



Project Report: Achieving Value for Money Sea-to-Sky Highway Improvement Project



December 2005



Review Engagement Report of the Auditor General of British Columbia

To the Board of Directors of Partnerships British Columbia, and

To the Minister of Transportation,

The Minister of Finance,

The Legislative Assembly of the Province of British Columbia:

The accompanying report, entitled “Project Report: Achieving Value for Money: Sea-to-Sky Highway Improvement Project” (the Report), has been prepared by Partnerships British Columbia using assumptions with an effective date of December 19, 2005. I have carried out a review of the Report and of the support provided by Partnerships British Columbia for the assumptions, context, decisions, procurement processes and results to date of the Sea-to-Sky Highway Improvement Project.

My review was made in accordance with assurance standards recommended by the Canadian Institute of Chartered Accountants for review engagements and accordingly consisted primarily of enquiry, analytical procedures and discussions related to the information supporting the disclosures in the Report. My review was based on the criteria set out in the annex to this Review Engagement Report.

A review—which provides a moderate level of assurance—is not an audit—which provides a high, though not absolute, level of assurance. The level of assurance I can offer is based, in part, on my ability to verify information. The Report contains significant future-oriented information, which by its nature requires assumptions about future economic conditions and courses of action. Given the difficulty of obtaining sufficient, appropriate evidence to support a high level of assurance on future-oriented information, I determined that a moderate level of assurance was appropriate. Consequently, I do not express an audit opinion on the Report. However, I do, in the paragraph below, provide a review level of assurance.

Based on my review, nothing has come to my attention that causes me to believe that the Report prepared by Partnerships British Columbia does not fairly describe the assumptions, context, decisions, procurement processes and results to date of the Sea-to-Sky Highway Improvement Project. Since the Report is based on assumptions regarding future events, actual results will vary from the information presented and the variations may be material. Accordingly, I express no opinion as to whether the expected results will be achieved.

Wayne Strelieff, FCA
Auditor General

Victoria, British Columbia
December 20, 2005

ANNEX TO REVIEW ENGAGEMENT REPORT

Criteria for the Review Engagement

Reporting on the assumptions, context, decisions, procurement processes and results to date of the Sea-to-Sky Highway Improvement Project should be, in both content and presentation:

1. Understandable i.e., the assumptions and judgements of management are clearly stated.
2. Accurate i.e., assertions are free from significant misstatements.
3. Rational i.e., cause-effect linkages are clearly described and plausible.
4. Complete i.e., there are no significant omissions of relevant facts or cause-effect linkages.
5. Qualified appropriately i.e., uncertainties around assumptions, estimates and predictions are described appropriately.
6. Relevant i.e., the overall presentation is consistent with the report's stated objective.

Purpose of this Document

Before an agency or Ministry of the Province enters into a public private partnership, Partnerships BC undertakes an analysis of the value for money expected to be achieved over the life of the partnership. Once the partnership reaches financial closing, the Province is committed to making this analysis available to the public, in the form of this report.

Value for money is a broad term that captures both quantitative factors, such as costs, and qualitative factors, such as service quality and protection of public interests.

Value for money is one of six key principles guiding public sector capital asset management in British Columbia. The others are:

- ▶ sound fiscal and risk management;
- ▶ strong accountability in a flexible and streamlined process;
- ▶ emphasis on service delivery;
- ▶ serving the public interest; and
- ▶ competition and transparency.

Since 2002, these principles have guided the B.C. public sector's approach to acquiring and managing assets such as roads, bridges and health care facilities. Under the Capital Asset Management Framework, ministries and other public bodies are encouraged to consider all available options for meeting their service objectives. They analyze the options and, after considering the qualitative and quantitative aspects of each, choose the one that overall best meets service delivery needs and makes the best use of taxpayers' dollars.

In some cases, the best option may be a traditional competitive selection process – where assets and/or services are purchased and operated by the public sector. In other cases, agencies may find other ways to meet their service needs without acquiring capital assets. In all cases, agencies are publicly accountable through regular budgeting, auditing and reporting processes.

In all competitive selection processes, including public private partnership contracts, the Province and Partnerships BC are committed to a high standard of public disclosure to demonstrate accountability and transparency.

Scope of this Report

Partnerships BC advised B.C.'s Ministry of Transportation on the business transaction and managed the competitive selection process for the public private partnership portion of the overall Sea-to-Sky Highway Improvement Project.

This report describes the rationale, objectives and processes that led to the use of a public private partnership for a portion of the Sea-to-Sky Highway Improvement Project, giving the public a clear sense of how and why the decision was reached to proceed with that option.

It explains how value for money was measured, and how it is expected to be achieved. Where applicable, it also compares key aspects of the final contract to other competitive selection process options considered for the project. The ultimate success of the project and the actual value for money realized is contingent on the successful implementation of the next stages of the project, which includes the detailed design, construction, and ongoing operations, maintenance and rehabilitation of the highway.

The assessment covers the period from the business planning phase through to finalization of the partnership contract in June 2005. Partnerships BC and the Sea-to-Sky Highway Improvement Project Team are accountable for the contents of this report, including the reasonableness of the facts, assumptions, and professional opinions that have been presented.

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Executive Summary

The Ministry of Transportation decided to make improvements to the Sea-to-Sky Highway.

The Sea-to-Sky Highway is a 95-kilometre long section of Highway 99 from West Vancouver to Whistler. Set in a mountain landscape, the highway presents complex engineering, traffic management and construction challenges.

British Columbia's Ministry of Transportation (MoT) decided to make improvements to the highway between West Vancouver and Whistler to improve its safety, reliability and capacity. These improvements, to be completed by 2009, include highway widening and straightening, and other measures designed to reduce hazards, shorten travel times, and increase capacity of the highway.

The improvements are expected to move MoT toward its long-term corridor objectives for the highway: to accommodate population growth, economic development in corridor communities, increasing demand for resident and visitor travel, and increased goods movement. Any additional improvements delivered will contribute to the fulfillment of MoT's long-term objectives.

In January 2003, Treasury Board approved a maximum \$600 million (\$2002) capital commitment for improvements to the highway (the Sea-to-Sky Highway Improvement Project – referred to in this document as the overall project). In a subsequent submission to Treasury Board in December 2003, MoT concluded it could provide essentially the same physical improvements at a lower capital cost – for an estimated \$600 million in as-spent dollars over the period to 2009 or for a net present cost of \$516 million (\$2005).¹ These improvements represented a portion of MoT's long-term corridor objectives and are referred to in this document as the baseline improvements.



¹ Net present cost (NPC) method applies a discount rate to future cash flows to bring them back to the present. So, the NPC expresses future amounts in today's dollars. It takes into account the time value of money. For example, a dollar received today is more valuable than a dollar received a year from now because the dollar received today can be invested and start generating a return immediately, whereas the dollar received a year from now cannot earn a return in the current year. Discounting allows for a more accurate comparison to be made between the costs of different options, if those options have different patterns of cash flow over time (e.g. all payments made in the first year of a 25-year period, versus payments spread evenly over the 25 years).

Improving and Operating the Highway

MoT chose a combination of design-build-finance-operate and design-build contracts to deliver the highway improvements.

Approximately two-thirds of the capital expenditure of the overall project is being undertaken through a 25-year performance-based Design-Build-Finance-Operate (DBFO project) public private partnership contract between MoT and the S2S Transportation Group (S2S).

The remaining third of the capital expenditure for the improvements is being procured by MoT through separate Design-Build (DB) contracts. The purpose of the DB contracts is to mitigate schedule risk by utilizing the 2004 and 2005 construction seasons, to coincide with the business planning and the competitive selection process of the DBFO project.

Under the DBFO contract, S2S will design and construct highway improvements on approximately two-thirds of the corridor, and will operate, maintain and rehabilitate the full corridor in keeping with performance standards in the contract.

Fair, Open, and Competitive Selection Process

The project had a fair, open, and competitive process.

The competitive selection process had the following features:

- ▶ disclosure of initial competitive selection process documents on the project's web site and the Partnerships BC web site;
- ▶ a proponent consultation process designed to increase proponents' understanding of the contract requirements and to encourage feedback from proponents throughout the process to improve the final contract;
- ▶ evaluation of proposals on their ability to provide the private sector portion of the baseline improvements, provide additional highway improvements and remain within an annual affordability ceiling (the AAC);

- ▶ the selection of a preferred proponent and limited negotiations between the proponent and MoT to reach a final contract; and
- ▶ a fairness reviewer who observed the process and determined that it was fair and unbiased.

Final Contract

The final contract between MoT and S2S is a 25-year performance-based contract designed to deliver safety, reliability and capacity improvements along the Sea-to-Sky Highway.

Contract provisions include:

- ▶ S2S providing the design, construction and financing of its portion of the baseline highway improvements;
- ▶ S2S providing additional highway improvements that are incremental to its portion of the baseline improvements;
- ▶ S2S providing operations, maintenance, and rehabilitation for the whole corridor;
- ▶ an allocation of risks between the parties, each taking responsibility for the risks they can most cost-effectively manage;
- ▶ a performance-based contract designed to protect the public interest and provide incentives to S2S to achieve the project schedule, maintain traffic flow during construction and ensure reliable service;
- ▶ the annual maximum allowable performance payments to S2S (as indicated by the AAC);
- ▶ formal dispute resolution provisions giving MoT the ability to pursue a measured response for deficiencies, up to and including contract termination; and
- ▶ MoT retaining ownership of the highway.

Achieving Value for Money

MoT believes value for money for this project is demonstrated because of the additional improvements, and the anticipated user benefits that flow from them, provided in the DBFO contract.

Value for money represents the relationship between costs and benefits of a project, and includes quantitative and qualitative factors.

Cost

Proposal evaluation usually involves some element of low price competition in which the specifications or outcomes are set and proponents provide a price. For the Sea-to-Sky DBFO project, this typical MoT process was reversed so proponent proposals would be evaluated for the additional improvements beyond the baseline they would provide at a set price. The maximum annual price that MoT estimated it would pay for the baseline highway improvements, and the operations, maintenance and rehabilitation of the whole corridor, was prescribed in the Request for Proposals (RFP) document (in the form of the annual affordability ceiling, or AAC).

The expected cost of the project to the Province is \$789.8 million (NPC \$2005) over the 25-year contract. This amount includes the capital cost of MoT's DB contracts and the costs of annual payments to S2S

for providing its portion of the baseline improvements and the additional improvements, and for operating, maintaining and rehabilitating the entire corridor.

By comparison, MoT estimates that the NPC of the risk-adjusted public sector comparator (PSC)² would be \$744.0 million (\$2005). While the cost of the DBFO contract exceeds the expected cost had MoT pursued a series of DB contracts (the PSC), MoT believes that the benefits from the additional improvements demonstrate value for money.

Benefits

From a benefits perspective, the overall value for money proposition considers those additional highway improvements in excess of the baseline improvements to be provided by the private sector and the anticipated user benefits that will flow from them. Baseline and additional improvements are summarized below.

BENEFITS TO THE PROVINCE

Baseline Requirements (PSC)

West Vancouver to Lions Bay

- ▶ 4-lane section with continuous median barrier, including straightening, widening and improved sightlines (eliminating several sharp curves).

North of Lions Bay to Murrin Park

- ▶ 2-, 3- and 4-lane sections; about half of this section includes improved 2 lanes; remaining sections include additional passing opportunities with 3 and 4 lanes. Those sections that are 4 lanes will include a median barrier to prevent crossover accidents. Sections adjacent to Murrin Park and within the community of Britannia will include improved 2-lane sections. In Furry Creek, there will be 3 lanes moving to 4 lanes with median barrier.

North of Murrin Park through Squamish

- ▶ 4-lane divided highway. This section will include median barriers throughout, including the addition of design features to the median within Squamish.

Squamish to Whistler

- ▶ 3 lanes throughout this section, including improved 2-lane sections and passing opportunities provided by alternating 3rd lane.

Additional highway improvements, beyond baseline, provided in the DBFO:

- ▶ 20 km additional passing lanes;
- ▶ 16 km additional median barrier;
- ▶ Additional highly reflective pavement markings to enhance safety;
- ▶ 30 km additional shoulder and centre-line rumble strips where most effective;
- ▶ improved lighting and roadside reflectors for additional safety;
- ▶ improved earthquake resistance and lighting on bridges;
- ▶ 10 km additional wider shoulders for improved safety and accommodation of cyclists;
- ▶ improved rock fall and debris catchment;
- ▶ additional highway straightening and improved sightlines;
- ▶ safer and more effective intersections, particularly in urban settings;
- ▶ improved signage signifying community entrances and recreational and tourism features;
- ▶ improved recreational trail facilities in Squamish; and
- ▶ improved highway maintenance response to weather conditions (three road/weather information sites).

² For more detail regarding the public sector comparator (PSC), please see page 7.

One of the goals of any road improvement is to produce benefits for road users. MoT believes that one indication of the value for money provided by the DBFO is a calculation of the anticipated user benefits from the incremental improvements provided under the DBFO. To estimate the expected user benefits, there is a common international approach used for estimating travel time savings and safety benefits in transportation projects. By applying this approach, along with a degree of professional judgment, MoT estimates the user benefits for major transportation projects in B.C.

The sum of the expected user benefits from the incremental improvements is estimated to be \$131 million net present value (NPV) over the life of the contract. To put these in perspective, benefits provided by the baseline improvements are estimated to be \$427 million NPV over the life of the contract. In the opinion of MoT, and Partnerships BC and their advisors, the benefits resulting from the incremental improvements are in the order of 15 to 30 per cent above the expected benefits of the baseline improvements.

Also, the contract requires that S2S meet standards that are comparable or equivalent to the standards applicable on other highways in B.C. The consequences to S2S for failing to meet the required standards are sufficiently significant that the overall result should be that S2S maintains the highway to a level that is, on average, higher than the maintenance level attained on other highways in B.C.

Ongoing Contract Monitoring

The contract between MoT and S2S includes provisions for ongoing monitoring designed to ensure that each phase of the construction, and the contract as a whole, is implemented as intended. For example, S2S must certify that the highway design complies with the contractual requirements.

MoT will continue to oversee the DBFO project, to ensure contract requirements and performance standards for safety, reliability and capacity (such as highway width, number of lanes, safety requirements, sightline requirements and signage) are appropriately met.



1. Project Background, Objectives and Partnership Structure

Background

The Ministry of Transportation decided to make improvements to the Sea-to-Sky Highway.

British Columbia's Ministry of Transportation (MoT) decided to make improvements to the highway between West Vancouver and Whistler to improve its safety, reliability and capacity. These improvements, to be completed by 2009, include highway widening and straightening, and other measures designed to reduce hazards, shorten travel times, and increase capacity of the highway.

The improvements are expected to move MoT toward its long-term corridor objectives for the highway: to accommodate population growth, economic development in corridor communities, increasing demand for resident and visitor travel, and increased goods movement.

In January 2003, Treasury Board approved a maximum \$600 million (\$2002) capital commitment for improvements to the highway (the Sea-to-Sky Highway Improvement Project – referred to in this document as the overall project). In a subsequent submission to Treasury Board in December 2003, MoT concluded it could provide essentially the same physical improvements at a lower cost – for an estimated \$600 million in as-spent dollars over the period to 2009 or for a net present cost of \$516 million (\$2005). These improvements represented a portion of MoT's long-term corridor objectives and are referred to in this document as the baseline improvements. Any additional improvements delivered through the project will contribute to the fulfillment of MoT's long-term objectives.

Objectives

MoT's objectives are to achieve improved safety, reliability and capacity of the Sea-to-Sky Highway.

The primary objectives for the Sea-to-Sky Highway Improvement Project include:

Safety	Improve the safety of the highway, primarily through improvements to the highway design.
Reliability	Improve travel time predictability for highway users.
Capacity	Enhance the ability of the highway to accommodate community growth and other user needs.
Project Completion and Budget	With the selection of Vancouver to host the 2010 Winter Olympics, to complete the highway improvements by late 2009 within the budget.
Manage Traffic Flows During Construction	To minimize disruption and maximize predictability for road users because the improvements are being undertaken on an operating highway with no alternate route to which traffic can be diverted.

With these objectives in mind, MoT defined a set of baseline improvements.

To achieve the objective of completion by 2009, MoT implemented measures to mitigate schedule risk. One measure was the development of a construction and traffic management plan allowing simultaneous construction north and south of Squamish. The plan allowed for what MoT considered an acceptable level of traffic delays while enabling the project to be completed on schedule.

In addition, MoT's decision to undertake two Design-Build (DB) contracts for a portion of the overall project enabled construction during the 2004 and 2005 construction seasons. An 830-metre long "test section" south of Lions Bay was completed in August 2004 to gain more knowledge of geotechnical, constructability and traffic management issues associated with the overall project. In September 2004, under a separate DB contract, construction started on the Sunset Beach to Lions Bay section of the highway.

Concurrently, the remainder of the project underwent a business planning process to determine procurement structures that would further alleviate schedule risk.

Selection of Partnership Structure

For the remainder of the project, MoT considered public sector delivery and a number of procurement structures, including Design Build Operate (DBO) and Design Build Finance and Operate (DBFO).

The following criteria were utilized by MoT and Partnerships BC to select the delivery model, assuming the use of an effective competitive process to implement it:

- ▶ deliver the baseline improvements on time and on budget;
- ▶ deliver additional highway improvements;
- ▶ transfer appropriate risks to the private sector at appropriate prices;
- ▶ include incentives in the contract to achieve project performance objectives; maintain project schedule and budget; and address traffic management requirements;
- ▶ conduct a fair, open and competitive process; and
- ▶ achieve value for money.

Based on the criteria above, MoT and Partnerships BC considered the two most viable delivery options to be: a series of separate contracts purchased by MoT (the public sector comparator), and the other, a public private partnership using a DBFO structure. These options were developed during the business planning process.



Development of the Public Sector Comparator

The public sector comparator (PSC) represents a cost estimate of the public sector procuring a project where assets and services are purchased through a series of separate contracts.

Partnerships BC is committed to the use of a PSC as it is intended to:

- ▶ inform decision makers on whether the output specifications are likely to be affordable before the project goes to market; and
- ▶ serve as a base case for estimating the range of value for money expected to be achieved in the final DBFO contract.

During the development of the public sector comparator for the Sea-to-Sky Highway Improvement Project, MoT and Partnerships BC primarily gave consideration to two procurement methods for the design and construction portions of the project:

- ▶ a series of DB contracts; or
- ▶ a single DB contract.

MoT and Partnerships BC determined that each method had advantages and disadvantages relative to the other, and each could have been used. On the basis of the criteria above, MoT determined that MoT would have used a series of DB contracts to procure the design and construction portion of the project in the event the DBFO arrangement did not offer the potential to achieve greater value for money.



Expected Benefits of the Selected Partnership Structure

The Province decided on a design-build-finance-operate (DBFO) partnership structure for the portion of the project not utilizing the DB contracts.

The Province chose a DBFO partnership structure for the remainder of the Sea-to-Sky Highway Improvement Project. In comparison to the PSC, a DBFO partnership structure adds private sector financing, integrates a wider range of services provided by the private sector and transfers additional risks to the private sector.

MoT and Partnerships BC were of the view that the addition of private sector financing would provide incentive to the private sector to meet or exceed the contractual requirements, because payments from MoT would be based on performance.

MoT and Partnerships BC assessed both qualitative and quantitative criteria to assist the Province in determining the appropriate competitive selection process for the project. Based upon the expectation of achieving additional highway improvements, and other advantages including management of schedule risk, a DBFO was recommended by Partnerships BC and MoT. This recommendation was accepted by Treasury Board.

Risk Management

A risk assessment to estimate the potential and cost of transferring certain risks to the private sector was conducted by members of the project team and their advisors, based on their knowledge and experience. The financial consequences and probabilities of various possible outcomes were assigned to the key project risks, utilizing methodologies such as simulations that are generally used to quantify risks.

Examples of risks that were considered to be transferable to a greater extent to the private sector using the DBFO option but, in the opinion of the project team, were less likely to be transferred in the PSC option, included:

- capital cost and construction risks – including schedule delays, latent defects³ and cost overruns;
- operating, maintenance and rehabilitation cost risks – including management of life-cycle costs;
- financial risks – including insurance risks during construction and a portion of insurance risks during the operational period; and
- traffic management risks – during construction and on an ongoing basis.



Schedule and Cost Efficiencies

Based on their experience on previous projects, the project team identified the potential for the contractor to realize schedule and cost efficiencies, resulting from:

- greater flexibility in detailed design, construction management, traffic management, and schedule achievement across the whole project when integrated by a single contracting party rather than as multiple separate contracts;
- accounting for life-cycle costs when developing design and operations and maintenance procedures;
- standardizing design elements and construction methods for structures;
- pooling geotechnical risk and recovery from poor conditions at any particular site;
- comprehensive equipment, labour and materials planning;
- improved risk distribution for the contractor across a larger portfolio of work segments; and
- pooling insurance costs.

Despite the longer competitive selection process required to develop and negotiate the DBFO, MoT believed that the financial incentives and penalties in a final contract would result in a shorter construction period and that more schedule predictability could be achieved.

³ Latent defects are defined as any unknown, pre-existing defects that could not have been discovered by a reasonable inspection of the highway.

2. Competitive Selection Process

The competitive selection process was designed to:

- ▶ select a qualified private sector contractor to design, build, and finance the improvements to the portion of the Sea-to-Sky Highway Improvement Project not utilizing the two DB contracts; and operate, maintain and rehabilitate the whole corridor; and
- ▶ be a fair, open and competitive process.

The following table provides a summary of the schedule and outcomes during the competitive selection process:

COMPETITIVE SELECTION PROCESS AND TIMELINES		
Stage	Timing	Outcome
Registration of Interest (ROI)	January 15, 2004 to March 3, 2004	The project was marketed internationally and 90 companies responded to the ROI.
Request for Qualifications (RFQ)	March 3, 2004 to May 13, 2004	<p>Submissions from five proponents were evaluated and three short-listed teams were announced May 13, 2004:</p> <ul style="list-style-type: none"> - Black Tusk Highway Group - Sound Highway Development Consortium - S2S Transportation Group <p>To be short-listed, proponents were required to demonstrate experience, capability and financial capacity to meet construction schedule objectives while managing traffic flow, and operating and maintaining the highway over the contract term.</p>
Request for Proposals (RFP) and Proponent Consultation Process	May 26, 2004 to January 17, 2005	The three short-listed teams submitted proposals.
Selection of Preferred Proponent	March 2, 2005	After evaluation of the proposals, S2S Transportation Group was selected as the preferred proponent.
Contract Finalization	After negotiations between MoT and S2S, financial close was reached on June 3, 2005.	A contract was signed by MoT and S2S Transportation Group.

Features of the Competitive Selection Process

Throughout the competitive selection process, a number of features were introduced. A description of these features, and the intention in using them, is provided below.

Annual Affordability Ceiling

MoT established an annual affordability ceiling to drive proponents to maximize scope within a fixed price.

Proposal evaluation usually involves some element of low price competition in which the specifications or outcomes are set and proponents provide a price. For the Sea-to-Sky DBFO project, this process was reversed – the maximum price that MoT was prepared to pay for the private sector portion of the baseline highway improvements and for operations, maintenance and rehabilitation of the entire corridor was prescribed in the Request for Proposals (RFP) document (in the form of an annual affordability ceiling, or AAC).

To arrive at the AAC, MoT financial advisors combined the capital, operating, maintenance and rehabilitation cost inputs estimated for MoT delivery using a series of DB contracts together with the assumed financial structure for the DBFO project into a project finance model. This was done to estimate what the required annual maximum allowable performance payments from the Province would need to be to meet financial commitments typical for such a transaction.

By establishing the AAC, MoT encouraged proponents to compete in terms of what additional improvements they were willing to contractually commit to for that price.

Proponent Consultation Process

The consultation process was designed to increase proponents' understanding of the contract requirements and to encourage their feedback throughout the process to improve the final contract, while maintaining competitive tension and fairness in the process.

Features of the proponent consultation process included:

- ▶ a series of meetings between the project team and each of the proponents covering a range of topics (examples include technical issues, highway design, construction schedule and traffic management, quality management, risk allocation, payment mechanism, and the contract); and
- ▶ MoT and proponents had the opportunity to exchange information, engage in dialogue, and clarify issues related to the RFP, including the form of the contract. The intention was for proponents to gain a better understanding of the project and to improve the contract.

Evaluation of Proposals

The project team completed a comprehensive evaluation process during the RFP stage.

The three short-listed proposals were evaluated against the RFP requirements. The evaluation had three stages:

RFP EVALUATION PROCESS	
Stage 1: Mandatory Submission Requirements	All proponents' submissions were evaluated for completeness as described in the RFP.
Stage 2: Baseline improvements All proponents' submissions were evaluated on a pass/fail basis against the private sector portion of the baseline improvements.	MoT established the baseline improvements for new construction, operations, maintenance and rehabilitation to be delivered under the project and described them in the RFP. Baseline improvements were evaluated in the following categories: <ol style="list-style-type: none"> 1. Project Management, Consultation & Communications 2. Design 3. Construction 4. Environment 5. Operations, Maintenance & Rehabilitation 6. First Nations Commitments 7. Quality Management System Requirements 8. Financial & Commercial
Stage 3: Scored Evaluation Submissions were evaluated for their ability to deliver additional highway improvements beyond the baseline improvements to move MoT toward its long-term corridor objectives.	For the scored evaluation, proposals which could deliver all of the baseline improvements, and were within the AAC, were evaluated in the following scoring categories: <ol style="list-style-type: none"> 1. Safety 2. Mobility 3. Construction Traffic Management 4. Handback Value 5. Environmental 6. Commercial & Financial

The project's fairness reviewer concluded that the competitive selection process was fair.

MoT engaged a fairness reviewer to act as an observer during the competitive selection and evaluation process. The reviewer concluded that the evaluation and selection process was implemented impartially, fairly and without bias or discrimination.

Contract Finalization

S2S Transportation Group (S2S) was selected as the preferred proponent. A final contract was negotiated between MoT and S2S.

The proposal submitted by S2S received the highest evaluation in terms of proposed additional improvements, while delivering the private sector portion of the baseline improvements and staying within the annual affordability ceiling. S2S was selected as the preferred proponent and a contract was negotiated. MoT finalized the contract with S2S on June 3, 2005.

3. The Final Contract

The final contract between MoT and the S2S Transportation Group is a 25-year performance-based contract designed to deliver safety, reliability and capacity improvements.

Profile of the S2S Transportation Group

The S2S Transportation Group (S2S) includes:

- ▶ Macquarie North America Limited is the financial advisor to S2S and is a member of the Macquarie Group, a global investment bank which invests in and develops infrastructure assets and manages infrastructure funds worldwide.
- ▶ Peter Kiewit Sons Co. is the project design/build contractor with North American experience in transportation design/build projects, and is a civil contractor with more than 60 years of building experience.
- ▶ JJM Construction Limited is a B.C. road builder and has constructed portions of the Island Highway and other rock excavation work.
- ▶ Hatch Mott MacDonald (HMM) will lead the design for Peter Kiewit Sons Co. HMM is a North American transportation consultant, having designed more than \$15 billion worth of transportation projects worldwide. HMM will be supported by ND Lea, McElhanney Engineering Services Limited and Urban Systems Limited. To date, these firms have provided approximately two-thirds of the preliminary design for the Sea-to-Sky project.
- ▶ Miller Paving is a provider of highway operations, maintenance and rehabilitation services in Canada.
- ▶ Capilano Highway Services has more than 15 years of maintenance and operations experience on the Sea-to-Sky Highway.

S2S is financing the project through two primary sources of funds - equity and senior debt. Equity is provided by Macquarie Essential Assets Partnership (MEAP), a Macquarie-managed fund focused on investing in North American infrastructure assets which has committed capital primarily from Canadian pension funds and other Canadian institutional investors. Senior debt is provided by way of arrangements between S2S and Royal Bank of Scotland and Société Générale.

Key Terms of the Performance-Based Contract

The contract is designed to protect the public interest by specifying service standards, with financial incentives to meet the standards through the use of underlying performance payments.

The key terms of the contract include:

- ▶ S2S will design, construct, and finance its portion of the baseline highway improvements;
- ▶ S2S will provide additional highway improvements incremental to its portion of the baseline improvements;
- ▶ S2S will operate, maintain and rehabilitate the whole corridor;
- ▶ S2S will receive payment from MoT for fulfilling its contractual obligations, with financial incentives to achieve the project schedule, and ensure reliable service after construction is completed. These payments are comprised of availability payments, vehicle usage payments and performance incentive payments. The performance incentive payments include:
 - a traffic management payment during construction, which is contingent upon adherence to the traffic management plan set out in the contract. For example, if S2S exceeds the number and duration of stoppages or closures set out in the contract, the traffic management payment will be reduced. The maximum traffic management payment is \$2.1 million per year;

- a payment which is earned if the safety performance of the highway exceeds the Provincial safety performance record for comparable highways. The maximum bonus in a given year is \$1 million;
- ▶ If S2S fails to meet the specified performance standards, MoT will be entitled to make deductions from the availability payment. Examples include the following:
 - penalties will be applied where S2S has failed to meet the operations and maintenance standards;
 - deductions will be made from the maximum allowable performance payments based on the travel time delay experienced by road users; and
 - deductions will be applied where sections of the highway have been unavailable;
- ▶ S2S will assume certain risks, such as construction schedule and budget;
- ▶ S2S is responsible to ensure that, at the end of the contract term, the asset meets certain conditions (e.g. that the highway's running surfaces and bridge decks meet the agreed-upon criteria). If the highway meets all the end of term requirements, the payment to S2S is \$50 million (\$2030). If the highway does not meet the requirements, the payment can be reduced by MoT's cost required to meet them. If the highway exceeds the requirements, the payment can be increased by the additional value of the highway up to a maximum of \$10 million (\$2030);
- ▶ MoT has the ability to monitor compliance against contractual requirements;
- ▶ MoT is able to have further improvements made to the highway at its own option and cost. Latent defects in portions of the highway not constructed by S2S are not part of the future works item as MoT is obligated to repair any such defects;
- ▶ MoT retains ownership of the highway and S2S is granted a non-exclusive license (not ownership) for 25 years to access and use the highway and its structures for the purpose of carrying out the operations;
- ▶ S2S is prohibited from charging tolls;
- ▶ MoT has the right to perform work itself where S2S fails to do so and to offset related costs against future payments to S2S;
- ▶ formal dispute resolution provisions give MoT the ability to pursue a measured response to deficiencies, up to, and including contract termination;
- ▶ the amount payable to S2S assumes the Provincial Base Case traffic forecast. For example, in any given year, a 10 per cent variance in traffic volume (either increase or decrease) results in a 1.2 per cent change in the payments to S2S.

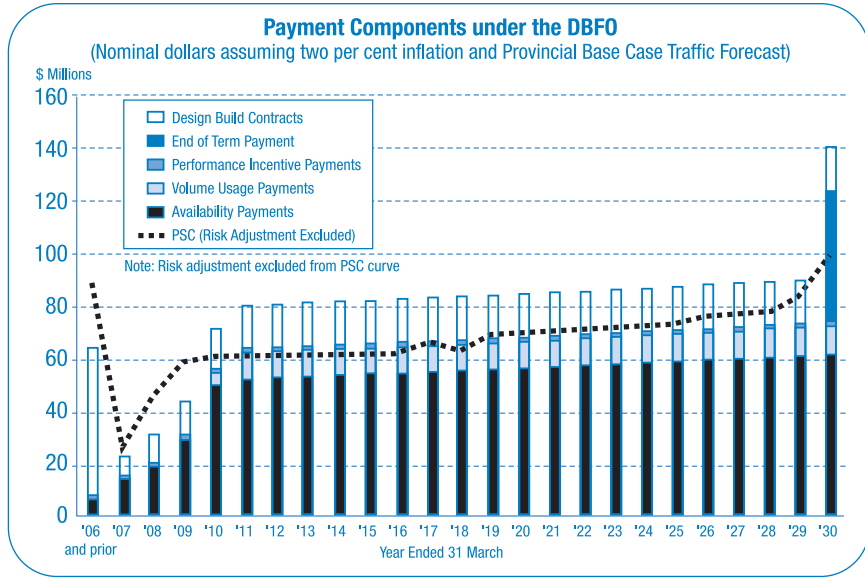
Performance Payments

The contract between MoT and S2S is a pay-only-for-performance contract.

The graphs and detailed tables on these pages show the expected performance payment to S2S for each year of the contract assuming that S2S achieves its performance requirements each year. The first graph is expressed in nominal dollars, assuming two per cent inflation; and the second graph is expressed with the effects of inflation removed⁴. The graphs show that the higher the rate of inflation, the total payments for the non-risk adjusted PSC increase at a faster rate than the DBFO option.

Each graph and table also shows, for comparative purposes, the PSC for each year of the same time period. The PSC assumes that capital costs have been financed in the year the capital expenditures are made and at the weighted average cost of capital rate as elaborated upon in the sidebar “Selection of Discount Rate” on page 20. Note that MoT expenditures to December 31, 2004 are not financed.

Due to the life-cycle (i.e. 25-year contract term) nature of the calculation of the estimated values of risk transfer, such values cannot be expressed on a year-by-year basis and therefore are excluded from the PSC for the charts and tables. The risk transfer is included in the table on page 17 in the report as an overall adjustment.

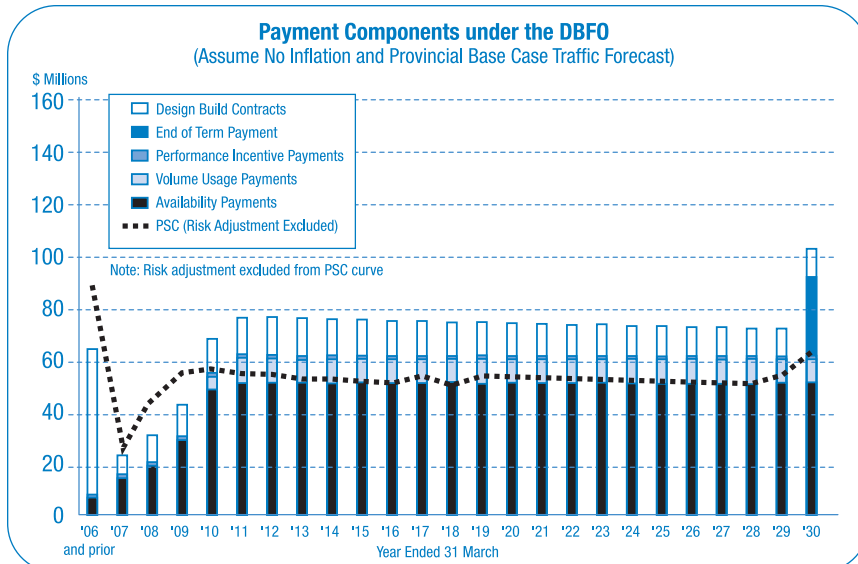


Note: PSC assumes MoT expenditures (DB contracts) to December 31, 2004 are as spent dollars and no financing is associated with them.

PAYMENT COMPONENTS UNDER DBFO (\$ Millions)								Non-Risk Adjusted PSC
(Nominal dollars assuming two per cent inflation and Provincial Base Case Traffic Forecast)								
Contract Year	Year Ended 31-March	DBFO Availability Payments	DBFO Volume Usage Payments	DBFO Performance Incentive Payments	DBFO End of Term Payment	MoT Design Build Contracts	MoT + DBFO Total Payments	
1	2006 and prior	6.6	0.0	0.7	0.0	56.4	63.7	87.8
2	2007	14.0	0.0	1.0	0.0	7.8	22.8	25.0
3	2008	18.7	0.0	1.3	0.0	10.9	30.9	45.0
4	2009	28.7	0.0	1.9	0.0	13.2	43.8	57.9
5	2010	49.5	5.2	1.1	0.0	15.0	70.8	60.4
6	2011	52.3	10.1	1.0	0.0	16.8	80.2	60.1
7	2012	52.7	9.9	1.0	0.0	16.8	80.4	60.1
8	2013	53.1	10.0	1.1	0.0	16.8	81.0	60.4
9	2014	53.5	10.1	1.1	0.0	16.8	81.5	60.8
10	2015	53.9	10.1	1.1	0.0	16.8	81.9	61.1
11	2016	54.4	10.2	1.1	0.0	16.8	82.5	61.5
12	2017	54.8	10.2	1.1	0.0	16.9	83.0	66.0
13	2018	55.2	10.3	1.1	0.0	16.9	83.5	62.2
14	2019	55.7	10.4	1.1	0.0	16.9	84.1	68.5
15	2020	56.1	10.4	1.1	0.0	16.9	84.5	69.4
16	2021	56.6	10.5	1.1	0.0	16.9	85.1	69.8
17	2022	57.1	10.6	1.1	0.0	16.9	85.7	70.4
18	2023	57.6	10.7	1.1	0.0	16.9	86.3	71.0
19	2024	58.1	10.7	1.1	0.0	16.9	86.8	71.7
20	2025	58.6	10.8	1.2	0.0	16.9	87.5	72.3
21	2026	59.1	10.9	1.2	0.0	16.9	88.1	75.1
22	2027	59.6	11.0	1.2	0.0	16.9	88.7	75.9
23	2028	60.2	11.1	1.2	0.0	16.9	89.4	76.9
24	2029	60.7	11.2	1.2	0.0	16.9	90.0	82.9
25	2030	61.3	11.3	1.2	50.0	16.9	140.7	98.5
Total		1,248.1	215.7	28.4	50.0	440.7	1,982.9	1,670.7*

*Non-risk adjusted

⁴ The performance payments provide a blend of capital and operating period payments. Inflation is assumed to be two per cent per year and is applied to 35 per cent of the payment.



Note: PSC assumes MoT expenditures (DB contracts) to December 31, 2004 are as spent dollars and no financing is associated with them.

PAYMENT COMPONENTS UNDER DBFO (\$ Millions)

(Assume No Inflation and Provincial Base Case Traffic Forecast)

Contract Year	Year Ended 31-March	DBFO Availability Payments	DBFO Volume Usage Payments	DBFO Performance Incentive Payments	DBFO End of Term Payment	MoT Design Build Contracts	MoT + DBFO Total Payments	Non-Risk Adjusted PSC
1	2006 and prior	6.6	0.0	0.7	0.0	56.3	63.6	87.7
2	2007	13.9	0.0	1.0	0.0	7.5	22.4	24.3
3	2008	18.4	0.0	1.3	0.0	10.4	30.1	42.8
4	2009	28.0	0.0	1.9	0.0	12.3	42.2	54.1
5	2010	48.1	5.0	1.1	0.0	13.8	68.0	55.2
6	2011	50.5	9.7	1.0	0.0	15.1	76.3	53.9
7	2012	50.5	9.5	1.0	0.0	14.8	75.8	52.9
8	2013	50.5	9.5	1.0	0.0	14.5	75.5	52.1
9	2014	50.5	9.5	1.0	0.0	14.2	75.2	51.4
10	2015	50.5	9.5	1.0	0.0	14.0	75.0	50.6
11	2016	50.5	9.5	1.0	0.0	13.7	74.7	49.9
12	2017	50.5	9.4	1.0	0.0	13.4	74.3	52.6
13	2018	50.5	9.4	1.0	0.0	13.2	74.1	48.6
14	2019	50.5	9.4	1.0	0.0	12.9	73.8	52.4
15	2020	50.5	9.4	1.0	0.0	12.7	73.6	52.1
16	2021	50.5	9.4	1.0	0.0	12.4	73.3	51.4
17	2022	50.5	9.4	1.0	0.0	12.2	73.1	50.8
18	2023	50.5	9.3	1.0	0.0	11.9	72.7	50.2
19	2024	50.5	9.3	1.0	0.0	11.7	72.5	49.7
20	2025	50.5	9.3	1.0	0.0	11.5	72.3	49.2
21	2026	50.5	9.3	1.0	0.0	11.3	72.1	50.0
22	2027	50.5	9.3	1.0	0.0	11.1	71.9	49.6
23	2028	50.5	9.3	1.0	0.0	10.8	71.6	49.3
24	2029	50.5	9.3	1.0	0.0	10.6	71.4	52.1
25	2030	50.5	9.3	1.0	31.1	10.4	102.3	60.6
Total		1,125.0	193.0	26.0	31.1	352.7	1,727.8	1,293.5*

*Non-risk adjusted

Expected Budget Reporting and Accounting Treatment

As construction proceeds the project will be treated as an asset and liability by the British Columbia Transportation Financing Authority (BCTFA) and will be consolidated into the summary financial statements of the Province.⁵ Upon completion of construction, the recorded book value of the project will be amortized over 40 years for bridge structures, major structures, and highway roadbed and over 15 years for paving, fencing, signage, traffic control equipment and most other assets attached to the highway. This is the same as any other highway in B.C.

Risk Allocation Summary

Risks have been allocated between the two parties, each taking the part they can most cost-effectively manage.

Throughout the competitive selection process, MoT and Partnerships BC allocated risks according to which party would be better able to cost-effectively manage those risks. The expected value of the risk transferred to S2S in the final contract is the amount added to the PSC cost estimate.

⁵ To be confirmed by the Office of the Comptroller General at the time of the summary financial statements.

The following table provides a summary of risk allocation for the project, including risks transferred to S2S, risks retained by MoT and shared risks. The detailed risk allocation is described in the final contract which is publicly available on the Partnerships BC web site.

Risks relating to:	Risk Allocation		
	Public (MoT)	Private (S2S and/or sub-contractors)	Shared
Design of highway and structures.		✓	
Construction of highway and structures (risk of time and cost overruns experienced by S2S).		✓	
Majority of the risks associated with environmental factors including changes to restrictions and permitting (with the exception of permits that are to be acquired by MoT).		✓	
A significant number of the operations and maintenance risks including the risk of latent defects in the upgraded sections which are undertaken by S2S.		✓	
Increases in operations and maintenance costs as a result of changes in the composition of traffic (for example, if heavier use of highway by heavy trucks was to cause more damage to the highway).		✓	
Protest or trespass actions related to S2S construction activities (up to a pre-determined limit)		✓	
Geotechnical (for example, soil below the highway surface) site conditions except for specified sections.		✓	
Acquisition of property required for highway construction – including risks related to cost and timeliness to acquire such property.	✓		
Responsibility for repairing any latent defects in work which was completed prior to the contract commencement date or for works undertaken by other MoT contractors (for example, the work on Sunset Beach to Lions Bay).	✓		
Bringing the highway back into agreed-upon condition after the occurrence of significant natural events (such as landslides).	✓		
Changes in certain types of laws (generally relates to those laws which are targeted at S2S or the contractor's industry and can be characterized as discriminatory).	✓		
Requirement to undertake soils or other remediation as a result of the discovery of undisclosed contaminated soils.	✓		
The adequacy of geotechnical information regarding matters such as conditions below the highway surface, (MoT is responsible for the accuracy of some of the data that it provides, and S2S is responsible for interpretation of all of the data provided).			✓
Unexpected site conditions at locations where MoT has provided a benchmarking mechanism.			✓
Requirements for moving utilities to construct the highway and structures and the risk that utility companies will not move quickly enough to meet S2S's schedule or that they will levy higher than expected charges for the relocation work.			✓
Impact of delay in proceeding with construction schedule caused by the discovery of archaeological findings during construction.			✓
Increases in the future of general insurance premium cost charged by the insurance industry for the insurance required by the contract (benchmarking for future insurance premium increases)			✓
Changes in certain types of laws which are not characterized as discriminatory or targeted at S2S or S2S's industry.			✓

4. Achieving Value for Money

MoT believes value for money for this project is demonstrated because of the additional improvements, and the anticipated user benefits that flow from them, provided in the DBFO contract.

Value for money represents the relationship between costs and benefits of a project, and includes quantitative and qualitative factors.

As noted earlier, for the Sea-to-Sky DBFO project, the typical MoT evaluation process was reversed so proponent proposals would be evaluated for the additional improvements beyond the baseline they would provide.

Cost

The expected cost of the Project to the Province is

\$789.8 million Net Present Cost (NPC \$2005) over the 25-year contract.⁶ This amount includes the capital cost of MoT's DB contracts and the costs of annual payments to S2S for providing its portion of the baseline improvements and the additional improvements, and for operating, maintaining and rehabilitating the entire corridor.

By comparison, MoT estimates that the NPC of the risk-adjusted PSC, which excludes the additional improvements, would be \$744.0 million (\$2005). While the cost of the DBFO contract exceeds the expected cost had MoT pursued a series of DB contracts (the PSC), MoT asserts the qualitative benefits demonstrate value for money.

The following table describes the NPC comparison for the DBFO and the PSC in more detail.

COMPARISON OF THE NET PRESENT COST OF THE PSC AND DBFO (\$2005 MILLIONS)

Description	Analysis Completed December 2003	Analysis Completed December 2005
PSC		
Capital Costs (MoT) ⁽¹⁾	515.9	516.0
Operations & Maintenance Costs (MoT) ⁽²⁾	105.7	107.5
Rehabilitation Costs (MoT) ⁽³⁾	32.7	36.3
Risk Adjustment ⁽⁴⁾	38.9	42.9
Competitive Neutrality Adjustment ⁽⁵⁾	62.5	41.3
Total Costs - Risk Adjusted	755.7	744.0
	December 2003	December 2005
DBFO Option		
Capital Costs (MoT) ⁽⁶⁾	146.0	208.1
Operations & Maintenance Costs (MoT) ⁽⁷⁾	10.6	3.2
Rehabilitation Costs (MoT) ⁽⁸⁾	2.0	0.0
Payment to S2S ⁽⁹⁾	530.2	578.5
Total Costs	688.8	789.8

Please refer to the sidebar "Expected User Benefits" on page 22 for additional information.

⁶ For the purposes of calculating the NPC, the following assumptions were used:

- A 25-year contract period from 2005/06 through 2029/30.
- A discount rate of 7.5 per cent (described in more detail in sidebar: Selection of Discount Rate).
- Sensitivity analysis of the 7.5 per cent discount rate showed that the NPC of the DBFO contract would have been about \$32.4 million more than the PSC if a 8.5 per cent discount rate had been applied, and about \$62.2 million more than the PSC if a 6.5 per cent discount rate had been applied. The 7.5 per cent discount rate is the weighted average cost of capital (WACC) estimated by S2S, and reflects the actual risk profile of the project from the perspective of the investor.

Notes to Table

The notes below define each component of the PSC and the DBFO option, and explain the changes in each component between December 2003 - the date of Treasury Board approval to undertake a DBFO - and December 2005, the release date of this report.

Cost Components of the PSC

- 1 Capital expenditures are based on a series of design/build contracts and include other acquisition costs, such as land. The increase of \$0.1 million, from \$515.9 to \$516.0 million NPC reflects a change in the RFP evaluation date. Thus, the amount of work on highway improvements undertaken by MoT occurred over a slightly longer period of time and MoT expenditures were higher than the amount in the December 2003 PSC.

- 2 In addition to operations and maintenance required to keep the highway open to traffic every day, this figure includes adjustments for other MoT-incurred costs including:
 - signals and lighting;
 - electrical power and maintenance;
 - line painting, avalanche control and weather stations;
 - rock scaling; and
 - a portion of annual overhead costs for management and administration of the Highways District.

The net increase of \$1.8 million (from \$105.7 to \$107.5 NPC) is the difference between:

 - \$31.7 million NPC increase that reflects the project team's and their technical advisors' improved understanding of the costs entailed in maintaining the highway to the baseline operations and maintenance requirements.
 - and**
 - \$29.9 million NPC decrease in assumed financing costs. In December 2003, financing for the capital expenditure and operation of the Project was a combination of the available MoT funding during the construction period and third party financing where expenditure requirements exceeded MoT's available funding. By December 2005 this financing assumption was no longer required and the PSC was adjusted accordingly.

- 3 Rehabilitation is the major repairs that are undertaken periodically to optimize the life-cycle of the highway. Rehabilitation costs increased by \$3.6 million (from \$32.7 to \$36.3 million NPC) to reflect additional information about the final highway inventory, increases in pavement rehabilitation costs due to rising oil prices and better specific asset condition information.

- 4 The risk adjustment reflects how the risks for this project (described in Chapter 3) were valued by the project team and its advisors. The risk adjustment increased by \$4.0 million (from \$38.9 to \$42.9 million NPC). This increase reflects the value assigned to the risks by the project team as they changed between December 2003 and just prior to receipt of the RFP submissions. Some risk estimates increased (schedule, contractors cost over-runs, increase in operations and maintenance costs, asset performance, complexity of procurement process, ability to resource), while others decreased (owner's cost over-runs, management of life-cycle costs, and insurance). For some risks, there was no change.

- 5 The competitive neutrality adjustment is made to ensure that the PSC does not reflect any competitive advantage that would simply be the result of public sector ownership. This allows a like-with-like value for money assessment. Without a competitive neutrality adjustment, the PSC may be artificially low and not reflect the full costs to government. The competitive neutrality adjustment decreased by \$21.2 million (from \$62.5 to \$41.3 million NPC) to reflect the final tax payable under S2S's corporate structure. The final amount (\$41.3 million NPC) adjusts for the tax-exempt status of public sector corporations (\$4.2 million) and the self-insurance policy of the Province (\$37.1 million).

Cost Components of the DBFO

- 6** MoT capital costs include MoT capital expenditures on the DB portions of the Sea-to-Sky Highway Improvement Project, contingency and all land acquisition costs.
- The MoT capital costs increased by \$62.1 million NPC, (from \$146.0 to \$208.1 million NPC).
- The increase is due to finalization of the scope of work for the DB portions, higher land acquisition costs, and transfer of responsibility for a portion of the contingency from S2S to MoT.
-
- 7** MoT will continue to have some responsibility for operations and maintenance, largely through its role in overseeing the project and contract administration costs.
- The NPC of the operations and maintenance costs paid for by MoT decreased by \$7.4 million NPC (from \$10.6 to \$3.2 million NPC).
- The decrease reflects additional responsibilities transferred to S2S in the final contract, including responsibility for operations and maintenance of the MoT DB sections as they are completed.
-
- 8** With responsibility for Sea-to-Sky Highway rehabilitation being fully transferred to S2S, MoT does not incur rehabilitation costs. MoT rehabilitation costs decreased from \$2.0 million NPC to \$0.
- The December 2003 calculation assumed that MoT would retain responsibility for rehabilitation of the DB sections over the term of the contract. The final agreement stipulates that S2S is responsible for rehabilitation for the whole highway.
-
- 9** The payment to S2S is for design and construction of highway improvements on approximately two-thirds of the corridor and operations, maintenance and rehabilitation of the full corridor to the performance standards in the contract. The payment to S2S over the term of the contract increased by \$48.3 million (from \$530.2 to \$578.5 million NPC). The increase was made to the AAC during the RFP process and all three short-listed teams based their submissions on the revised AAC. The revision was based upon the project team's consideration of cost pressures identified by proponents and independent information provided by technical advisors. The specific cost pressures were:
- the improved understanding of both the project team and proponents of the costs of achieving the operations and maintenance obligations required by the incentive based contract. The contract requires that S2S meet standards that are comparable or equivalent to the standards applicable on other highways in B.C. The consequences to S2S for failing to meet the required standards are sufficiently significant that the overall result should be that S2S maintains the highway to a level that is, on average, higher than the maintenance level attained on other highways in B.C.
 - labour cost inflation and shortages;
 - oil and fuel cost increases;
 - higher than anticipated requirements for the condition of the asset at end of the contract term and rehabilitation costs; and
 - no opportunity to adjust the payment over the contract term for unanticipated inflation.

In the judgment of MoT and its project advisors, these changes were appropriate.

As shown on page 17, the capital cost shown in the PSC did not materially change between 2003 and 2005.

Selection of the Discount Rate for this Project

To compare the PSC and the final contract, the cash flows for the term of the contract must be discounted to a common point in time so that a comparison that expresses the present value of money that will be spent (or received) in the future can be made.

By applying a rate of discount (interest rate) to future cash flows to bring them back to the present, the NPC expresses future amounts in the dollars of a reference year (2005). The same discount rate must be applied to both the PSC and the final contract.

The cost of using capital is defined as the rate of return investors, who have alternative market investment opportunities, will require before they will invest in the project. The discount rate used represents the weighted average cost of capital (WACC) for S2S. The WACC best reflects the level of risk transfer for this particular project. WACC measures the cost of capital and is calculated by weighting the marginal cost of each type of capital (i.e. the interest on debt and the return on equity) by the proportion of that type of capital in the project's capital structure.

The public sector's borrowing rate reflects government's low cost of debt, relative to the rate of interest on corporate bonds. Government's cost of borrowing is lower because government can, through its powers of taxation, increase its revenues to pay loans. Consequently, there is a very low risk that the public sector debt's will not be paid back and thus it can borrow funds at a lower rate than the private sector.

Using the public sector discount rate to compare the PSC and the final contract is not appropriate because the cost of public sector borrowing reflects the taxpayer-supported credit of the Province whereas the WACC reflects the level of risk associated with the individual project. Therefore, the appropriate cost of capital for government borrowing would be to adjust the public cost of debt by the project risk premium. Thus, the project WACC can be tied to the government cost of borrowing with the following relationship:

Discount rate = Private sector WACC = Public cost of debt + Project risk premium



Benefits

From a benefits perspective, the overall value for money proposition for the DBFO considers those additional highway improvements in excess of the baseline improvements to be provided by the private sector, and the anticipated user benefits that will flow from them. Baseline and additional improvements are summarized in the table below.

BENEFITS TO THE PROVINCE

Baseline Requirements (PSC)

West Vancouver to Lions Bay

- ▶ 4-lane section with continuous median barrier, including straightening, widening and improved sightlines (eliminating several sharp curves).

North of Lions Bay to Murrin Park

- ▶ 2-, 3-, and 4-lane sections; about half of this section includes improved 2 lanes; remaining sections include additional passing opportunities with 3 and 4 lanes. Those sections that are 4 lanes will include a median barrier to prevent crossover accidents. Sections adjacent to Murrin Park and within the community of Britannia will include improved 2-lane sections. In Furry Creek, there will be 3 lanes moving to 4 lanes with median barrier.

North of Murrin Park through Squamish

- ▶ 4-lane divided highway. This section will include median barriers throughout, including the addition of design features to the median within Squamish.

Squamish to Whistler

- ▶ 3 lanes throughout this section, including improved 2-lane sections and passing opportunities provided by alternating 3rd lane.

Additional highway improvements, beyond baseline, provided in the DBFO:

- ▶ 20 km additional passing lanes;
- ▶ 16 km additional median barrier;
- ▶ Additional highly reflective pavement markings to enhance safety;
- ▶ 30 km additional shoulder and centre-line rumble strips where most effective;
- ▶ improved lighting and roadside reflectors for additional safety;
- ▶ improved earthquake resistance and lighting on bridges;
- ▶ 10 km additional wider shoulders for improved safety and accommodation of cyclists;
- ▶ improved rock fall and debris catchment;
- ▶ additional highway straightening and improved sightlines;
- ▶ safer and more effective intersections, particularly in urban settings;
- ▶ improved signage signifying community entrances and recreational and tourism features;
- ▶ improved recreational trail facilities in Squamish; and
- ▶ improved highway maintenance response to weather conditions (three road/weather information sites).

Expected User Benefits

One of the goals of any road improvement project is to produce benefits for road users, such as improved safety or shorter trip times. For example, the purpose of adding a passing lane would be to improve the capacity of that section of the road and to reduce the number of collisions.

MoT believes that one indication of the value for money provided by the DBFO is a calculation of the anticipated user benefits resulting from the additional physical improvements provided under the DBFO.

Road user benefits can be calculated as:

- those benefits that would be expected from the construction of the baseline improvements; and
- those benefits that result from the additional improvements that S2S will provide through its contract with the Province.

The MoT project team calculated the expected road user benefits arising from the highway improvements that private sector proponents included in their proposals in response to the RFP. In this exercise, not all benefits could be quantified. For example, today's highways throughout B.C. include many features that provide for a safer highway relative to the design criteria that were not in place when the road was first constructed. Although these improvements are not specifically calculated (and thus any estimation of their value is a professional engineering judgment factor), they include things such as:

- wider shoulders, with allowance for bicycle passage;
- highways designed for larger vehicles; and
- interchanges to provide safe entrance and exit to the highway for vehicles.

To estimate the expected user benefits, there is a common international approach used for estimating travel time savings and safety benefits in transportation projects. By applying this approach, along with a degree of professional judgment, MoT estimates the user benefits for major transportation projects in B.C.

By applying this quantitative approach to the additional improvements obtained through the DBFO, MoT has estimated the expected benefits to be realized by road users as (all benefits are presented in net present value (NPV) terms):

1. Road improvements that result in reduced travel times and thus generate travel time savings. When people use their time to travel there is an opportunity cost equal to the value they place on the next best alternative activity.
 - a. Estimated anticipated user benefits from incremental improvements: \$48 million from completion of construction in 2009 to end of contract term in 2030.
 - b. Estimated benefits provided by baseline improvements over existing highway: \$279 million.
2. Safety improvements reduce accidents. Current standard values for accident costs have been derived from international research by MoT.
 - a. Estimated anticipated user benefits from incremental improvements: \$74 million from completion of construction in 2009 to end of contract term in 2030.
 - b. Estimated benefits provided by baseline improvements over existing highway: \$148 million.
3. Additionally, by S2S reducing road closures by 50 per cent over the road closure plan developed by MoT for the baseline improvements, savings in travel time costs will be generated by reducing the number and duration of delays incurred by road users.
 - a. Estimated anticipated user benefits: \$9 million. These benefits are realized only during the 2005-2009 construction period.

The sum of the expected user benefits from the incremental improvements is estimated to be \$131 million NPV over the life of the contract. To put these in perspective, benefits provided by the baseline improvements are estimated to be \$427 million NPV over the life of the contract. In the opinion of MoT and its advisors, the benefits resulting from the incremental improvements are in the order of 15 to 30 per cent above the expected benefits of the baseline improvements.

The generally accepted method for evaluating a project's costs and benefits is to compare the incremental differences between undertaking and not undertaking the project. If MoT had chosen to leave Highway 99 as is (i.e. not undertake either the DBFO or the PSC), it would still have incurred operations, maintenance and rehabilitation (OM&R) costs. In MoT's opinion, the OM&R costs it would have incurred if it had not undertaken the project would have been similar to those of the PSC. Therefore, MoT would determine the benefits of the Sea-to-Sky Highway Improvement Project by comparing the total incremental benefits of the project to the incremental costs, which are approximated by the total costs of the DBFO less the OM&R costs of the PSC. Please refer to page 17.

In summary, MoT believes value for money will be demonstrated for this project because of the additional improvements, and the anticipated user benefits that flow from them, provided in the DBFO contract.

Competitive Selection Costs

Competitive selection process costs - including the costs of transaction and legal advisors and partial compensation to the two teams that responded to the RFP but were not selected as preferred proponent - were \$22 million.

This figure is 2.8 per cent of the \$789.8 million NPC for the DBFO.

As one of the first transportation DBFO projects in B.C., the Sea-to-Sky Highway Improvement Project has provided an opportunity to develop processes, procedures and documents that have been used on other projects, such as the Kicking Horse Canyon Phase II Project.

Each of the teams that submitted a proposal, but was not selected as the preferred proponent, received partial compensation of \$1.5 million. In return, the Province receives the intellectual and other property rights to the design and other elements of each proposal. MoT has not yet determined if and how these elements will be utilized for the project – but is able to do so at its option at any time throughout the life of the contract.



5. Ongoing Contract Monitoring

MoT will oversee the project, ensuring that contractually committed standards are met.

Under the contract terms, S2S is required to register for, and maintain the standards of, the ISO 9000⁷ program, a program that focuses on maintaining good management standards. Penalties will be incurred by S2S for non-compliance.

Design and Construction Period

The design of the project is the responsibility of S2S, who must certify that the design complies with the contractual requirements in all respects. As well, S2S' work must pass two interim reviews by MoT (at 50 per cent design and at 90 per cent design). MoT will provide comments on submittals to ensure contractual obligations are met.

Operations

Under the terms of the contract, S2S is responsible for operating the highway and for maintenance and rehabilitation. Outcome-based specifications determine the work required by S2S, which is subject to performance auditing by both S2S and MoT.

MoT retains a number of ongoing responsibilities, including integration with the provincial highway system, managing side road rehabilitation, and managing highway operations during the Olympic period in 2010.

⁷ ISO stands for International Standards Organization or the International Organization for Standardization. The ISO is responsible for acting as an international standards organization that develops manufacturing and performance standards for a wide variety of industries.



partnerships
British Columbia