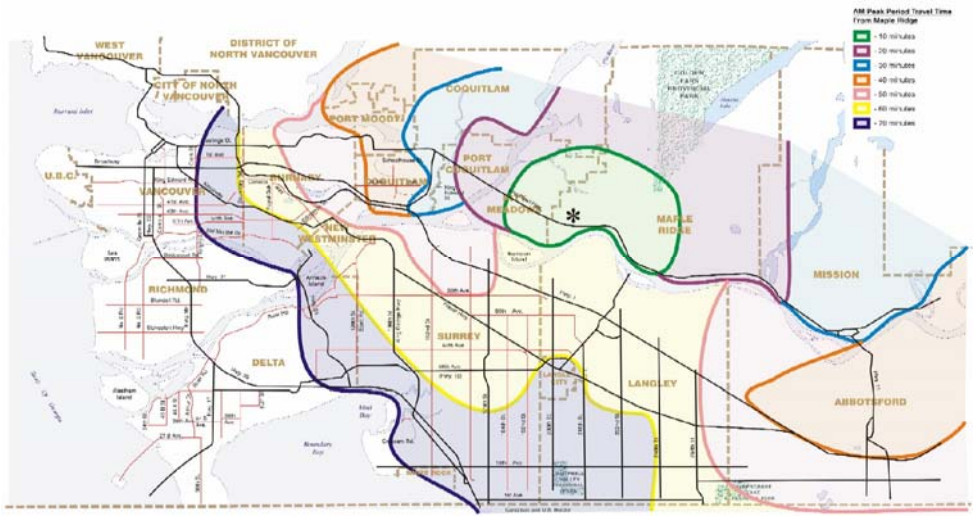

Exhibit 3: Travel Time Isochrones (Contours) without Golden Ears Bridge - AM peak

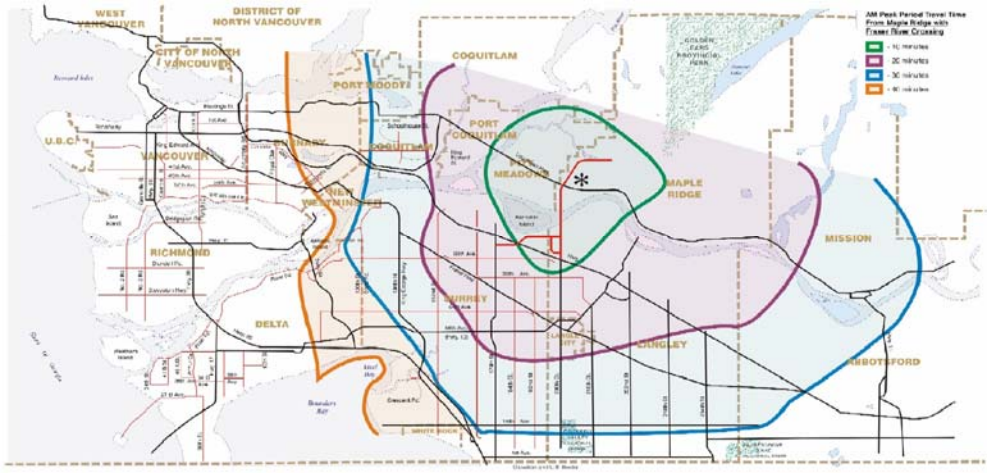

Exhibit 4: Travel Time Isochrones (Contours) with Golden Ears Bridge - AM peak

Economic impacts during construction

The GEB Project will result in major direct economic impacts during its construction. In BC alone, the project is conservatively forecast to generate over 7,000 person-years of employment and approximately $400 million in GDP, including $155 million in government revenues.

Economic competitiveness and community benefits

The GEB will improve the economic competitiveness of Fraser Valley communities. In addition to improving workforce mobility and increasing the labour pool, the GEB will facilitate the efficient flow of commercial goods and business traffic. It will also provide community benefits through new travel and routing choices for transit users, cyclists, and pedestrians.

The Livable Region Strategic Plan provides the basis for planning and implementing major transportation improvements in the GVRD. The GEB is a key component of that plan, and is required to realize the population and employment targets for the most directly served municipalities of Maple Ridge, Pitt Meadows, Surrey and Langley. Exhibit 5 summarizes the expected attraction of new residents and businesses to the four adjacent communities. All of these benefits are a result of the improved mobility provided by the GEB.

INDUCED BENEFITS by 2021	*Langley*	*Surrey*	*Maple Ridge/ Pitt Meadows*
New businesses	155	170	410
New residential units	1,455	1,660	4,000
Population	4,600	5,150	12,000
Commercial floor space	235,000 ft²	260,000 ft²	615,000 ft²
Property tax	$5 million	$4.75 million	$13 million
Residential DCCs	$23 million	$33 million	$50 million

Exhibit 5: Community Benefits induced by the Golden Ears Bridge

C. Brief History of the Project to Date

With the creation of TransLink in 1998, the new crossing project fell within TransLink's mandate to plan and finance the regional transportation system. In September 2000, the TransLink Board endorsed in principle the development of a tolled high-capacity crossing of the Fraser River in the 200th Street corridor. The Board directed staff to confirm the feasibility and desirability of such a crossing and to bring forward recommendations on the optimal configuration, required road network improvements and financing and development strategy.

In May 2002, TransLink staff presented to its Board[4] the findings of the initial consultation, traffic, financial and technical analyses supporting the feasibility and desirability of the GEB Project. The Board authorized the establishment of a project team and approved the expenditures necessary to proceed with developing the project specifications and to commence the procurement process. The Board further directed that the project be undertaken at no net cost to TransLink. The user tolls must, when combined with the redirected annual indexed Albion Ferry subsidy, be sufficient to cover all project costs.

[4] TransLink Board Report: Fraser River Crossing Project May 13, 2002

In October 2003, following the exploration of a number of alternatives, the Board approved[5] a business model whereby a new wholly owned subsidiary of TransLink would be responsible for entering into a Design-Build-Operate contract with a selected contractor. The toll revenue risk would be non-recourse to TransLink and reside solely with the subsidiary. So in the event that toll revenues were not sufficient to support the costs and contractual payments, there was no obligation for TransLink to step in and support the project. A subsequent study, commissioned in spring 2004 to review the business model decision, raised concerns about the asset ownership risks in the event of a TransLink default under the non-recourse model. TransLink would not allow a subsidiary to fail, nor would it risk a transfer of ownership of the bridge and toll revenues to a private party (most likely the banks providing the financing) in the event of a default. Therefore, the premium (higher financing costs) paid to finance the non-recourse subsidiary model was deemed excessive and did not provide good value to TransLink. Consequently, in October 2004 TransLink staff recommended, and the Board approved[6], the following alternative business model for the GEB Project where the revenue risk resided solely with TransLink:

- The GEB Project will use a DBFO delivery model for the design, construction, financing, operation, maintenance and rehabilitation of the GEB.
- TransLink will enter into a separate design-build-operate-maintain (DBOM) contract with a tolling equipment and system supplier.
- TransLink by By-Law will set the toll rates and structure, and TransLink will receive all net revenues.
- The DBFO Contractor will be paid directly by TransLink and the costs will be recovered through toll revenues and the redirected annual indexed Albion Ferry subsidy.

On a purely financial basis, one of the models considered was slightly preferred over the DBFO model. In that model, the design-build contractor would provide financing during construction, but TransLink would refinance the project by borrowing through the Municipal Financing Authority, with its preferred borrowing rates, at the end of construction. However, the decision of a preferred model was not strictly a financial one. The qualitative analysis came out highly in favour of the DBFO model since there was a financial commitment by private investors through the entire term of the agreement (mitigates the risk of any material or latent defect in the design or construction), the model has a proven track record in the industry and is well understood and accepted, there is a complete transfer of risk to the contractor to obtain and structure the financing, and there were fewer approvals required.

Subsequently, the Board approved[7] a further recommendation whereby TransLink will be responsible for the direct financing of TransLink's incurred costs, including property acquisition, project planning and development and third party commitments (municipal road improvements, Katzie First Nation agreement, etc.) totalling $216 million. Since TransLink carried all the risks associated with these activities and responsibilities, TransLink would not benefit by transferring the financing responsibility to the DBFO Contractor. TransLink would simply pay a higher borrowing cost. However, a $50 million license fee payable by the

[5] TransLink Board Report: Fraser River Crossing – Request for Qualifications and Preferred Business Model October 13, 2003
[6] TransLink Board Report: Revised Business Model for the Golden Ears Bridge October 6, 2004
[7] TransLink Board Report: Financing TransLink Expenditures for the Golden Ears Bridge September 12, 2005

DBFO Contractor to TransLink upon contract close would help offset some of the TransLink costs, thereby reducing TransLink's direct borrowing and debt obligation to $166 million. The license fee represented a significant up-front investment by the DBFO Contractor. $50 million was deemed to be the upper limit that lenders would be willing to provide prior to design and construction commencing.

The design, construction, financing, operations, maintenance and rehabilitation of the GEB were contracted to a single private contractor for an approximately 35.5-year period (assuming 3.5 years to reach substantial completion followed by a fixed 32-year operations period). The contract term was determined through a financial analysis that determined that, based on the projected toll revenues and Albion Ferry subsidy, the project is anticipated to achieve full cost recovery of initial capital costs, operations, maintenance and rehabilitation costs, and the costs of financing, over 35.5 years. This 35.5-year term began in 2006 with the completion of the agreement with the DBFO Contractor on March 3, and terminates 32 years after substantial completion is attained – in 2041.

3. Selection Process

A. Selecting a DBFO Contractor

TransLink was responsible for the planning, preliminary engineering, environmental certification, third party approvals, and property acquisition. The Project Team was led by TransLink staff and included consultants with specialized technical, business, financial and legal expertise. The Project Team led the procurement process.

A Request for Qualifications was completed and three proponent teams were short-listed to proceed to the Request for Proposals (RFP) stage, for the DBFO components of the project. The key procurement milestones are as follows:

- The RFP was released in January 2005 to:
  - Golden Crossing Group
  - Fraser Valley Connector Group
  - RiverLink
- One of the proponent teams (RiverLink) withdrew from the competition in February 2005 when one of the principle partners was unable to make commitments to the consortium.
- Binding technical proposals were submitted on September 13, 2005 by the two remaining teams.
- A proposal completeness review, technical evaluation[8] and due diligence[9] review of the evaluation was completed on October 19, 2005.
- Both proponents were advised on October 21, 2005 of a change in the RFP process, requiring that they both include TransLink's conceptual design of the Lougheed Highway Interchange in their Financial Submission – the Financial Submission deadline was extended by one week to allow for this inclusion.
- Notification of technical compliance was delivered to the proponents on October 21, 2005.
- Two binding financial offers were received November 4, 2005.
- A completeness review, financial evaluation[10] and due diligence review of the evaluation was carried out between November 4 and November 21, 2005.

[8] Technical evaluation team comprised of recognized experts in project management, quality management, environmental management, safety planning, construction, communications, first nations, road design, structural design, operations, maintenance and rehabilitation and aesthetics.
[9] The due diligence panel included a director of KPMG, a former ADM Ministry of Transportation, and a current VP at Partnerships BC
[10] Financial evaluation team comprised of TransLink's financial advisors (TDSI; Infrastructure Financial Advisory Services), TransLink Financial Analyst

- The TransLink Board approved the selection of Golden Crossing Group as Preferred Proponent on December 7, 2005.
- Commercial Close was achieved on February 24, 2006.
- Financial Close was achieved on March 3, 2006 (the effective date of contract)

A key component of the selection process was the ongoing consultation between TransLink and the proponents. Consultation allowed TransLink to provide direct clarification of the contractual requirements. It also allowed the proponents to provide feedback on both the contractual requirements and the procurement process including issues related to the RFP. The feedback was viewed as a test of reasonableness and draft agreements were revised to reflect the feedback that TransLink received. This direct ongoing consultation was monitored by a Fairness Monitor[11] to ensure that the process was fair and even-handed to the competing teams. The Fairness Monitor has delivered his report indicating that the process met the criteria of fairness, openness, transparency and integrity.

> "*We are of the view that the evaluation of the proposals met the criteria of fairness, openness, transparency and integrity. Throughout the process, we were impressed by the careful and conscientious approach of all the GVTA team. We congratulate all members of the evaluation team and the Golden Ears project managers for the high degree of professionalism displayed throughout."*[12]

B. Proposal Evaluation

The evaluation of the proposal submissions was based on a *Submission Evaluation Manual* and specific technical and financial evaluation methodology documents.

The *Submission Evaluation Manual* was prepared as a general guide for the evaluation teams for selecting the preferred proponent for the GEB project. The manual elaborates on the framework that was described in the *Request for Proposal* document and explains the various stages of the evaluation process. The specific technical and financial evaluation methodology documents contain the proposal evaluation worksheets that stipulate the criteria to be used by each of the technical and financial teams to evaluate each of the proponent's proposal submissions. These documents were developed by individual technical and financial teams and were presented to a due diligence committee for review prior to the start of the evaluation process (see Exhibit 6 for evaluation team organization chart).

The technical evaluation committee was comprised of nine individual evaluation teams: organization/project management; quality; environmental; safety/construction; Katzie First Nation/communications; design – roads; design – structures; operations, maintenance and rehabilitation; and, aesthetics. A financial evaluation committee evaluated the financial submissions once the proponents had passed the technical evaluation.

Throughout the evaluation process, the Project Director was supported by a Due Diligence Committee and the Fairness Monitor to ensure that the evaluation undertaken by the technical and financial teams was done fairly and in accordance with the approved evaluation criteria. The Due Diligence Committee included a director of KPMG, a former ADM Ministry of

[11] ADR Chambers, the Hon. Roger P. Kerans.
[12] ADR Chambers, Fairness Monitor's Report, the Hon. Roger P. Kerans

Transportation, and a current VP at Partnerships BC. All of the committee members have public infrastructure procurement and contracting expertise.

Based on the technical evaluation, both proponents passed. As a result, both were asked to submit financial proposals.

The financial evaluation process was comprised of five key components: mandatory requirements; financial capacity; financial plan; financial model; and, financial offer. Both proponents met the requirements of the first four components. The determination of the best financial offer was based on a calculation of the lowest NPV of proposed monthly payments. Golden Crossing Group submitted the best financial offer and were awarded the contract to design, build, operate and finance the GEB.

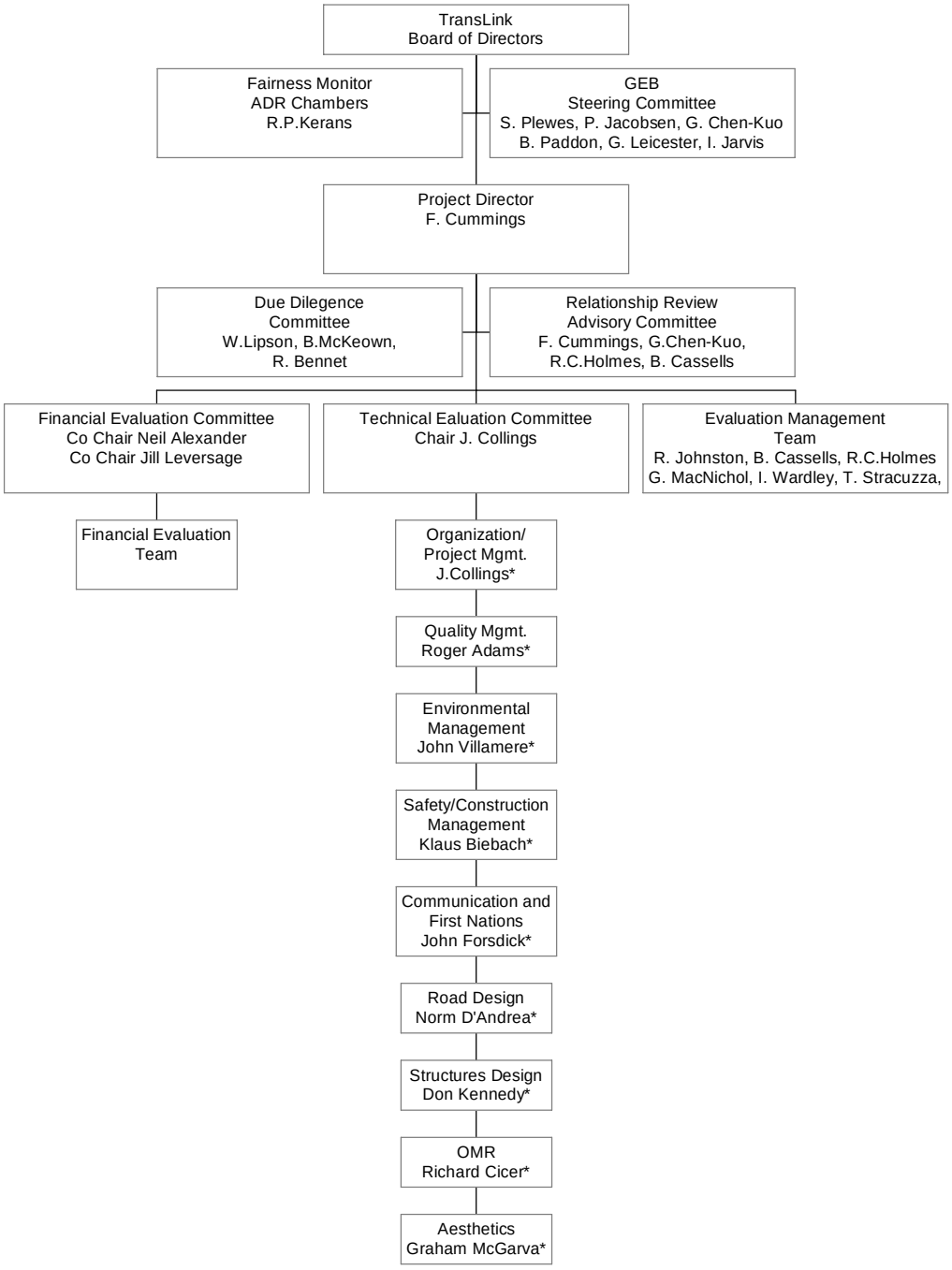

Exhibit 6: Evaluation Team Organization Chart

****Subcommittee Chairs***

4. Agreement Summary

A. Golden Crossing Group

Headed by Bilfinger Berger BOT Inc., the Golden Crossing Group's prime team members include:

- Bilfinger Berger Civil (a division of Bilfinger Berger AG)
- CH2M Hill Companies Ltd.
- Buckland and Taylor Ltd.
- Capilano Highway Services Company

Bilfinger Berger BOT Inc. assumes the role of DBFO Contractor and will carry out its duties via a special purpose company called the Golden Crossing General Partnership. The GCGP is responsible for:

- acting as a single point of contact for TransLink during both the design-build and operations maintenance and rehabilitation phases;
- meeting the requirements and standards set out within the DBFO Agreements;
- ensuring contract compliance and delivery of service from the design-build contractor and operations and maintenance contractor;
- managing the relationships and reporting requirements with TransLink and its representative;reporting to the lenders and managing the project financing; and,planning and executing the bridge and highway rehabilitation in compliance with the project requirements.

The GCGP's design-build contractors (Golden Crossing Constructors Joint Venture) are:

- Bilfinger Berger Canada Inc., a wholly owned subsidiary of Bilfinger Berger Civil and a division of Bilfinger Berger AG, and
- CH2M Hill Canada Ltd., a wholly owned subsidiary of CH2M Hill Companies Ltd.

The design-build contractor will be supported during the design-build phase by a large group of consultants and subcontractors with both international experience and local expertise. Buckland and Taylor Ltd. will be the lead designers for the main bridge crossing the Fraser River.

The GCGP's operations and maintenance contractor is Capilano Highway Services Company (Capilano).

As the operations and maintenance contractor, Capilano will:

- be responsible for all operations and maintenance activities related to the GEB and associated approaches;

- ensure a safe, well-maintained bridge and highway network;
- be supported by the GCGP, who will be responsible for rehabilitation activities over the duration of the DBFO Contract; and,
- have access to additional services provided by various selected subcontractors.

B. Project Financing Structure

The project agreement provides a license to the GCGP to design, build, finance, operate and maintain the GEB project for a period of 35.5 years. This covers a 3.5-year construction period, followed by a 32-year operating period during which the DBFO Contractor will receive a combination of capital payments, operation, maintenance and rehabilitation payments, and safety payments from TransLink. (The details of the payment schedule are described in *Section D. Payments to the DBFO Contractor*.) TransLink received a license fee payment of $50 million from the GCGP at financial close.

The GEB financing structure essentially consists of two components: "financing provided by banks" and "financing provided by the DBFO Contractor".

The "financing provided by banks" itself has two components: senior debt and mezzanine debt[13]. The senior debt is provided 50% by Dexia Credit Local and 50% by Depfa Bank, two European-based banks; the mezzanine debt is provided 100% by Depfa Bank.

The senior debt and the mezzanine debt differ primarily in terms of their interest rates (senior rates are lower) and events arising as a result of a default (senior debt terms are satisfied prior to mezzanine lenders). Both of these loans are to be drawn down by the DBFO Contractor during the construction period to pay for the construction with no repayments of either interest or principal until substantial completion is reached. Thereafter, because of the relatively small magnitude of capital payments made by TransLink during the early years of operations (see *Section D. Payments to the DBFO Contractor*), the amounts paid back on these loans do not cover the interest costs, and accordingly, the amounts owed on these two loans grows. At their peaks, the senior debt reaches $928 million and the mezzanine debt reaches $31 million. Both loans are projected to be fully paid by the second to last year (Year 31) of the term of the operating period.

The capital cost includes everything required to deliver the project including accrued interest during construction. So the capital cost of the project reflects the total amount of debt including interest. In this structure, there is a difference between the $808 million contracted capital construction cost, and the $928 million senior debt. This is a result of TransLink's repayment program, where TransLink has sculpted the capital repayment for the first five years after substantial completion, until the traffic, and consequent revenue, is forecast to complete its early years' ramp-up. As stated earlier, the constrained capital payments are insufficient to fund even the interest due to the debt, so the unpaid interest is added to the outstanding balance of debt owed, and consequently, the debt grows.

[13] Senior debt – top tier of debt; lenders terms must be addressed in the event of default prior to any other mezzanine or junior debt
Mezzanine debt – second tier of debt; lenders terms addressed in the event of default after senior lenders terms have been satisfied

The payments to be made on the senior debt are guaranteed by two monoline insurance companies[14]: XL Capital Assurance and Ambac Assurance Corporation. These two insurance companies have charged a fee to guarantee to the senior lenders the amounts due. Because these two companies are 'AAA'-rated, the senior debt has achieved a 'AAA' rating, which results in a lowest current rate of interest, whereas the free standing rating for the project is 'BBB' which would result in a higher rate of interest to offset the perceived higher risk of the loan.

The "financing provided by the DBFO Contractor" essentially consists of the equity invested in the project. During the construction, the "equity" is provided by way of an equity bridge loan from the two banks supported by a letter of credit from a highly rated financial institution. After substantial completion of the project, the equity bridge loan, together with all accumulated interest, is repaid by a combination of subordinated debt and equity invested by the DBFO Contractor. The subordinated debt invested by the DBFO Contractor is projected to be approximately $35 million and the equity invested by the DBFO Contractor is projected to be approximately $17 million. In the event of a default by the DBFO Contractor that leads to termination, TransLink is under no obligation to repay the equity invested.

Although accomplished elsewhere, the financing structure is innovative in a number of aspects. The financing features a 34.5-year maturity period on the debt and the unconditional and irrevocable financial guarantees of payment to the lenders of scheduled principal and interest, provided equally by the monoline insurance companies. This marks the first time a Canadian public private partnership transaction has been strengthened with a AAA financial guarantee. The higher the rating, the lower the payments are to the lenders. The lower the payments are to the lenders, the lower the payments are from TransLink to the DBFO Contractor. In addition, this transaction is the first guarantee of bank loans in the public private partnership market in North America. This is the biggest private financing ever raised for a "greenfield" public private partnership project in Canada. This first guaranteed public private partnership financing structure in North America (second in the world) resulted in attractive terms for the borrower, and subsequently lower payments by TransLink, while ensuring the required pricing certainty at the proposal stage by fixing the long term borrowing rate at financial close.

In summary, the following points highlight why this financing structure is a good one for TransLink:

- Vast majority of debt is senior debt, resulting in low interest rates and low payments;
- Relatively low percentage of equity required, again resulting in lower payments to the DBFO Contractor;
- Payments to senior lenders are guaranteed, thereby increasing the credit rating on the debt, again lowering interest rates and lowering payments;
- Relatively long amortization period (34.5 years) reducing annual payments to match toll revenue forecasts;
- Payments to the DBFO Contractor in the first five years of operation are sculpted to match the forecasted traffic ramp-up period, thereby deferring payments until TransLink is receiving steady toll revenues.

[14] Companies providing credit insurance to lenders or bondholders for a project company's debt

C. Terms of the DBFO Agreements

The agreement[15] specifies standards that the DBFO Contractor must meet for designing, constructing, operating, maintaining and rehabilitating the GEB. A hand-back standard is specified that defines the condition of the main river bridge, the structures and the roads at the end of the term of the agreement when TransLink takes over the maintenance and operations functions. Payment is subject to the DBFO Contractor meeting those standards. Failure to meet the standards results in payment deductions depending on the nature and frequency of the deficiency. Each deficiency carries with it an assigned number of points. Deductions are based on the accumulated number of points in each payment period. If the failure to meet a specific standard is significant, there is a contractual implication (default or termination in the extreme case).

The following are the key terms of the agreement:

- TransLink acquires the facility lands required to construct the project;
- TransLink grants a license to GCGP to design, build, finance, operate, maintain, and rehabilitate the GEB for a 3.5 year construction period and a 32 year operating term;
- No payment is made to GCGP until substantial completion (bridge is operational) is reached;
- Substantial completion is determined by an independent certifier contracted to and cost shared by both TransLink and the DBFO Contractor;
- Municipal, Provincial and GVRD facilities (i.e. roads, sewers, water mains) are handed over to the respective agencies upon reaching substantial completion;
- GCGP provides 2-year warranties on all Municipal, Provincial and GVRD handover facilities;
- GCGP is responsible for maintaining, operating and rehabilitating the TransLink owned assets only – handover facilities are maintained by the respective agencies;
- TransLink retains ownership of land and all TransLink assets (except for handover facilities) constructed throughout all phases of the agreement;
- GCGP assumes construction schedule and budget risks;
- GCGP receives monthly capital and operating payments after substantial completion is reached;
- GCGP receives payments (up to a maximum aggregate amount of $250,000 per year) for safety initiatives resulting in measurable safety improvements (reduced collisions);
- If GCGP fails to meet maintenance performance standards, TransLink is entitled to apply a performance deduction or a non-availability deduction to the monthly operations, maintenance and rehabilitation (OMR) payment depending on the nature of the non-conformance;

[15] The Project Agreement is posted to TransLink's website

- In the event that a material defect in the design, construction, workmanship or materials has a material adverse effect upon the structural integrity or functionality of the bridge, any above-grade structures, or the travelled portion of the roads, GCGP is obligated to correct the defect for the duration of the term of the agreement;

- If a material defect results in lane closures affecting TransLink's ability to collect tolls, the monthly capital payments are subject to deductions;

- GCGP is required to self-monitor and provide periodic operations and maintenance reports;

- TransLink has the ability to monitor and audit compliance against contractual requirements;

- TransLink collects and controls the tolls charged through an agreement with a separate toll contractor;

- TransLink has the ability to perform safety or emergency related work itself when GCGP fails to do so and offset related costs against payments to GCGP;

- Unique to this agreement, TransLink has the ability to independently effect a refinancing of the project, if more favourable terms can be leveraged. (Although this is not limited to TransLink achieving a superior credit rating, it would be one example where the ability to refinance could be effective, particularly if money could be borrowed over a longer period of time at a more favourable rate. The result could be a deferral of payments to future years allowing TransLink to accommodate unforeseen priorities. The benefits would obviously have to outweigh any penalties or breakage fees inherent in the current financing structure.)

D. Payments to the DBFO Contractor

The DBFO Contractor will receive monthly capital payments and monthly OMR payments once substantial completion is achieved. The monthly capital payments serve to repay GCGP for financing the construction costs of the project. The monthly OMR payments reimburse GCGP for the costs of operating, maintaining and rehabilitating the completed facility. Projected rehabilitation costs have been annualized and are paid out monthly throughout the term of the agreement. Safety payments up to a maximum aggregate amount of $250,000 per year are also available to GCGP providing an incentive for infrastructure or operations improvements that increase the safety of the facility.

All payments to GCGP are indexed annually to the All-items Consumer Price Index for Canada (not seasonally adjusted) as published by Statistics Canada. Similarly, Greater Vancouver Transportation Authority By-Law 2005-40, TransLink's by-law for assessing tolls on the GEB, provides for tolls to be increased annually by indexing them to the same CPI. This protects both TransLink and GCGP from the effects of inflation.

The payments summarized below are base rates, before adjusting for inflation. The first five years of payments have been sculpted to allow a "ramp-up", or build up, of traffic to occur before the maximum monthly payments are due. As a result, the growth in payments (in $2005) mirrors the revenue (toll) projections:

July 2009 to December 2009:	**$500,000 per month**
January 2010 to June 2010:	**$1,500,000 per month**
July 2010 to June 2011:	**$3,000,000 per month**
July 2011 to June 2014:	**$4,000,000 per month**
July 2015 to June 2041:	**$4,792,386.34 per month**

OMR payments will be paid to GCGP on a monthly basis. The monthly OMR payment before adjusting for inflation is:

July 2009 to June 2041:	**$316,198 per month**

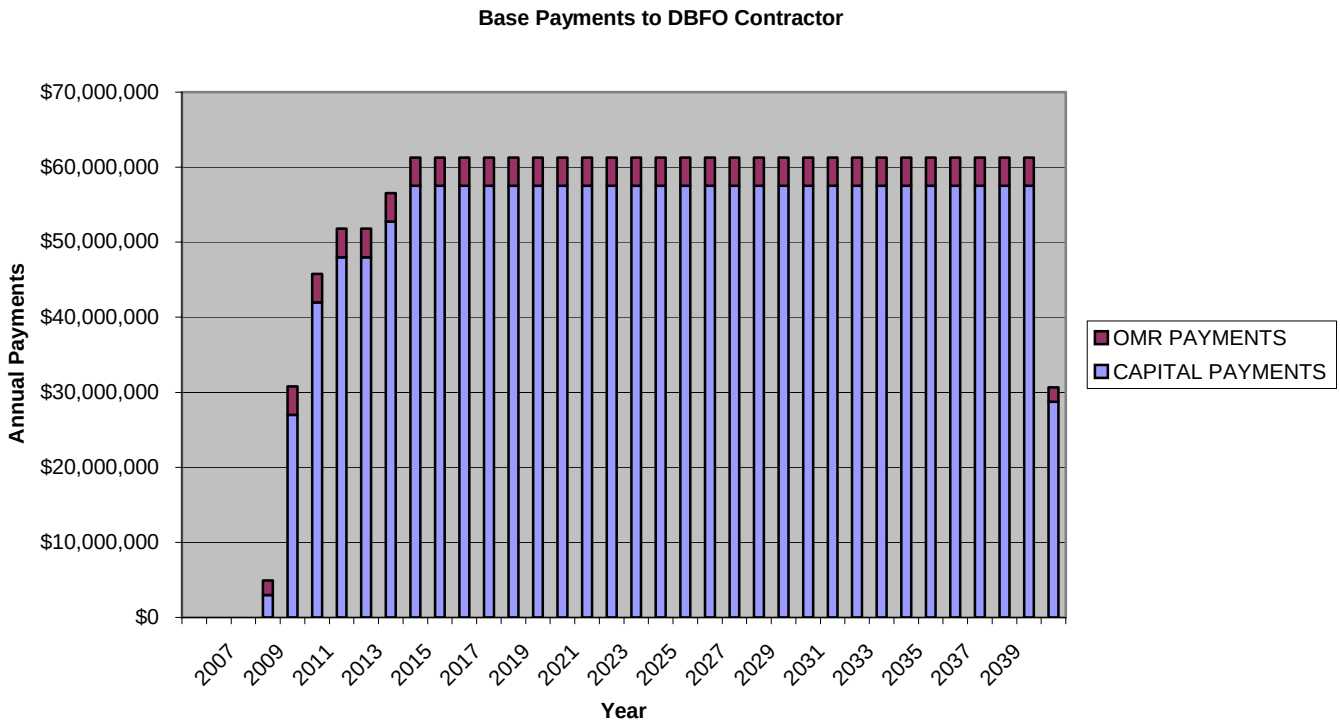

Exhibit 7: Annual Base Payments to DBFO Contractor ($2005)

E. Total Construction Costs

Although the construction capital cost is only one component of the total project cost, it forms the basis for the 35.5 years of borrowing. The GCGP is responsible for financing its portion of the total capital cost (all roads, structures and associated infrastructure but not including TransLink's incurred costs for project development and property acquisition), and the monthly capital payments presented above reflect the principal payments together with the borrowing costs.

Proponents were required to provide a detailed cost breakdown of the estimated construction costs with their financial submissions. The proposed amount was then used to establish the fixed price contract with GCGP with its monthly payment schedule.

GCGP submitted a capital cost breakdown totalling $746 million. In addition to this, TransLink required payment of an up-front license fee of $50 million. The main river bridge crossing the Fraser River accounts for $370 million of the total cost or roughly 50% of the capital construction cost.

TransLink has been developing the GEB project since 2000 when the board first approved the concept and directed staff to initiate the project definition phase and determine the approvals and procurement process. TransLink's net costs for the project activities since 2000, will be $166 million. This includes approximately $140 million budgeted for property acquisition and a further $26 million for project development, payments for municipal road improvements, Katzie First Nation benefit agreement and interest during construction.

F. Risk Allocation

The terms and conditions of the Project Agreements reflect the risks allocated by TransLink through the RFP process. Risks have been allocated to the party best able to manage them. In some areas, TransLink is in a better position to cost-effectively manage a risk and has therefore retained it. The expected value of the risk transferred to GCGP has been used in determining the reference case costs in Section 5 of this report.

Risk Factor	*TransLink*	*GCGP*
Land acquisition	✔	
Fraser River Port Authority lease	✔	
Accuracy of TransLink supplied geotechnical data	✔	
Sufficiency and interpretation of TransLink supplied geotechnical data		✔
Accuracy, sufficiency and interpretation of all other data		✔
Environmental assessment certification	✔	
Environmental authorization		✔
Environmental Permitting		✔
Archaeological finds (disclosed)		✔
Archaeological finds (undisclosed)	✔	
Municipalities and outside agency construction work		✔

Risk Factor	*TransLink*	*GCGP*
Approvals and permits		
Design and construction		✔
Material and labour costs		✔
Material Defects		✔
Utility identification, relocation and accommodation		✔
Severe weather		✔
River flooding		✔
Consultation and communications	✔	✔
Quality management		✔
Insurance and bonding		✔
Operations, maintenance and rehabilitation		✔
Meeting handback standards		✔
Damage to Works (e.g. weather, vandalism, traffic crash, defective materials)		✔
Safety		✔
Soil contaminants (pre-existing and undisclosed)	✔	
Soil contaminants (pre-existing and disclosed or arising from Works)		✔
Inflation – for payments to the DBFO Contractor	✔	
Financing (interest rates, terms and conditions)		✔
Interest rate changes between submission of Financial Offer and commercial close	✔	
Changes in laws	✔	✔
Toll revenues	✔	
First Nation issues	✔	
Commitments to Katzie First Nation		✔

Exhibit 8: Project Risk Allocation

G. Affordability

The success of the GEB contractual arrangement will largely be a result of TransLink's ability to make the Capital and OMR payments to GCGP, and service the debt on its own costs, using just the revenues earmarked for the GEB. Toll revenues and the current $5.2 million annual Albion Ferry subsidy are the only two sources of revenue being used to pay the costs of the project. Both of these revenue sources are indexed to inflation.

The net present value of all Capital payments, OMR payments, and debt service costs on TransLink's portion of the project costs, totals $1,126.6 million. The net present value of the toll revenue and the Albion Ferry subsidy totals $1,229.9 million. In net present value terms, projected revenues exceed the costs by $103.3 million. Revenues are estimated based on the

near investment grade traffic and revenue forecasts[16] provided by Steer Davies Gleave, TransLink's traffic and revenue consultant for the GEB.

TransLink has the ability to vary the tolls by optimizing the rates in the toll bylaw to ensure that they are reflective of the real costs of the project, that they provide effective transportation demand management, and that they continue to attract users to the GEB. TransLink will require a number of years of experience operating the bridge before the real traffic demand and resultant revenue is established with certainty.

[16] New Fraser River Crossing - Traffic and Revenue Forecasts May 13, 2004, Steer Davies Gleave

5. Project Schedule

A. Design and Construction

The detail design phase has been underway since financial close. A number of pre-financial close construction activities were approved, enabling the GCGP's design-build contractor to begin dredging and storing Fraser River sand prior to the construction window in the river being closed.

The design is the responsibility of GCGP, who has subcontracted it to their design-build contractor, Golden Crossing Constructors Joint Venture. They must certify that the design meets all the requirements. TransLink will undertake design reviews, but formal approval is not required. TransLink will provide comments on submittals to ensure that contractual obligations are met.

Construction will start in spring 2006 and will continue until completion in 2009. TransLink will undertake random construction inspections in the form of quality and conformance audits, and provide comments to ensure that contractual obligations are met.

Substantial completion, enabling bridge traffic to start flowing, is scheduled for June 2009. Operations, maintenance and rehabilitation are contracted for a 32-year period, commencing at the date of substantial completion.

B. Operations

GCGP is responsible for operations, maintenance and rehabilitation of the GEB for a 32-year period commencing at the date of substantial completion. GCGP has subcontracted the operations and maintenance responsibilities to Capilano Highway Services Company. GCGP retains the rehabilitation responsibilities.

TransLink makes monthly OMR payments based on the availability of the roads and bridge to the users. Capilano must meet the contracted service specifications or they are subject to penalties and deductions from the monthly payments.

TransLink will be contracting directly with a toll contractor to design-build and operate a tolling system for the GEB. A tolling cooperation agreement will be in place to ensure that all parties are aware of the division of responsibilities.

6. Reference Case Analysis

A. Reference Case Costs

The purpose of preparing a reference case is to provide a benchmark against which TransLink can compare private sector proposals, and to assist in assessing whether the delivery of the project by the private sector represents value-for-money.

The reference case provides a hypothetical, risk-adjusted estimate of the cost of procuring the GEB project using traditional, or recently used public sector procurement strategies and financing methods, assuming a level of management responsibility and allocation of risks that are typical under such methods. Risk is appropriately allocated reflecting the reference case procurement scenario.

The reference case analysis is completed in a stand-alone report *(Golden Ears Bridge Reference Case Report, November 4, 2005; Adjustments to the Golden Ears Reference Case Report, November 25, 2005)* and presents the compilation of data for, and calculation of, the net present value of estimated reference case construction and operating period costs and revenues for the GEB project. The report follows the principles in the May 2003 Industry Canada Document *The Public Sector Comparator – a Canadian Practices Guide* and is considered to reflect current best practice. TransLink's Engineering and Project Services department prepared the report.

In addition, technical guidance was gained from principles applied in developing similar comparators from recently awarded P3 projects in B.C. (e.g. Sea-to-Sky Highway and the Canada Line Project). Project consultants experienced with Canada-based P3 projects were instrumental in the development of the reference case. The Partnerships Victoria (Australia) *Public Sector Comparator Technical Note* was also referenced to provide guidance on the report.

The *Reference Case Report* documents, in particular:

- The compilation and calculation of the raw NPV and the risk-adjusted NPV of the reference case scenario
- The project's material risks, both quantifiable and unquantifiable
- The methodology for the quantification of project risks, and
- The results of the financial analysis.

In summary, the main objectives of the reference case analysis are:

- To establish a "public" delivery scenario for all components of the project;
- To estimate the costs of delivering an identical project and associated services using the public or more traditional delivery scenario;
- To estimate the revenue forecast impacts resulting from the reference case scenario;
- To identify and quantify key risks, and show the expected risk allocation; and

- To determine the net present value of all project cash flows over the project term using the reference case delivery scenario.

Six reference case delivery options were considered for the construction of the civil works. Road and bridge projects undertaken recently in BC were reviewed to determine the maximum contract size that local contractors are typically able to pursue[17]. Because of the size of the project, the timing requirements, the potential economies of scale, and the logical combination of work packages, the reference case splits the scope of work into five sizable individual contracts. Three of which are design-build contracts; two would be smaller design-bid-build contracts. The type of contract chosen for each section is based on the complexity and type of construction work, and potential opportunities for innovation and scheduling improvements. Sections dominated by or with significant structural and utility works have been designated ideal candidates for design-build. Sections with traditional civil infrastructure content, similar to municipal road projects, have been designated as ideal candidates for design-bid-build.

Operations and maintenance contracts for the roads, bridge and structures would be awarded to a single private contractor with a five-year renewable term. Rehabilitation works for the roads, bridge and structures would be procured when they were needed. The tolling delivery would be unchanged from the current plan for the project, which is a design-build-operate-maintain strategy.

Comparative Schedule: **The reference case analysis makes practical assumptions when it comes to schedule. It starts from the supposition that TransLink has chosen not to accept proposals for the DBFO contract. It further assumes that the procurement process would have to be restarted, since TransLink would have to prepare documents for the five individual contracts and select the contractors for the work. Therefore, the reference case analysis assumes a one-year delay in the start of construction, a one-year delay in completion, and subsequently, a one-year delay in the start of operations. In determining the value for money of the DBFO agreement, the resultant delay of benefits to users in the reference case should be a key consideration but is not quantified in this analysis.**

The one-year delay of the reference case is predicated by the construction windows available for in-river work on the Fraser River as well as the practical consideration of the work required to restart a procurement process involving five major contracts. However, one could argue that in a true assessment of value for money, the current project schedule, including decisions and process undertaken to this point, should be dismissed and a hypothetical scenario developed where the reference case delivery options were advanced in parallel with the current process. This would result in an aligned comparison of outcomes and confirm (or disprove) that the decisions made to date, were the correct ones.

Both methodologies are valid, and for the purposes of this report, the assessment of value for money has reviewed the implications of both scenarios. The results are provided in the comparison tables in Exhibit 12 and 13.

[17] Golden Ears Bridge Reference Case Report, November 4, 2005

B. Reference Case Cost Estimates and Financing

Construction cost estimates were based on the BC Ministry of Transportation's elemental cost estimating methodology. The methodology is spreadsheet based and prompts the user to provide data in a logical fashion, related to the sequencing of construction activities. The total estimated cost of the project is built up and provided as the main output of the model. Unit material, labour and equipment rates used were current and based on historical road projects data collected by the Ministry of Transportation.

The cost estimate was adjusted to reflect a general rate of inflation of 2.5% and an annual construction cost (labour and materials) inflation rate of 6%. The annual construction cost inflation rate was based on an assessment of information from various construction industry sources including the BTY Group Market Intelligence Newsletter, Statistics Canada Non-residential Building Construction Price Index, Daily Commercial News and Construction Record, Engineering News Record and the Ministry of Transportation. Most sources indicated a peak inflation rate of 8-10% in the year 2005, followed by a general levelling off of inflation until 2010. The rate of 6% represented what was felt to be a conservative average of the inflation forecasts and was selected for use in this analysis. The 6% inflation rate is assumed valid until 2010.

To determine the total financing costs of the reference case there were some efficiencies built into the financial analysis. These included financing the construction program through a Municipal Financing Authority managed commercial paper program, and providing a principal holiday of two years for each of the ten bonds required to finance the debt. Bonds would be conventional with a sinking fund, amortized over 30 years with no principle repayments for a minimum of two years (and possibly five), and hedged against inflation using a series of interest rate swaps. The financial modelling for the reference case identified a need for an additional short-term borrowing facility to cover the shortfall of revenue in the first nine years of operation and the inability to pay the total debt service costs. This short-term borrowing would be repaid by 2026.

Exhibit 9 presents the total costs of the reference case before adjusting for risk. A discount rate of 6% was used in the NPV analysis representing TransLink's cost of borrowing. The total NPV includes property costs, development costs and the costs associated with tolling.

Raw Cost Summary (NPV)	*$ millions*
Capital Costs	$ 884.0
Operations, Maintenance and Rehabilitation	$ 62.3
TOTAL NPV	$ 946.3

Exhibit 9: Reference Case Net Present Value Before Risk Adjustment

C. Reference Case Risk Assessment

The purpose of the reference case is to provide a benchmark against which TransLink can compare private sector proposals, and to assist in assessing whether project delivery by the private sector represents value for money.

Exhibit 10 illustrates such a comparison assuming that the private sector proposal costs come in at exactly the level of the NPV of the reference case after allowing for the proponents' assessment of risk and efficiencies.

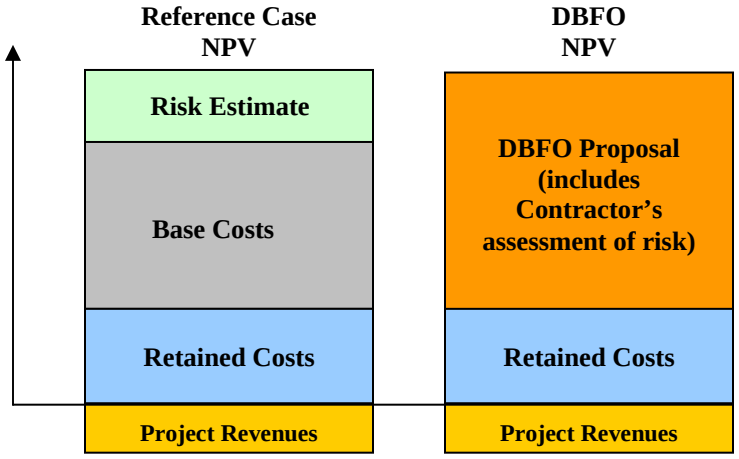

Exhibit 10: Comparison of Reference Case NPV to DBFO Proposal

The objective of the risk assessment process was to identify and quantify the risks associated with the reference case that are retained by the owner, that would have otherwise been transferred to the contractor in the DBFO procurement scenario.

D. Risk Assessment Methodology

The risk analysis process adopted for the GEB Reference Case is summarized in the following steps:

1. Define reference case scope
2. Identify and categorize risks related to reference case scope
3. Quantify range of impacts of individual risks
4. Determine the distribution of outcomes within the risk ranges and
5. Conduct a Monte Carlo simulation and evaluation of the cumulative outcome of all the risks for each risk category
6. Assess cumulative impacts of risks

The risk categories identified for the GEB reference case were:

- Construction specific risks including municipal extras, utilities, traffic management, project management, staging conflicts, geotechnical conditions, environmental remediation, archaeological discoveries, noise mitigation, drainage, etc.

- Global risks including the integration of five construction contracts, construction schedule delay, time delays (review and approvals process), lost tolling revenue, etc.

- OMR risks including latent or material defects, delayed rehabilitation, different heavy vehicle volumes than forecast, etc.

	90th Percentile Risk Tolerance
Quantified Capital Cost Risks (NPV)	$ 143.0 million
Quantified OMR Cost Risks (NPV)	$ 27.6 million

Exhibit 11: Quantified Reference Case Risks

Exhibit 11 shows a confidence level of the quantified risks at the 90th percentile. The confidence level is chosen on a scale of 1 to 100 and is based on the risk tolerance acceptable to the owner, in this case TransLink. A choice of the 90th percentile confidence level can be interpreted as an acceptance that, on a balance of probabilities, the actual cost will not exceed the estimated value more than once out of 10 times. If a higher risk tolerance is chosen by an owner, meaning that the owner requires a higher confidence level that the costs would not be exceeded, the quantified risk estimates typically go up. The 90th percentile confidence level has been chosen as an appropriate measure of TransLink's risk tolerance. Increasing the confidence level would have the effect of increasing the capital estimates in this reference case. The *Golden Ears Bridge Reference Case Report* assesses the risks at a wide range of risk tolerances.

The principle risks relating to the differential between risk adjusted and the raw capital cost estimates include the potential for significant construction cost inflation between 2005 and 2010, uncertainties related to project management and design costs primarily as a result of the interface between the five contracts, and the potential for delays.

The risks associated with OMR costs include the possibility of latent defects in material and construction, delayed rehabilitation, and a higher volume of trucks than expected.

Exhibit 12 provides the sum of the raw reference case cost estimates from Exhibit 9 and the 90th percentile risk cost estimates from Exhibit 11. The capital estimate includes financing costs associated with the financing plan described earlier in the Reference Case Cost Estimates and Financing section. It also compares the Reference Case NPV analysis with that of the contracted DBFO. A positive Net Total indicates that revenues exceed costs over the life of the project.

The NPV of the revenues in the reference case (Exhibit 12) are lower than in the DBFO analysis. In order to accurately compare "like with like", the end date of the DBFO contract (June 2041) was held as the end date for the reference case analysis. Because there is a one-year delay in opening the bridge to traffic in the reference case, there is one year of lost revenue as well.

	Reference Case (90th Percentile)	*DBFO*[18]
Capital*	($ 982.7 million)	($ 1,060.1 million)
OMR	($ 90.0 million)	($ 66.5 million)
Revenues	$ 1,165.3 million	$ 1,229.9 million
NET TOTAL	$ 92.6 million	$ 103.3 million

*includes financing costs

Exhibit 12: Risk Adjusted Net Present Value Comparison – Affordability With Assumed Reference Case Schedule Delay

In order to assess the effect of eliminating the one-year delay assumption, a NPV comparison is provided in Exhibit 13, that shows both analyses on the same delivery schedule, eliminating the one-year of lost revenue. The effect is an increase of the Net Total of the reference case, bringing the reference case almost equivalent to the DBFO analysis. The higher Capital and OMR costs Reference Case costs in Exhibit 13 are a direct result of advancing cash flows one year earlier. The revenue stream is equivalent to the one used in the DBFO analysis.

	Reference Case (90th Percentile)	*DBFO*
Capital*	($ 1,039.9 million)	($ 1,060.1 million)
OMR	($ 93.0 million)	($ 66.5 million)
Revenues	$ 1,229.9 million	$ 1,229.9 million
NET TOTAL	$ 97.0 million	$ 103.3 million

*includes financing costs

Exhibit 13: Risk Adjusted Net Present Value Comparison – Affordability With No Assumed Schedule Delay to the Reference Case

[18] Details provided in Chapter 4.G. Affordability

When reviewing the reference case Capital and OMR estimates, the reader is reminded that these numbers are representative of TransLink's assessment of the risk inherent in the project and the probabilities of them occurring. The DBFO numbers are fixed price values based on the contractual payment schedules. These numbers are representative of the DBFO Contractor's assessment of the risk in the project, but in this case, the payments will not change if any of the risks manifest themselves.

7. Achieving Value for Money

The Golden Ears Bridge is a major road and bridge construction project in a built-up urban area, whose success is dependent on the cooperation and influence of many stakeholders and approval agencies. A project of this nature is typically an unlikely candidate for a public private partnership since government is usually better able to obtain approvals and permits from other government agencies. However, TransLink has successfully negotiated the transfer of considerable risk to its private partner, including the approvals and permitting responsibility, resulting in capital cost certainty in a construction market that is experiencing capacity challenges. The capacity issue is starting to reveal itself with inflated construction contracts showing up throughout BC.

Comparing the total costs of the DBFO contract with the risk adjusted reference case, on a net present value basis, has shown the estimated value of the DBFO delivery in measurable terms, although they are very close. The quantified value is likely higher than that stated in the previous section, since the inflation factors used in determining the construction costs of the reference case have been conservatively estimated. Industry experts have indicated that labour, material and equipment costs are likely to exceed the 6% inflation rate used by TransLink, as competition increases in an overheated construction market fuelled by the 2010 Olympics. The value of obtaining a fixed price, cost certain contract in this market, cannot be overstated.

The innovative financing structure for this project, successfully achieves TransLink's objectives. It results in a stream of Capital and OMR payments that over the life of the project are affordable and protects TransLink at a time when the project is at its most vulnerable – the early years of operation. TransLink does not make a single payment to the DBFO Contractor until the bridge goes into service. TransLink has capped capital payments over the first five years to allow the redistribution of traffic to build as users discover the advantages that the GEB will afford. This results in TransLink avoiding high payments in the early years when costs may exceed the toll revenues. It allows TransLink to defer payment to a time when toll revenues are more certain. Unique to this project, TransLink has the ability to independently effect a refinancing of the project, if more favourable terms can be leveraged. It is unlikely that TransLink could have implemented a similar financing structure, in particular the extended principle holiday and deferred payment schedule.

TransLink retains the revenue risk, continues to have the ability to set the toll rates, and guarantees payment to the DBFO Contractor, if they meet the performance standards. As a direct result of this, the market has reacted with favourable borrowing rates. This was further enhanced by GCGP's financing structure, where the payments to be made on the senior debt are guaranteed by two monoline insurance companies. This resulted in an "AAA" rating, thereby enhancing the credit worthiness of the project, resulting in borrowing costs very competitive with those in other comparable projects.

In the reference case analysis, the earlier decisions of the TransLink Board that set the project on the path of DBFO model were accepted – history could not be altered. If a decision were made to implement on the basis of the reference case, the time that had passed was recognized, and the result would have been a one-year delay to the bridge opening. User benefits would be delayed by one year, resulting in the loss of one year of travel time savings, operating cost savings and safety benefits. The resultant user benefits are the main reason for completing the GEB, and have been estimated to total $3.6 billion over the life of the project. A sensitivity analysis was completed on a hypothetical reference case, ignoring the one year delay and observing the effects. The net present value did not change markedly.