



## South Fraser Perimeter Road Environmental Assessment Application



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## PREFACE

The Ministry of Transportation (MOT) is proposing to build the South Fraser Perimeter Road (SFPR). It is proposed as a new four-lane, 80 km/h route along the south side of the Fraser River extending from Deltaport Way in Delta to 176<sup>th</sup> Street and the Golden Ears Bridge (GEB) Connector Road and Highway 1 in Surrey/Langley. The SFPR Project (the Project) is being proposed in response to the impact of growing regional congestion, and to improve the movement of people, goods and transit throughout Greater Vancouver.

The Project is subject to both the provincial *Environmental Assessment Act* (BCEAA) and the federal *Canadian Environmental Assessment Act* (CEAA). When both Acts apply, provincial and federal agencies prefer to conduct a joint review under a standing EA (Environmental Assessment) cooperation agreement, with federal agencies following the provincial process, where possible, and using best efforts to meet provincial legislated timelines.

In the provincial process, the Project is considered a reviewable project according to Table 14 of BCEAA's *Reviewable Projects Regulations* (BC Reg. 370/2002), which states that a new highway project is reviewable if it is "a new facility consisting of  $\geq 20$  continuous km of paved public highway with  $\geq 2$  lanes", (BCEAA BC Reg. 370/2002, Table 14, Section 1, Column 2, (1)). The Project is subject to a screening study under CEAA and relevant triggers.

To initiate the provincial environmental assessment process, the MOT submitted a Letter of Intent to Initiate Pre-Application Review for the Project to the Environmental Assessment Office (EAO) on 3 February 2003. In response, the EAO Project Assessment Director issued a section 10(1)(c) order under BCEAA on 3 February 2003, stating that an EA Certificate is required for the Project, and thereby commencing the provincial Pre-Application period. The EAO Project Assessment Director issued a second order on 27 October 2004 under Section 11 of BCEAA stating that the EA of the Project be conducted according to the scope, procedures and methods set out by the EAO.

The SFPR Project is subject to the federal CEAA process due to at least three (and possibly more) federal agencies being required to issue approvals for the Project of a type listed in the CEAA *Law List Regulations*. Based on the project description, the Project will require *Fisheries Act* authorizations from Fisheries and Oceans Canada (DFO); an Approval from Transport Canada under the Section 5(1)(a) of the *Navigable Waters Protection Act* and a permit from the Canadian Transportation Agency, under the *Railway Safety Act*, for rail crossings. In the event that federal funding is provided to the Project, other federal Responsible Authorities (RA) may be identified. All of the above noted federal departments will be 'Responsible Authorities' under CEAA, and will have to ensure that an EA is carried out in accordance with CEAA. In addition to the federal RA listed above, Federal Authorities (FA), such as Environment Canada, Natural Resources Canada and Health Canada, will provide expert advice in relation to the Project.

The EA Application is a screening level study, and has been developed pursuant to the Section 11 order and the Approved Terms of Reference for the Project, both issued by the EAO. The Approved Terms of Reference was developed by the EAO, and approved by them on 29 December 2004.

The EAO established two working groups to provide advice in support of the review: a biophysical / technical working group (BTWG) and a socio-economic/community working group (SEWG). The working groups include representatives from federal, provincial and local government agencies and First Nation groups. The EAO has chosen, for the pre-application phase, to have joint meetings of the BTWG and SEWG.

The working group members who have been involved in the development of the Application, through participation in either formal EAO initiated working group meetings or direct consultation with the MOT, are:

- Ministry of Transportation
- Canadian Environmental Assessment Agency (CEA Agency)
- Fisheries and Oceans Canada (DFO)
- Environment Canada
- Canadian Wildlife Service (CWS)
- Health Canada (HC)
- Transport Canada
- Environmental Assessment Office (EAO)
- Land and Water BC
- Ministry of Environment (MOE)
- BC Ministry of Agriculture & Lands (MAL)
- Ministry of Small Business & Economic Development
- Ministry of Tourism, Sports & Arts (Archaeology Branch)
- Ministry of Competition, Science and Enterprise (MCSE)
- Ministry of Community Aboriginal & Women's Services (MCAWS)
- Greater Vancouver Regional District (GVRD)
- Corporation of Delta
- TransLink
- City of Surrey
- Fraser Health Authority
- Sto:Lo Nation
- Tsawwassen First Nation
- Katzie First Nation

## EXECUTIVE SUMMARY

The Gateway Program was established by the Province of British Columbia in response to the impact of growing regional congestion, and to improve the movement of people, goods and transit throughout Greater Vancouver.

The B.C. Ministry of Transportation (the Proponent) is responsible for advancing the South Fraser Perimeter Road (SFPR or the Project), one of three component projects of the Gateway Program. The proposed SFPR extends north and east from the Highway 17/Deltaport Way intersection through Delta and Surrey along the south bank of the Fraser River connecting with highways 99, 91 and 1 and 15, and eventually terminating at the proposed intersection west of the Golden Ears Bridge (GEB) crossing of the Fraser River. The SFPR is proposed as a four-lane facility with an 80 km/h design speed, and five interchanges and five intersections.

The proposed SFPR corridor currently consists of roads that form portions of an important link for commercial and commuter traffic. It addresses, to varying service levels, a portion of the projected future traffic demand in the corridor. However, the existing roads have varying standards, cross sections, speeds and capacities; including local roads through communities, arterials through industrial areas and expressways. Many of the roads along the current corridor are not compatible with the existing traffic volumes or mix of vehicles. Continuity along the corridor is weak, in some cases no road currently exists. The challenges of a discontinuous and variable corridor prevent the roads serving the current SFPR corridor from fulfilling the envisioned role and function of the SFPR route as an efficient goods movement corridor.

The SFPR will facilitate the separation of local and regional traffic and reduce regional traffic on the local/municipal road network. In doing so, the Project will help to address the safety concerns that currently exist in the corridor.

The SFPR is subject to environmental review under both the *Canadian Environmental Assessment Act* (CEAA) and the *British Columbia Environmental Assessment Act* (BCEAA). The review of the Project will be conducted under the terms of the Canada-British Columbia Agreement for Environmental Assessment Cooperation and in accordance with the procedural process in the Section 11 Order issued by the Environmental Assessment Office (EAO) on 27 October 2004.

An information distribution (communications) and consultation program was undertaken as part of the SFPR Project over the period between May 2003 and June 2006, though pre-design consultation has been ongoing since 1998. The MOT consultation process is intended to ensure that interested members of the public can provide input, have project-related questions answered, and facilitate dialogue between the MOT and interested individuals and groups. In addition, the MOT has undertaken consultation with key stakeholders such as local governments, commercial transportation interests, emergency and first response providers as well as environmental regulatory agencies. The issues raised during these pre-design consultation activities have informed the design of the

Project and guided the assessment of potential impacts and the development of mitigation.

The SFPR project is being proposed in an area where up to eight First Nation organizations have been identified as having potential aboriginal interests. Accordingly, the MOT began a program of information sharing and consultation with the identified First Nations in 2003. Since then, a specific and directed First Nation consultation program has been implemented, the goal of which has been to identify First Nation interests, issues and concerns related to the SFPR, and to consider and address these within the context of the overall planning, design and approval processes. To date, participating First Nations have expressed interests in relation to potential impacts on archaeology, fisheries, land-use, and socio-community / economic considerations. The MOT will continue to work with these First Nations to further define the scope of their interests and/or concerns and to mitigate or otherwise resolve their project-related concerns.

During the pre-application phase of the environmental assessment process, First Nations have also been informed of, and have had the opportunity to participate in, the Projects' public and stakeholder consultation program. These opportunities will continue throughout the Application Review phase of the EA process.

The proposed Project scope includes all activities directly associated with the construction and operation of the SFPR. The scope of the assessment includes potential project-related impacts on biophysical and socio-community values including: archaeology, air quality, agriculture, fisheries, hydrogeology, noise, wildlife, water quality, socio-community and socio-economic conditions, cumulative effects and identified First Nations interests.

A number of studies have been undertaken to support the environmental assessment of the Project. These studies were guided by work plans developed through consultation with the Biophysical and Socio-Economic working groups coordinated by the EAO, and are discussed in the Application and provided as technical volumes.

The Application has been developed to meet the requirement of the Approved Terms of Reference, which were issued by the EAO, after consultation with the Biophysical and Socio-economic working groups. The Approved Terms of Reference were developed to ensure that all federal and provincial environmental assessment requirements would be addressed in the Application.

The development of the proposed SFPR has been supported by an extensive consultation program with: the public, key stakeholders, governmental agencies; and First Nations. The consultation has helped to refine the Project and address issues and concerns raised during planning. Additional consultation is planned for the future, and opportunities will be sought to further avoid or minimize potential impacts.

The main conclusions of the environmental assessment are as follows and are discussed in detail in the Application and technical volumes:

**Agriculture**

As a result of pre-design consultation with farming interests, a number of measures have been taken to avoid or minimize impacts to agriculture in southwest Delta. Additional steps will be taken during future stages of project development to further reduce impacts to agriculture. However, it is assumed that the Project will impact agricultural lands as a result of: direct footprint impacts, severance and isolation of parcels and indirect impacts. As such, the MOT has committed to the development and implementation of a strategy to enhance productivity of agricultural lands in southwest Delta. The magnitude and scope of the strategy will be determined in consultation with the Delta Farmers Institute, the Agricultural Land Commission, and the Ministry of Agriculture.

**Archaeology**

There are important archaeology values, including the St. Mungo and Glenrose Cannery sites, along the corridor and there is strong public and First Nations interest in protecting the resources contained in these sites. The footprint of the Project has the potential to impact on these values. However, mitigation proposed to protect archaeology resources has been recommended, including: additional detailed study, as part of final design to avoid impacts where possible; recovery of artefacts where required; and capping key archaeological components to protect these sites from future impacts.

**Air Quality**

A review of recent and projected trends in regional air quality indicates that for most parameters, air quality has improved since the late 1980s, and with or without the proposed project additional improvements are anticipated in the future. Much of this improvement is linked to reductions in emissions from vehicles as new emissions control technologies are phased in. As a result, human health risks associated with emissions of criteria air contaminants (CAC) are being reduced.

Studies on changes in air quality throughout the SFPR corridor have determined that air emissions from vehicle traffic during operation, with the exception of greenhouse gases, will decrease between 2003 and 2021, due to improvements in emissions control technology. Hence, there is not expected to be any adverse impact on human health as a result of changes in air quality. In addition, some existing human health effects will be reduced. Emissions associated with construction activities can be effectively mitigated through the application of best practices and no long term adverse effect is anticipated.

**Contaminated Sites**

The corridor includes a number of properties that are suspected of being contaminated as a result of past land use. To avoid environmental and human health effects associated with contamination during SFPR construction and operation, all sites will be assessed for contamination, as part of property acquisition. Any contaminated sites will be managed in compliance with relevant legislation in the context of their proposed future land use.

**Fisheries**

The corridor includes a range of fisheries values that are potentially impacted by construction and operation of the Project. Through project planning, steps have been

taken to avoid and minimize, where possible, impacts to fish and fish habitat. The application of best practices during construction will further help to avoid impacts to fisheries resources. However, even with the application of mitigation, it is anticipated that there will be residual impacts on aquatic (3.5 ha) and riparian (15 ha) fisheries habitat. As a result, compensation concepts to achieve no net loss of fish habitat have been identified throughout the corridor. The habitat balance after taking into account such concepts is estimated to be a positive balance of 3.3 ha (aquatic) and 2.7 ha (riparian).

### **Hydrogeology**

The corridor includes a number of areas with unique and sensitive hydrogeological conditions including areas adjacent to Burns Bog. While the Project does not impact the Burns Bog Partnership Lands, careful effort will be required to ensure design and construction of the Project does not impact the values contained in bog ecosystems adjacent to the SFPR. The assessment identifies design and construction considerations that will ensure that hydrogeological conditions adjacent to the Project are maintained. Specific design recommendations are made to ensure that water levels and water chemistry, in Burns Bog, do not change as a result of the Project. Specific design recommendations include: features to allow for continued radial flow (i.e., light weight fills/drains) and preserve water chemistry (i.e., selection of fill materials). In addition to design and construction mitigation, a post-construction monitoring program is proposed to ensure that design mitigation is operating as intended and that water levels and chemistry in Burns Bog are maintained at pre-construction conditions. In addition, recognizing the unique ecological values of Burns Bog, opportunities are being considered to address impacts to Burns Bog as a result of historic development.

### **Noise**

There are a number of areas along the corridor where noise impacts as a result of construction and operation will occur. Construction related impacts can be addressed effectively through the use of best practices and construction activities are not anticipated to result in long-term adverse effects. Operation of the Project will result in a change in noise conditions relative to current conditions. In some cases, the magnitude of the change will require that some form of mitigation be applied, as per MOT guidelines for the application of noise mitigation. Mitigation that is recommended in the case of the SFPR includes the use of “quiet pavement” and noise barrier. The application of such mitigation will reduce traffic related noise to levels that are considered acceptable, according to commonly used frameworks that are used to assess noise impacts.

### **Socio-community**

A study of the effect of the Project on socio community/socio-economic conditions determined that the Project is generally consistent with, and supportive of, the OCP and regional growth plans of local and regional government. In addition, the Project is anticipated to have a generally positive effect on employment and income in adjacent communities. Issues such as access have largely been addressed during pre-design planning and consultation. Minimizing construction and operational related impacts to visual conditions, heritage resources and other considerations will be considered in more detail, as part of community consultation that will support future design stages.

**Wildlife**

The SFPR Project corridor supports a diverse range of important wildlife and vegetation values. The process of planning for SFPR has been an iterative one and has provided the opportunity to avoid potential effects on wildlife and vegetation values through design and alignment refinements. The assessment of potential impacts of the Project, on such values, has determined that many, remaining, project related impacts can be avoided or mitigated through the application of best practices during future stages of project design and construction. In addition, mitigation is recommended to address species-specific and site-specific impacts to wildlife values including; wildlife values on agricultural land, connectivity between upland and forest and river, wetland areas, Burns Bog, red and blue listed plant communities, and sensitive species (i.e., barn owls, sandhill crane).

**Residual Effects and Cumulative Effects Assessment**

Taking into account the application of general and specific mitigation, it is anticipated that the Project will result in residual environmental effects. The MOT is committed to working with relevant federal and provincial environmental agencies in order to identify appropriate compensation and develop a follow up program to ensure that mitigation and compensation programs are effective in addressing the range of potential effects associated with the construction and operation of the Project.

As required under CEEA, the Application considers federal requirements including: cumulative environmental effects. While most environmental effects associated with construction and operation of the Project can either be mitigated or compensated for, it was determined that there are residual environmental effects which require consideration in a cumulative environmental effects assessment. The issues that are subject to this assessment include: air quality, wildlife and vegetation; fisheries; and noise. The cumulative environmental effects assessment undertaken for the Project determined that while there are cumulative environment effects, they are not significant. Federal reviewing agencies will make the final determination on the presence and significance of potential cumulative environmental effects.

**Conclusion**

As a result of the environmental assessment undertaken for the proposed project, it has been determined that there are a number of environmental and socio-community values that are potentially impacted by construction and operation of the SFPR. Where possible, steps have been taken to avoid such impacts during project planning. Additional mitigation during design, construction and operational phases of the Project is proposed to address future potential project impacts. Where residual effects exist, after the application of such mitigation, compensation will be identified in consultation with relevant regulatory agencies.

Taking into account the application of the proposed mitigation, in conjunction with compensation and follow up programs to be confirmed, the MOT has assessed that construction and operation of the Project will not result significant adverse affects. This conclusion is the opinion of the MOT, and it is recognized that regulatory agencies will make their own determination of significance.



## TABLE OF CONTENTS

PREFACE .....	i
EXECUTIVE SUMMARY .....	iii
1. INTRODUCTION.....	1
1.1 Proponent Identification .....	1
1.2 Project Background.....	1
1.2.1 The Gateway Program.....	1
1.2.2 South Fraser Perimeter Road.....	3
1.3 Regulatory Framework.....	4
1.3.1 Provincial EA Process under BCEAA .....	5
1.3.2 Federal EA Process under CEAA.....	5
1.3.3 Joint Provincial and Federal Review Process.....	6
1.4 Application Layout.....	6
1.5 Table of Concordance.....	8
2. INFORMATION DISTRIBUTION AND CONSULTATION .....	22
2.1 Overview of Information Distribution and Consultation.....	22
2.1.1 Process .....	23
2.2 Information Distribution and Consultation Activities to Date.....	26
2.2.1 Information Distribution and Communication.....	26
2.2.2 Local and Regional Government Liaison.....	27
2.2.3 Regulatory Agency Dialogue .....	27
2.2.4 Design Consultation.....	29
2.2.5 First Nations Consultation.....	32
2.3 Issues Identification .....	32
2.4 Proposed Application Review Period Activities .....	46
2.5 Post Environmental Assessment Activities.....	46
3. PROJECT BACKGROUND .....	48
3.1 Project Background and Rationale .....	48
3.1.1 Regional Growth and Development.....	48
3.1.2 Existing Travel Conditions .....	54
3.1.3 Future Traffic Conditions.....	61
3.1.4 Existing and Future Transit.....	68
3.1.5 Benefits of SFPR .....	69
3.1.6 Federal Funding.....	69
3.2 Project Location, Alternatives, Site Selection .....	70
3.2.1 Previous studies.....	70
3.2.2 Alternative Conceptual Designs.....	74
3.2.3 Alternatives to the Project.....	82
3.3 Project Constraints.....	84
3.3.1 Environmental .....	84
3.3.2 Geotechnical .....	85
3.3.3 Archaeological .....	85
3.3.4 Socio-Community.....	85

	3.3.5	Agriculture.....	85
4.		PROJECT DESCRIPTION.....	87
	4.1	Project Delivery Mechanism .....	87
		4.1.1 Design Bid Build.....	87
		4.1.2 Design Build.....	87
		4.1.3 Alliance.....	87
		4.1.4 Design Build Finance Operate .....	87
		4.1.5 SFPR Project Delivery Framework .....	88
	4.2	Project Design.....	88
		4.2.1 Route Description .....	92
		4.2.2 Description of Project Components .....	94
		4.2.3 Temporary and Ancillary Project Works .....	102
		4.2.4 Site investigations .....	106
		4.2.5 Land and Water Lot Requirements.....	107
	4.3	Construction Phase.....	108
		4.3.1 Project Plan and Schedule.....	108
		4.3.2 Construction Activities.....	108
	4.4	Operations Phase .....	115
	4.5	Decommissioning.....	117
	4.6	Capital Costs.....	117
	4.7	Labour Force.....	118
5.		SCOPE OF ASSESSMENT AND STUDY AREA .....	119
	5.1	Scope of the Project.....	119
	5.2	Scope of Assessment .....	120
	5.3	Project and Study Boundaries .....	121
		5.3.1 Study Area Determination.....	121
		5.3.2 Consultation for Geographic Scope.....	121
	5.4	Spatial and Temporal Boundaries .....	122
		5.4.1 Spatial Boundaries.....	122
		5.4.2 Temporal Boundaries.....	122
6.		ENVIRONMENTAL ASSESSMENT METHODOLOGY.....	123
	6.1	Impact Assessment Methodology.....	123
		6.1.1 General .....	123
		6.1.2 Ecosystem Component and Temporal Baseline Selection.....	123
		6.1.3 Determination of Significance .....	124
	6.2	Other Environmental Assessment Requirements.....	127
7.		IMPACT ASSESSMENT.....	128
	7.1	Agriculture.....	128
		7.1.1 Introduction .....	128
		7.1.2 Methods .....	128
		7.1.3 Existing Agricultural Conditions .....	131
		7.1.4 Impact Assessment.....	140
		7.1.5 Proposed Mitigation and Compensation.....	150

	7.1.6	Conclusions .....	155
7.2		Air Quality and Public Health .....	157
	7.2.1	Introduction .....	157
	7.2.2	Background to Air Quality Assessments.....	158
	7.2.3	Methods – Air Quality.....	168
	7.2.4	Existing Air Quality Conditions.....	173
	7.2.5	Impact Assessment – Air Quality.....	176
	7.2.6	Assessment of Significance – Air Quality .....	186
	7.2.7	Public Health Impact Assessment .....	190
	7.2.8	Proposed Mitigation .....	211
	7.2.9	Conclusion .....	212
7.3		Contaminated Sites.....	214
	7.3.1	Introduction .....	214
	7.3.2	Methodology .....	215
	7.3.3	Existing Contaminated Site Conditions.....	217
	7.3.4	Impact Assessment.....	222
	7.3.5	Proposed Mitigation .....	225
	7.3.6	Conclusions .....	228
7.4		Fisheries.....	229
	7.4.1	Introduction .....	229
	7.4.2	Methodology .....	229
	7.4.3	Existing Fisheries Conditions.....	235
	7.4.4	Impact Assessment.....	244
	7.4.5	Proposed Mitigation .....	254
	7.4.6	Proposed Compensation .....	257
	7.4.7	Residual Impacts Assessment.....	272
	7.4.8	Conclusion .....	273
7.5		Hydrogeology .....	274
	7.5.1	Introduction .....	274
	7.5.2	Methods .....	275
	7.5.3	Existing Hydrogeological Conditions .....	282
	7.5.4	Impact Assessment.....	292
	7.5.5	Proposed Mitigation .....	299
	7.5.6	Conclusions .....	303
7.6		Water Quality .....	305
	7.6.1	Introduction .....	305
	7.6.2	Methods .....	305
	7.6.3	Existing Water Quality Conditions .....	310
	7.6.4	Impact Assessment.....	316
	7.6.5	Proposed Mitigation .....	317
	7.6.6	Conclusion .....	319
7.7		Wildlife and Vegetation .....	320
	7.7.1	Introduction .....	320

	7.7.2	Methods .....	321
	7.7.3	Existing Vegetation Conditions .....	325
	7.7.4	Existing Wildlife Conditions.....	333
	7.7.5	Impact Assessment.....	342
	7.7.6	Proposed Mitigation .....	357
	7.7.7	Potential Residual Impacts .....	366
	7.7.8	Compensation .....	369
	7.7.9	Adaptive Management Program .....	371
	7.7.10	Conclusion .....	372
8.		<b>SOCIO-COMMUNITY IMPACT ASSESSMENTS .....</b>	<b>373</b>
	8.1	Noise .....	373
	8.1.1	Introduction .....	373
	8.1.2	Background on Noise.....	374
	8.1.3	Methodology .....	376
	8.1.4	Existing Noise Conditions .....	389
	8.1.5	Predicted Noise Levels .....	390
	8.1.6	Proposed Mitigation .....	391
	8.1.7	Assessment of Impacts During Construction.....	394
	8.1.8	Assessment of Impacts During Operation .....	396
	8.1.9	Residual Impacts .....	403
	8.1.10	Conclusion .....	406
	8.2	Archaeology and Heritage Resources .....	408
	8.2.1	Introduction .....	408
	8.2.2	Methods .....	409
	8.2.3	Existing Environmental and Cultural Setting.....	414
	8.2.4	Impact Assessment.....	424
	8.2.5	Proposed Mitigation .....	430
	8.2.6	Conclusion .....	434
	8.3	Socio Community Impact Assessment .....	436
	8.3.1	Introduction .....	436
	8.3.2	Methods .....	436
	8.3.3	Existing Environment .....	442
	8.3.4	Potential Operational Impacts.....	452
	8.3.5	Potential Construction Impacts .....	464
	8.3.6	Proposed Mitigation .....	465
	8.3.7	Conclusion .....	468
	8.4	Socio-Economic Assessment .....	469
	8.4.1	Introduction .....	469
	8.4.2	Methods .....	469
	8.4.3	Existing Socio-economic Environment .....	471
	8.4.4	Potential Socio – economic Impacts.....	481
	8.4.5	Proposed Mitigation .....	486
	8.4.6	Conclusion .....	488

9.	SUMMARY OF IMPACTS, MITIGATION AND RESIDUAL EFFECTS .....	489
10.	OTHER REVIEW CONSIDERATIONS.....	495
10.1	Accidents and Malfunctions .....	495
10.1.1	Introduction .....	495
10.1.2	Construction.....	495
10.1.3	Operation .....	498
10.2	Effects of the Environment on the Project .....	499
10.2.1	Introduction .....	499
10.2.2	Seismic and Slope Stability Hazards.....	499
10.2.3	Climate Change .....	500
10.2.4	Erosion.....	502
10.2.5	Flooding Hazards.....	502
10.3	Cumulative Environmental Effects.....	503
10.3.1	Introduction .....	503
10.3.2	Methodology .....	504
10.3.3	Scoping .....	504
10.3.4	Analysis of Effects.....	511
10.3.5	Significance Evaluation.....	519
10.3.6	Conclusion .....	519
11.	ENVIRONMENTAL MANAGEMENT PLAN.....	523
11.1	Fisheries Habitat and Compensation Plan .....	524
11.2	Wildlife and Habitat Management Plan.....	525
11.3	Other Construction EMP sub-plans .....	526
11.3.1	Surface Water Quality and Sediment Control Plan .....	526
11.3.2	Contaminated Sites Management Plan .....	527
11.3.3	Hazardous Waste Management and Spill Plan .....	528
11.3.4	Construction Waste Management Plan .....	529
11.3.5	Air Quality and Dust Control Plan .....	530
11.3.6	Noise and Vibration Management Plan .....	530
11.3.7	Archaeological Mitigation / Monitoring Plan.....	530
11.3.8	Environmental Education and Awareness Plan.....	531
11.3.9	Environmental Monitoring Plan .....	532
11.3.10	Health and Safety Plan .....	532
11.3.11	Emergency Response Plan .....	533
11.3.12	Agriculture Mitigation Plan .....	534
11.4	Operational Environmental Management Plan .....	535
12.	FIRST NATIONS CONSIDERATIONS .....	536
12.1	Scope of First Nations Considerations .....	536
12.2	Consultation with First Nations .....	536
12.3	First Nations Consulted – Pre-Application Phase.....	537
12.3.1	Musqueam Indian Band.....	539
12.3.2	Tsawwassen First Nation.....	541
12.3.3	Semiahmoo First Nation .....	545

12.3.4	Qayqayt (New Westminster Indian Band).....	547
12.3.5	Kwikwetlem First Nation.....	548
12.3.6	Katzie First Nation.....	550
12.3.7	Kwantlen First Nation.....	554
12.3.8	Sto:lo Nation .....	555
12.4	Project Setting: Traditional Use Considerations .....	557
12.5	Project Setting - Socio-economic Considerations.....	559
12.5.1	Overview .....	559
12.5.2	Reserves .....	560
12.5.3	Demographics.....	561
12.5.4	Labour Market Data: .....	564
12.5.5	Economic Development.....	570
12.5.6	Housing and Services.....	572
12.6	Potential Project Impacts on First Nations Interests.....	574
12.7	Environmental Management Plans and Mitigation .....	574
12.8	Commitments to First Nations.....	575
12.9	Ongoing Consultation, Impact Assessment, Mitigation and Follow Up	575
12.9.1	Proposed First Nations Consultation Program During Application Review .....	576
13.	CONCLUSION .....	579
14.	REFERENCES.....	580

**List of Tables**

Table 1.1	Agencies responsible for potential SFPR permits and approvals.....	5
Table 1.2	Bio-physical and socio-community study reports.....	7
Table 1.3	Table of concordance. ....	8
Table 2.1	Summary of regulatory agency meetings. ....	28
Table 2.2	Consultation conducted between 1999 and 2006 (Pre-application).....	30
Table 2.3	Summary of the key issues identified during consultation.....	33
Table 3.1	Daily truck demand on SFPR (vehicle km). ....	52
Table 3.2	Daily vehicle demand (2031) along segments of the SFPR (trips).....	53
Table 3.3	Summary of regional planning documents applicable to SFPR. ....	55
Table 3.4	Northbound Highway 17 (Deltaport Way to Hwy 99 Interchange) travel times (fall 2003) .....	56
Table 3.5	Traffic volumes on Highway 17 south of Ladner Trunk Road (2004). ....	56
Table 3.6	Eastbound River Road (Hwy 99 to Nordel Way) travel time (fall 2003) .	57
Table 3.7	Traffic volumes on River Road at Nordel Way (winter 2003). ....	57
Table 3.8	Traffic volumes on South Fraser Way at Grace Road (Winter 2003). ....	58
Table 3.9	Projected SFPR traffic volumes south of Ladner Trunk Road (2021). ...	62
Table 3.10	Projected SFPR traffic volumes west of Nordel Interchange (2021). ....	63
Table 3.11	Projected traffic volumes west of Tannery Road Interchange (2021).....	63
Table 3.12	Projected SFPR traffic volumes east of 136 <sup>th</sup> Street (2021).....	64
Table 4.1	Key SFPR features and design / construction constraints. ....	89
Table 4.2	Highway and structure design criteria / standards for the SFPR.....	95
Table 4.3	Proposed SFPR and associated roads railway crossings.....	97
Table 4.4	Description of new SFPR structures.....	100
Table 4.5	Summary of potential utility conflicts on the SFPR alignment. ....	103
Table 4.6	Key schedule milestones for the SFPR. ....	108
Table 4.7	Existing roads to be decommissioned as part of the SFPR. ....	114
Table 4.8	General highway maintenance activities (MOT 2004b).....	116
Table 5.1	Environmental assessments conducted for the SFPR Project. ....	120
Table 6.1	General adverse environmental impacts (adapted from CEAA 1994)..	125
Table 6.2	Significance of adverse environmental impacts (CEAA 1994). ....	126
Table 7.1-1	Relevant climate normal (1971-2000) data for the study area. ....	133
Table 7.1-2	Areas managed by the Delta Farmland and Wildlife Trust Land Stewardship Programs.....	134
Table 7.1-3	Farmland in Delta by crop type (Delta and MAFF 2002). ....	135
Table 7.1-4	Selected 2001 agricultural statistics (Statistics Canada 2002).....	136
Table 7.1-5	Gross farm receipts in selected municipalities.....	138
Table 7.1-6	Agricultural land under the SFPR footprint within 30 m of centreline. ...	141
Table 7.1-7	Comparison of approximate footprint impacts for crops in Delta.....	141
Table 7.1-8	Parcels and area lost from production or potentially converting to lower agricultural utility due to severance and isolation. ....	145
Table 7.2-1	Predicted CAC emission changes in the LFV (2003-2021).....	160
Table 7.2-2	Forecast CAC emissions from all sources in the LFV for 2021. ....	160
Table 7.2-3	Air contaminants emitted by vehicles. ....	162

Table 7.2-4	Description of federal and provincial ambient air quality levels. ....	165
Table 7.2-5	Summary of ambient air quality objectives for B.C. and Canada. ....	167
Table 7.2-6	Ambient air quality monitoring stations in the vicinity of the SFPR.....	173
Table 7.2-7	Background values for CO, NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> and SO <sub>2</sub> .....	173
Table 7.2-8	Estimated total annual point, area, and mobile emissions in the GVRD, the LFV and Whatcom County (2000) for contaminants. ....	175
Table 7.2-9	Summary, for existing roads in 2003, of maximum and 98 <sup>th</sup> percentile predicted concentrations.....	178
Table 7.2-10	Summary, for existing roads (without SFPR) in 2021, of maximum and 98 <sup>th</sup> percentile predicted concentrations. ....	179
Table 7.2-11	Summary, for SFPR 2021, of maximum predicted and 98 <sup>th</sup> percentile concentrations in the four divisions of the modelling domain.. ....	180
Table 7.2-12	Air quality impact significance criteria (from CEAA). ....	187
Table 7.2-13	Assessments of ambient air quality impacts of the SFPR (2021) relative to the ambient baseline.....	189
Table 7.2-14	Acceptable levels of risk for various health hazard indices. ....	191
Table 7.2-15	Criteria and hazardous air contaminants (EPA 2004) considered.....	191
Table 7.2-16	Estimated current (2003) ground level concentrations of target contaminants in the study area.....	192
Table 7.2-17	Average respiratory hospital admissions (A) and cardiac hospital admissions (B) per 1,000,000 persons per day.....	193
Table 7.2-18	Median acute hazard quotients for all affected organ systems based on the worst-case (maximum 1-hour) ground level concentrations.....	197
Table 7.2-19	Median chronic hazard quotients for all affected organ systems based on the worst-case (maximum 1-hour) ground level concentrations.....	197
Table 7.2-20	Predicted acute PM related mortality per million inhabitants per year exposed to the 98 <sup>th</sup> percentile 24-hour average concentration. ....	209
Table 7.3-1	Potentially contaminated sites affected by the SFPR, by section.....	222
Table 7.4-1	Habitat rating system. ....	234
Table 7.4-2	Selected watercourses, Deltaport Way to 80 <sup>th</sup> Street. ....	238
Table 7.4-3	Selected watercourses, 80 <sup>th</sup> Street to the Alex Fraser Bridge.....	239
Table 7.4-4	Selected watercourses, Alex Fraser Bridge to Gunderson Slough. ....	240
Table 7.4-5	Selected watercourses, Gunderson Slough to Pattullo Bridge.....	240
Table 7.4-6	Selected watercourses, Pattullo Bridge to GEB Connector.....	242
Table 7.4-7	Tier 1 watercourses and site-specific mitigation requirements.....	244
Table 7.4-8	Tier 2 watercourses and site-specific mitigation requirements.....	245
Table 7.4-9	Tier 3 watercourses and site-specific mitigation requirements.....	248
Table 7.4-10	Tier 4 watercourses. ....	249
Table 7.4-11a	Impacts to watercourses, Deltaport Way to 80 <sup>th</sup> Street. ....	250
Table 7.4-11b	Impacts to watercourses, 80 <sup>th</sup> Street to Alex Fraser Bridge. ....	251
Table 7.4-11c	Impacts to watercourses between Alex Fraser and Pattullo bridges....	251
Table 7.4-11d	Impacts to watercourses, Pattullo Bridge to Golden Ears Connector...	252
Table 7.4-12	Summary of Impacts along the proposed SFPR alignment.....	254
Table 7.4-13	Summary of SFPR impacts and compensation (habitat balance). ....	272
Table 7.5-1	Summary of monitoring well locations and rationale for installation.....	279

Table 7.5-2	Groundwater quality parameters sampled and analyzed. ....	281
Table 7.5-3	Local geological conditions from this study, and the literature. ....	283
Table 7.5-4	Estimated and measured watershed discharges. ....	292
Table 7.6-1	Water quality sampling sites in the SFPR study area. ....	308
Table 7.6-2	Parameters sampled and/or analyzed during the assessment. ....	309
Table 7.7-1	Ecosystems in the Burns Bog portion of the SFPR study area. ....	327
Table 7.7-2	Very dry maritime Coastal Western Hemlock subzone ecosystems. ...	328
Table 7.7-3	Ecosystems in the dry maritime Coastal Western Hemlock subzone. .	329
Table 7.7-4	Areas of habitat types in the SFPR study area, by project section. ....	330
Table 7.7-5	Plant species at risk found or potentially present in the study area. ....	333
Table 7.7-6	Potential rare aquatic insect and butterfly species in the study area. ....	334
Table 7.7-7	Amphibian and reptile species in the SFPR study area: 2004. ....	335
Table 7.7-8	Conservation status of amphibian and reptile species in study area ...	335
Table 7.7-9	Bird species at risk that potentially occur in the SFPR study area. ....	339
Table 7.7-10	Summary of small mammal habitat assessment. ....	340
Table 7.7-11	Small mammal occurrence in the SFPR study area. ....	341
Table 7.7-12	Area of potentially affected habitat (ha), and percent of mapped habitat (in parentheses), by project section and habitat type. ....	348
Table 7.7-13	Potential impacts on red-listed plant communities. ....	349
Table 7.7-14	Potential impacts on blue-listed plant communities. ....	349
Table 7.7-15	Potential impacts on vegetation in the SFPR study area. ....	350
Table 7.7-16	Potential impacts to areas supporting the viability of Burns Bog. ....	352
Table 7.7-17	Impacts, mitigation and residual impacts by VEC. ....	358
Table 8.1-1	Average outdoor construction noise levels ( $L_{eq}$ in dBA) at various distances from an active 200 m-long construction zone. ....	382
Table 8.1-2	Potential severity of human activity interference impacts in residential areas associated with various levels of outdoor noise. ....	384
Table 8.1-3	Results of baseline sound monitoring program – summary ....	389
Table 8.1-4	Baseline and construction noise $L_{dn}$ – summary. ....	390
Table 8.1-5	Baseline and future operation noise levels – summary. ....	391
Table 8.1-6	Anticipated community reaction to construction noise – summary. ....	395
Table 8.1-7	Estimated residents highly annoyed (HA) with baseline (2004), and combined baseline and (unmitigated) construction noise. ....	396
Table 8.1-8	Estimated highly annoyed (HA) with operation noise environment. ....	398
Table 8.1-9	Potential mitigation for traffic noise impacts – west section. ....	399
Table 8.1-10	Potential mitigation for traffic noise impacts – east section. ....	402
Table 8.1-11	Residual impacts – average traffic noise levels and impact. ....	404
Table 8.1-12	Residual impacts – average $L_{dn}$ and change in % residents HA. ....	405
Table 8.1-13	Residual impacts – average noise increase and noise impact index. ...	406
Table 8.2-1	Archaeological potential in the study area. ....	421
Table 8.2-2	Archaeological deposit volume calculations. ....	422
Table 8.2-3	Significance summary for archaeological resources. ....	422
Table 8.3-1	Corporation of Delta demographic profile. ....	442
Table 8.3-2	City of Surrey demographic profile. ....	442

Table 8.3-3	Population forecast – Delta, Surrey and total study area. ....	453
Table 8.3-4	Land required for the SFPR by land use type.....	457
Table 8.3-5	Heritage properties. ....	458
Table 8.3-6	Local road traffic volumes changes. ....	460
Table 8.3-7	Proposed roads associated with SFPR to maintain property access...	462
Table 8.3-8	Visual impact assessment summary by SFPR section. ....	463
Table 8.3-9	Summary of visual impact assessment results by impact rating. ....	464
Table 8.3-10	Proposed mitigation measures. ....	467
Table 8.4-1	Corporation of Delta employment profile. ....	472
Table 8.4-2	City of Surrey profile (Statistics Canada census data). ....	474
Table 8.4-3	Surrey and Delta industrial land values (GVRD 2005b). ....	479
Table 8.4-4	Surrey development cost charges. ....	479
Table 8.4-5	Delta development cost charges. ....	479
Table 8.4-6	Study area residential dwelling prices, 2001 – 2006. ....	480
Table 8.4-7	SFPR study area economic impacts (Development Consulting Grp)...	486
Table 9.1	Summary of impacts, mitigation and residual effects .....	490
Table 10.2-1	Performance based design for three levels of seismic hazard. ....	500
Table 10.3-1	Potential cumulative effects. ....	508
Table 10.3-2	Historical, existing and future activities, and associated issues. ....	510
Table 10.3-3	Significance evaluation of potential cumulative effects. ....	521
Table 12.1	Overview of First Nations in the study area. ....	560
Table 12.2	First Nations reserves in the study area. ....	560
Table 12.3	First Nations reserves in the study area. ....	561
Table 12.4	First Nations population (1998-2005) in the study area.....	562
Table 12.5	On and off-reserve First Nations study area population, May 2006. ....	563
Table 12.6	Study area reserve population by major age groups (2001). ....	563
Table 12.7	First Nations and non-First Nations reserve populations (2001). ....	564
Table 12.8	First Nations study area unemployment and participation (2001). ....	565
Table 12.9	First Nations unemployment and participation, South Fraser Health Area.	565
Table 12.10	Percentage of labour force by industry for First Nations in the study area, GVRD and BC (2001). ....	566
Table 12.11	Percentage of labour force by occupation for First Nations in the study area, compared to GVRD and BC (2001).....	567
Table 12.12	Usual place of work for First Nations labour force in the study area, and total population in the GVRD and BC (2001).....	568
Table 12.13	Highest education level for on-reserve study area populations (2001).	569
Table 12.14	Average personal income (1995 and 2000).....	570
Table 12.15	Band business and economic activities. ....	572
Table 12.16	B.C.-First Nations’ forestry agreements in the study area.....	572
Table 12.17	Housing statistics (2001).....	573
Table 12.18	On-reserve services and facilities.....	573
Table 12.19	On reserve infrastructure. ....	574
Table 12.20	Project milestones in the review process.....	577

**List of Figures**

Figure 1.1	Proposed location for the South Fraser Perimeter Road.....	2
Figure 3.1	Major industrial areas along or adjacent to the SFPR corridor.....	59
Figure 3.2	Existing and predicted truck volumes to and from special generators. ..	60
Figure 3.3	Employment density along the SFPR corridor (2003). .....	60
Figure 3.4	Existing (blue, from Figure 3.3) and predicted future (red and yellow) employment distribution in the SFPR corridor (2021).....	62
Figure 3.5	Shortest (preferred) paths for trucks from Deltaport Way to areas in the GVRD without the SFPR (2021).....	65
Figure 3.6	Shortest (preferred) paths for trucks from Deltaport Way to areas in the GVRD with the SFPR (2021). .....	66
Figure 3.7	Estimated travel time savings from Deltaport associated with the SFPR in 2021 (morning). .....	67
Figure 3.8	Projected time savings for trips to South Westminster with the SFPR and other components of the Gateway Program (morning 2021). .....	68
Figure 3.9a	Location of the SFPR with key interchanges and features, west. ....	72
Figure 3.9b	Location of the SFPR with key interchanges and features, east. ....	73
Figure 3.10	Alignment options considered in southwest Delta. ....	76
Figure 3.11	Hoover and Naas SFPR alignment proposal.....	79
Figure 3.12	SFPR options considered for Fraser Heights (CN Intermodal wetland). ..	81
Figure 4.1	Typical single grade cross-section for the SFPR.....	95
Figure 4.2	Typical split grade cross-section for the SFPR.....	96
Figure 4.3	Typical cross-section for the GEB Connector part of the SFPR.....	96
Figure 7.1-1	Potential severance and isolation impacts in the study area.....	144
Figure 7.2-1	Change in CAC emissions in the LFV, 1985-2025 (GVRD 2003b). ....	159
Figure 7.2-2	The GVRD ambient air quality monitoring network, squares identify the stations used in this study (figure extracted from GVRD 2003a).....	169
Figure 7.2-3	Maximum 1-hour NO <sub>x</sub> concentration in the SFPR corridor including major cross streets (2003). .....	183
Figure 7.2-4	Maximum 1-hour NO <sub>x</sub> for existing roads (2021) in the SFPR corridor. ..	184
Figure 7.2-5	Maximum 1-hour NO <sub>x</sub> concentration with the SFPR (2021) .....	184
Figure 7.2-6	Modeled cross section of SFPR air emissions at Ladner Trunk Road. ..	185
Figure 7.2-7	Spatial distribution of the predicted acute respiratory hazard quotients for (A) the existing roads in 2003, (B) 2021 without SFPR and (C) 2021 with SFPR scenarios. ....	199
Figure 7.2-8	Spatial distribution of the predicted chronic respiratory hazard quotients in the: A) existing roads 2003; B) existing roads (without SFPR) 2021; and C) 2021 with SFPR scenarios.....	200
Figure 7.2-9	Predicted incremental lifetime cancer risk in the existing roads (2003 and 2021) and the 2021 Gateway scenario.....	202
Figure 7.2-10	Spatial distribution of the predicted lifetime cancer risk in: A) the existing roads in 2003; B) the existing roads (no SFPR) 2021; and C) 2021 with SFPR scenarios. ....	204
Figure 7.2-11	Median cardiac hospital admissions (CHA) and respiratory hospital admissions (RHA) per million inhabitants per year for the existing roads in 2003 and 2021 (without SFPR), and the 2021 with SFPR scenario as a result of: PM <sub>10</sub> (A,C) and PM <sub>2.5</sub> (B,D).....	206

Figure 7.2-12	Anticipated median total lifetime mortality per million persons as a result of PM <sub>10</sub> (A) and PM <sub>2.5</sub> (B).....	207
Figure 7.2-13	Anticipated PM <sub>10</sub> related annual mortality (per 1,000,000 inhabitants) for: A) the existing roads in 2003; B) the existing roads without SFPR in 2021; and C) the 2021 SFPR scenario.....	208
Figure 7.3-1a	Potentially contaminated sites in the SFPR study area and tier designation, west.....	223
Figure 7.3-1b	Potentially contaminated sites in the SFPR study area and tier designation, east.....	224
Figure 7.4-1a	Watercourses and fisheries values in the study area, west.....	236
Figure 7.4-1b	Watercourses and fisheries values in the study area, east.....	237
Figure 7.4-2	Compensation proposal at Crescent Slough at Highway 99.....	258
Figure 7.4-3	Compensation proposal west of 80 <sup>th</sup> Street.....	259
Figure 7.4-4	Compensation proposal for 96 Street Ditch, Delta.....	260
Figure 7.4-5	Compensation proposal for Cougar Canyon Creek.....	262
Figure 7.4-6	Compensation proposal at the 137A Street Watercourse.....	264
Figure 7.4-7	Compensation proposal for the Bon Accord drainage system.....	265
Figure 7.4-8	Compensation proposal at the 157 Street watercourse/East-West Drainage Channel.....	266
Figure 7.4-9	Compensation proposal at 164 and 164A Street watercourses and the South Fraser Perimeter Ditch (West).....	268
Figure 7.4-10	Compensation proposal t for the former PKI property.....	269
Figure 7.4-11	Compensation proposals at 175 Street, 176 Street and 177A Street watercourses.....	270
Figure 7.4-12	Compensation proposal on 99A Avenue Watercourse, 182A Street Ditch and Fraser River Foreshore at 182A Street.....	271
Figure 7.5-1	Aquifers in the study area.....	276
Figure 7.5-2	Sensitive bog and agricultural areas potentially affected by the SFPR. Note the boundary is Fig. 6.6 from Hebda <i>et al.</i> 2000.....	297
Figure 7.5-3	Proposed mitigation to reduce SFPR-related impacts in sensitive bog and agricultural areas adjacent to Burns Bog.....	301
Figure 7.6-1	Approximate locations of water quality sampling sites.....	307
Figure 7.7-1	Biogeoclimatic subzones of the SFPR study area.....	326
Figure 7.7-2a	Ecosystem types SFPR study area, west.....	331
Figure 7.7-2b	Ecosystem types SFPR study area, east.....	332
Figure 8.1-1	Levels of Common noises in the community (dBA).....	375
Figure 8.1-2a	Baseline noise monitoring sites and residential enclaves, west.....	379
Figure 8.1-2b	Location of baseline noise monitoring sites and residential enclaves.....	380
Figure 8.1-3	Community reaction due to newly introduced noise, relative to existing noise, in an urban residential community (HMMH 1995).....	386
Figure 8.1-4	Community annoyance due to noise (HMMH 1995).....	387
Figure 8.2-1a	Archaeological potential and archaeological sites.....	419
Figure 8.2-1b	Archaeological potential and archaeological sites.....	420
Figure 8.2-2	Nottingham Farm site.....	426
Figure 8.2-3	Location of intact archaeological deposits associated with the St. Mungo, Wet and Glenrose Cannery sites.....	428

Figure 8.3-1a	Communities, census tracts and land use, west.....	438
Figure 8.3-1b	Communities, census tracts and land use, east. ....	439
Figure 8.3-2a	Official community plan land use designations, west. ....	445
Figure 8.3-2b	Official community plan land use designations, east. ....	446
Figure 8.4-1	Labour force/occupation type.....	476
Figure 8.4-2	House construction in the study area (Statistics Canada 2001).....	481
Figure 12.1	Musqueam statement of intent boundary. ....	540
Figure 12.2	Tsawwassen statement of intent boundary ....	543
Figure 12.3	Semiahmoo traditional territory boundaries. ....	546
Figure 12.4	Katzie statement of intent boundary ....	551
Figure 12.5	Sto:lo statement of intent boundary ....	556
Figure 12.6	SFPR First Nations overview map.....	558



**List of Technical Volumes**

Technical Volume 1	SFPR conceptual alignment and design (horizontal alignment, vertical profile and cross sections).
Technical Volume 2	Summary of orders, and required permits and approvals. 2a Section 10(1)(c) Order issued by the EAO 2b Section 11 Order issued by the EAO 2c Required permits and approvals
Technical Volume 3	Consultation reports and documents. 3a Community Update May 2005 3b Community Update April 2006
Technical Volume 4	Evaluation of Alternatives 4a SFPR 72 <sup>nd</sup> Street Corridor Evaluation (Gateway 2006c). 4b Sunbury Memorandum
Technical Volume 5	Calibration of the Gateway Program traffic models.
Technical Volume 6	Agriculture impact assessment.
Technical Volume 7	Air quality (local) impact assessment.
Technical Volume 8	Contaminated sites impact assessment.
Technical Volume 9	Fish habitat impact assessment.
Technical Volume 10	Hydrogeology impact assessment.
Technical Volume 11	Water quality impact assessment.
Technical Volume 12	Wildlife, wildlife habitat and vegetation impact assessment.
Technical Volume 13	Noise impact assessment.
Technical Volume 14	Archaeological impact assessment.
Technical Volume 15	Socio-community impact assessment.
Technical Volume 16	Air quality (regional) impact assessment.
Technical Volume 17	Profile of First Nations.



**List of Abbreviations**

%HA	Percent of Highly Annoyed
ADT	Average Daily Traffic
AIP	Agreement-In-Principle
ALC	Agriculture and Land Commission
ALR	Agricultural Land Reserve
AM PH	AM Peak Hour traffic Volume
AOA	Archaeological Overview Assessment
AQ	Air Quality
ARB	California Air Resources Board
asl	Above sea level
ATOR	Approved Terms of Reference
AWHT	Average Week-Day Hour (traffic)
BCEAA	<i>British Columbia Environmental Assessment Act</i>
BCWQG	British Columbia Water Quality Guidelines
bgs	Below ground surface
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe (Railroad)
BOD	Biological Oxygen Demand
BP	Before Present
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BTWG	Biophysical/Technical Working Group
CAC	Criteria Air Contaminant(s)
CAN/CSA	Canadian Standards Association
CCME	Canadian Councils of Ministers of the Environment
CDC	Conservation Data Centre
CEAA	<i>Canadian Environmental Assessment Act</i>
CEA	Cumulative (Environmental) Effects Assessment
CEPA	<i>Canadian Environmental Protection Act</i>
CHA	Cardiac Hospital Admission
CHBDC	Canadian Highway Bridge Design Code
CMHC	Canada Mortgage and Housing Corporation
CN	Canada National (Railway)
COD	Chemical Oxygen Demand
COSEWIC	Committee On the Status of Endangered Wildlife in Canada
CSD	Census Sub-Division
CSR	Contaminated Sites Regulation
CWS	Canada-Wide Standards
CWS	Canadian Wildlife Service
dBA	A-Weighted Decibel
DCC	Delta Chamber of Commerce or Development Cost Charges
DFCP	Delta Forage Compensation Program
DFI	Delta Farmers Institute
DFO	Department of Fisheries and Oceans Canada
DFWT	Delta Farmland and Wildlife Trust
DSM	Deep Soil Mixing
EA	Environmental Assessment
EAO	Environmental Assessment Office
EC	Ecosystem Components
EMP	Environmental Management Plan

EMS	Emergency Management Systems
EPA	Environmental Protection Agency
FA	Federal Authorities
FHCA	Fraser Heights Community Association
FHWA	Federal Highway Administration
FPWGQAQ	Federal Provincial Working Group on Air Quality
FREMP	Fraser River Estuary Management Program
FRPA	Fraser River Port Authority
FTA	Federal Transit Administration
FVRD	Fraser Valley Regional District
GDP	Gross Domestic Product
GEB	Golden Ears Bridge (project, and Connector Road)
GHG	Greenhouse Gases
GIS	Geographic Information System
GMS	Growth Management Strategies
GPS	Global Positioning System
GVRD	Greater Vancouver Regional District
GVTA	Greater Vancouver Transport Authority (TransLink)
HADD	Harmful Alteration, Disruption or Destruction of Fish Habitat
HAP	Hazardous Air Contaminant (Pollutant)
HAZMAT	Hazardous Material
HC	Health Canada or Hydrocarbon
HCA	Heritage Conservation Act
HDPE	High Density Polyethylene
HEPH	Heavy Extractable Petroleum Hydrocarbons
HOV	High Occupancy Vehicle
HS	High-Speed
IARC	International Agency for Research in Cancer
ISO	International Standards
LDV	Light-Duty Vehicle
LEPH	Light Extractable Petroleum Hydrocarbons
LFV	Lower Fraser Valley
LOAEL	Lowest Observed Adverse Effect Level
LRSP	Livable Region Strategic Plan
MAE	Multiple Account Evaluation
MAFF	Ministry of Agriculture Food and Fisheries
MAL	Ministry of Agriculture and Land
MCAWS	Ministry of Community Aboriginals & Women's Services
MCSE	Ministry of Competition, Science and Enterprise
MICR	Maximum Individual Cancer Risk
MPN	Most Probable Number
MOE	Ministry of Environment
MOT	Ministry of Transportation
MSRM	Ministry of Sustainable Resource Management
MWLAP	Ministry of Water Land and Air Protection
NFPR	North Fraser Perimeter Road
NGO	Non-Government Organisation
NII	Noise Impact Index
NO <sub>x</sub>	Oxides of Nitrogen
NTU	Nephelometric Turbidity Meter

NWPD	Navigable Water Protection Division
NWS	National Weather Service
OCP	Official Community Plan
OEHHA	California Office of Environmental Health Hazard Assessment
OGA	Open-Graded Asphalt
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenols
PEP	Provincial Emergency Program
PM	Particulate Matter
PPT	Parts Per Thousand
PSI	Preliminary Site Investigation
RA	Responsible Authorities
RCS	Regional Context Statement
RIC	Resource Inventory Committee
ROW	Right-of-Way
SARA	<i>Species at Risk Act</i>
SCF	Community Futures (Development Corporation of Sto:lo)
SEWG	Socio-Economic/Community Working Group
SFPR	South Fraser Perimeter Road
SPCA	Society for the Prevention of Cruelty to Animals
SRY	Southern Railway
STP	Sewage Treatment Plant
STS	Sea-to-Sky (Highway)
TDM	Transportation Demand Management
TDS	Total Dissolved Solids
TEM	Terrestrial Ecosystem Mapping
TEU	Twenty-foot Equivalent Units
TFN	Tsawassen First Nation
TNM	Traffic Noise Model
TOC	Total and Dissolved Organic Carbon
TOR	Terms of Reference
TRM	Treaty Related Measures
TSI	Terminal Systems Inc.
TSS	Total Suspended Solids
UBC	University of British Columbia
UTM	Universal Transverse Mercator Co-ordinates
US DOT	United States Department of Transportation
UST	Underground Storage Tanks
VEC	Valued Ecosystem Components
VkmT	Vehicle Kilometre Travelled
VOC	Volatile Organic Compounds (excluding methane and ethane)
VPA	Vancouver Port Authority
VPH	Volatile Petroleum Hydrocarbons
WAD	Weak Acid Dissociable
WHO	World Health Organisation



# 1. INTRODUCTION

## 1.1 Proponent Identification

This Application for an Environmental Assessment Certificate is for the South Fraser Perimeter Road (SFPR). The Proponent is the British Columbia Government, Ministry of Transportation (MOT).

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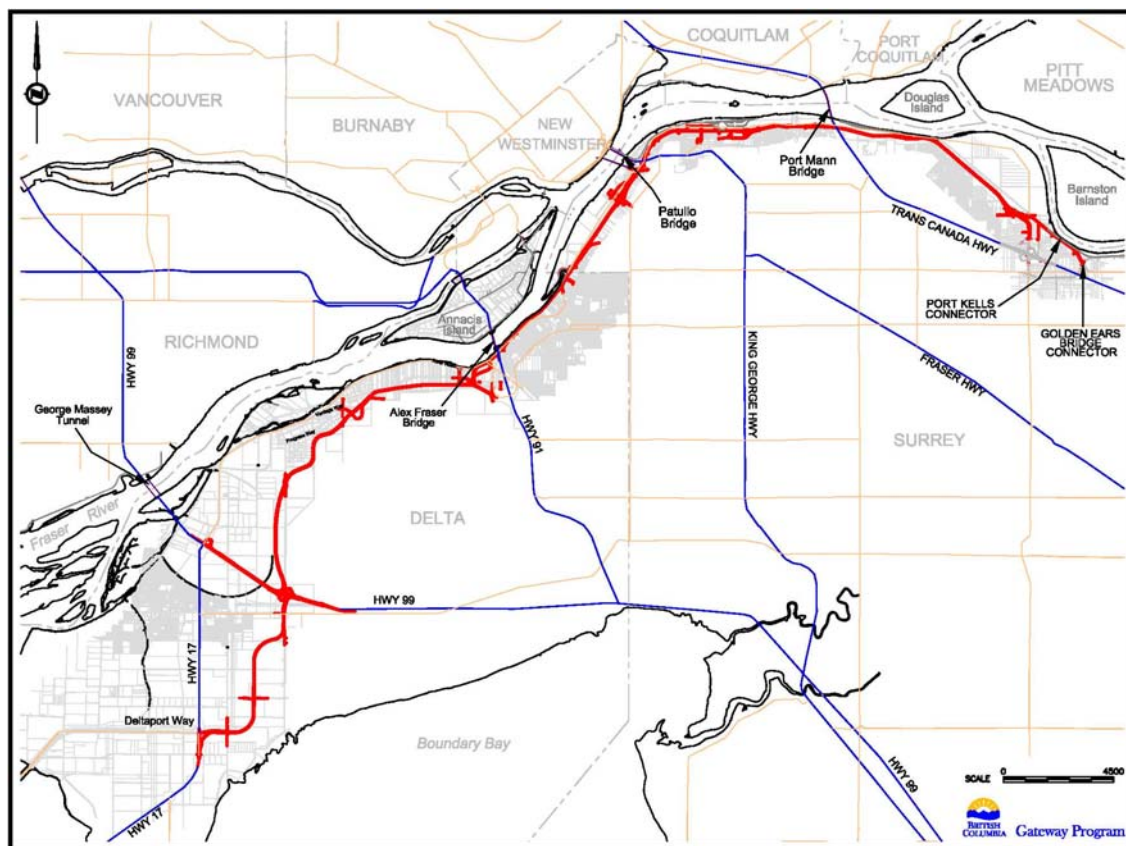
## 1.2 Project Background

### 1.2.1 The Gateway Program

The Gateway Program was established by the Province of British Columbia in response to the impact of growing regional congestion, and to improve the movement of people, goods and transit throughout Greater Vancouver. Gateway roads and bridge improvements are proposed to complement other regional road and transit improvements already planned or underway. These improvements will help create a comprehensive, effective transportation network that supports improved movement of people and goods, facilitates economic growth, increases transportation choice and provides better connections to designated population growth areas.

The South Fraser Perimeter Road (SFPR or the Project) is being advanced as one of three component projects of the Gateway Program. It is proposed as a new four-lane, 80 km/h route along the south side of the Fraser River extending from Deltaport Way in southwest Delta to 176<sup>th</sup> Street, with connections to Highway 1 and to approximately 184<sup>th</sup> Street in Surrey where it links with TransLink's future Golden Ears Bridge (GEB) (**Figure 1.1** and Technical Volume 1).

**Figure 1.1 Proposed location for the South Fraser Perimeter Road.**



The scope of Gateway Program improvements also includes:

- **North Fraser Perimeter Road:** improvements on existing roads to provide an efficient, continuous route from New Westminister to Maple Ridge. TransLink is responsible for the New Westminister section, while the Ministry of Transportation is responsible for the segment from King Edward Avenue (Coquitlam) to Maple Ridge. The **Pitt River Bridge & Mary Hill Interchange** is a stand-alone component of the NFPR that includes a new seven-lane bridge to replace the existing Pitt River swing bridges and an interchange to replace the existing Lougheed Highway and Mary Hill Bypass intersection.
- **Port Mann/Highway 1:** widening of Highway 1 and twinning the Port Mann Bridge, upgrading interchanges and improving access and safety on Highway 1 from Vancouver to Langley. The project includes congestion-reduction measures such as HOV lanes, transit and commercial vehicle priority access to on-ramps, cycling network improvements and a proposed toll on the Port Mann Bridge. The new Port Mann Bridge will be built to accommodate future light rail transit.

The Gateway Program will provide road and bridge user benefits primarily in the form of travel time savings (avoided delays), reduced vehicle operating costs and improved

safety. Analysis indicates that the Gateway Program will result in travel time and operating cost savings with a present value of \$8 billion. Other benefits include:

- **Address congestion.** Gateway improvements will help relieve congestion at key bottlenecks to keep people and goods moving.
- **Improve the movement of people and goods in and through the region.** Bring corridors to current design and safety standards, make merging safer and easier, and provide enhanced opportunities for transit and HOV service.
- **Improve access to key economic gateways.** By improving links between ports, industrial areas, railways, airports and border crossings, Gateway road and bridge improvements will help Greater Vancouver to retain and increase its role as a critical North American gateway for international trade.
- **Improve the regional road network.** By alleviating gridlock along major corridors, the proposed improvements will contribute to better overall traffic flow.
- **Improve quality of life.** By relieving bottlenecks on major routes, Gateway road and bridge improvements will help keep regional traffic on regional roads instead of local streets, improving quality of life in surrounding communities.
- **Reduce vehicle emissions.** Gateway improvements will reduce emissions from congestion-related idling.
- **Facilitate better connections to buses, SkyTrain, cycling and pedestrian networks.** Each of the Gateway improvement projects includes cycling improvements. The Gateway Program is also exploring with TransLink ways to make transit service more feasible, including transit priority to on-ramps, park & ride facilities and potential new and improved transit services.
- **Reduce travel times.** Gateway improvements are projected to reduce travel times through 2031. Depending on their origin and destination, travelers could see time savings of up to 30% when compared to 2003.

The Gateway Program will also provide safety improvements along the major transportation corridors and as a result reduce regional traffic on local streets.

### 1.2.2 South Fraser Perimeter Road

Currently, there is no direct route that serves east-west travel demand for port, industrial and regional users along the south side of the Fraser River. Opportunities for port expansion, increasing industrial development in Surrey and Delta and increased growth in Asia-Pacific trade, reinforces the need for the SFPR.

The SFPR has long been part of provincial, regional and municipal transportation plans. With connections to highways 1, 15, 91, 99 and 17, and the future Golden Ears Bridge, the SFPR will take a significant step towards improving the region's road network.

The SFPR will link primary gateway facilities such as Deltaport, Fraser Surrey Docks, CN Intermodal yard, Canada/U.S. border crossings and the Tsawwassen ferry terminal to Vancouver Island. It would also serve the growing industrial centres in Delta, Surrey and

Langley. The route would also benefit tourists accessing borders, Vancouver Island and the B.C. interior.

The following goals have been established for the SFPR Project:

- improve the movement of people and goods through the region by providing improved connections to the Provincial highway network;
- reduce east-west travel times, particularly for heavy truck movements, by providing a continuous highway along the south side of the Fraser River;
- improve access to major trade gateways and industrial areas and facilitate development in designated industrial areas along the south side of the Fraser River;
- improve safety and reliability; and
- restore municipal roads as community connectors by reducing truck and other traffic on municipal road networks.

The SFPR is a four-lane divided roadway located on the south side of the Fraser River through Delta and Surrey. By 2031, it is envisioned that SFPR will be a fully grade-separated expressway with interchanges at all access points. However, based on the results of traffic modeling, the concept for “opening day” includes a combination of intersections and interchanges.

The current estimated capital costs for the design and construction of the proposed SFPR is \$800 million (in \$2005), and is estimated to generate 4,219 person years of employment contributing \$387 million to the provincial gross domestic product.

The SFPR is subject to environmental review under both the *Canadian Environmental Assessment Act* (CEAA) and the *British Columbia Environmental Assessment Act* (BCEAA), as specified in the Section 10(1)(c) Order issued by the B.C. Environmental Assessment Office (EAO) on 3 February 2003 (Technical Volume 2a). The review of the Project will be conducted under the terms of the Canada-British Columbia Agreement for Environmental Assessment Cooperation, and in accordance with the procedural process in the Section 11 Order issued by the EAO on 27 October 2004 (Technical Volume 2b). Orders and agreements applying to the review of the Project are addressed below (section 1.3).

### 1.3 Regulatory Framework

Given the scope of the proposed project, the SFPR is subject to environmental review under both the *Canadian Environmental Assessment Act* (CEAA) and the *British Columbia Environmental Assessment Act* (BCEAA) as discussed in the following sections. The required permits and approvals associated with the Application, including potential for future licenses, are summarized (**Table 1.1**) and presented in more detail in Technical Volume 2c.

**Table 1.1 Agencies responsible for permits and approvals potentially required for the SFPR.**

Harmonized Provincial/Federal EA Review	Environmental Assessment Office
	Canadian Environmental Assessment Agency
	Responsible Authority(ies)
	Minister of the Environment (Federal)
Joint Government Agencies	Fraser River Estuary Management Program
Federal Agencies	Environment Canada
	Fisheries and Oceans Canada (DFO)
	Transport Canada
Provincial Agencies	Ministry of Agriculture and Lands
	Land and Water BC Inc.
	Ministry of Environment (MOE)
	Ministry of Public Safety and Solicitor General
	Ministry of Tourism, Sport and the Arts
	Minister of Agriculture and Lands
	Agricultural Land Commission
Regional Agencies	Greater Vancouver Regional District
Municipal Agencies	Corporation of Delta
	City of Surrey
Utilities	Terasen Gas
	BC Hydro & Power Authority

**1.3.1 Provincial EA Process under BCEAA**

The provincial EA process is managed by the EAO, which determines the review process for each project on an individual basis, taking into account project circumstances. The project is considered a reviewable transportation project according to Table 14 of the BCEAA *Reviewable Projects Regulations*, which states that a new highway project is reviewable if it is "a new facility consisting of  $\geq 20$  continuous km of paved public highway with  $\geq 2$  lanes", (BCEAA BC Reg. 370/2002, Table 14, Section 1, Column 2, (1)).

This Application addresses the information requirements identified in the Application Terms of Reference (ATOR), finalized by the EAO on 29 December 2004 (EAO 2004a).

**1.3.2 Federal EA Process under CEAA**

The SFPR Project is subject to the federal CEAA process because at least three (and possibly more) federal agencies will need to issue approvals listed in the CEAA *Law List Regulations*. Based on the project description, the Project will require *Fisheries Act* authorizations from Fisheries and Oceans Canada (DFO); an Approval from Transport Canada under the Section 5(1)(a) of the *Navigable Waters Protection Act* and an permit from the Canadian Transportation Agency, under the *Railway Safety Act*, for rail crossings. All of the above noted federal departments will be 'Responsible Authorities'

under CEAA, and will have to ensure that an EA is carried out in accordance with CEAA. In the event that federal funding is provided to the Project, other federal Responsible Authorities (RA) may be identified. No concurrent approvals and permits are being sought in association with this Application.

In addition to the federal RA listed above, Federal Authorities (FA), such as Environment Canada, Natural Resources Canada and Health Canada, will provide expert advice in relation to the Project.

The federal CEAA process focuses primarily on the biophysical effects of a project. All assessments under CEAA must examine a project's potential environmental effects, including cumulative effects, the effects of accidents and malfunctions, the significance of these effects, and the measures available to mitigate and/or compensate for them. The assessment also evaluates the effects of the environment on the project.

### **1.3.3 Joint Provincial and Federal Review Process**

As the Project is subject to review under BCEAA and CEAA, the terms of the *Canada-British Columbia Agreement for Environmental Assessment Cooperation (2004)* (Agreement) apply. Under the Agreement, projects that require an EA by both the Government of Canada and the Government of British Columbia will undergo a single assessment, administered cooperatively by both governments. Both governments will use the information generated through the cooperative EA as the basis for their respective decisions about the Project.

## **1.4 Application Layout**

The EA Application structure generally follows the Approved Terms of Reference issued by the EAO on 29 December 2004, and contains information outlined in the Section 11 Order of BCEAA (EAO 2004a). The approved Terms of Reference prepared by the EAO can be found in its entirety on the EAO website [http://www.eao.gov.bc.ca/epic/output/html/deploy/epic\\_project\\_doc\\_list\\_196\\_p\\_tor.html](http://www.eao.gov.bc.ca/epic/output/html/deploy/epic_project_doc_list_196_p_tor.html). The Terms of Reference is summarised in the table of concordance (**Table 1.3**), which links the Terms of Reference requirements to sections of the Application.

This Application is broken down into 14 sections, with figures, tables and appendices. Section 1 introduces the Project, the MOT and the regulatory framework, and presents the table of concordance. Section 2 describes the distribution of information to the public and public consultation activities. It also discusses the identification of issues for this project. Section 3 presents the background information and rationale for the Project, and alternative means that were considered to achieve the Project goals, as well as development constraints faced by the Project. A detailed description of the Project is provided in section 4, including phases of the Project, capital costs and the labour force required for construction.

Section 5 identifies the scope of the Project and the study area, and section 6 describes the environmental assessment methodology and other environmental assessment

requirements. Section 7 assesses the potential impact of the Project on the following biophysical environmental components: agricultural resources; air quality (local and regional) and human health; contaminated sites; fisheries and aquatic resources; hydrogeology; water quality; wildlife; wildlife habitat and vegetation. The potential project-related impacts on socio-economic and community issues are addressed in section 8, including: acoustic/noise; archaeology and heritage resources; socio-community issues; and socio-economic issues. A summary of the impacts, mitigation and residual impacts identified in the impact assessment sections is presented in section 9.

Section 10 addresses federal review considerations, and includes accidents and malfunctions, effects of the environment on the Project, and cumulative environmental effects (likely contribution of residual unmitigated effects of this project in concert with the effects of other activities in the region). Section 11 is the environmental management plan for the Project, and section 12 is information specific to the interests of the potentially affected First Nations. Section 13 presents the conclusions of the assessment.

The independent bio-physical and socio-community study reports completed in support of the EA Application are appended to this Application as technical volumes (**Table 1.2**). A summary of each of these documents presented in this Application (sections 7 and 8).

**Table 1.2 Bio-physical and socio-community study reports presented as appendices to this application, and summarized in sections 7 and 8.**

Technical Volume	Title
6	Agriculture Impact Assessment
7	Air Quality (Local)
8	Contaminated Sites Assessment
9	Fish Habitat Impact Assessment
10	Hydrogeology Impact Assessment
11	Water Quality Assessment
12	Wildlife, Wildlife Habitat and Vegetation Impact Assessment
13	Noise Impact Assessment
14	Archaeological Potential and Impact Assessment
15	Socio-Community Impact Assessment
16	Air Quality (Regional)

### 1.5 Table of Concordance

**Table 1.3 Table of concordance between the Approved Terms of Reference (EAO 2004) and the Application.**

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
<b>PREFACE</b>		
None	Indicate the Project is subject to review under the BCEAA pursuant to a request by the Proponent, and an Order issued under section 10 of BCEAA.	preface
	Indicate the Project is subject to a screening study under CEAA and the relevant triggers	preface
	Indicate the Application has been developed pursuant to the ATOR and approved by EAO. To meet the information requirements under both BCEAA and CEAA.	preface
	Show the Application has been developed pursuant to any other relevant instructions provided in the Section 11 Order pursuant to BCEAA.	preface
	Indicate the agencies, First Nations and other parties involved in Application development.	preface
<b>EXECUTIVE SUMMARY</b>		
None	A concise description of all key facets of the Project.	executive summary
	General outline of the key impacts and proposed mitigation strategies / measures.	executive summary
	Succinct description of information distribution and First Nations and public consultation.	executive summary
	The issues raised and solutions suggested, during consultations.	executive summary
	Summary of the key results and conclusions from the assessment.	executive summary
<b>1. INTRODUCTION</b>		
1.1 Proponent Identification	Proponent contact information.	section 1.1
1.2 Project Overview	Briefly describe the Project, its rationale and key components.	section 1.2
	Include the estimated capital cost of the Project, and job creation information.	section 4.6
	Discuss orders and agreements applying to the review (and included in appendices).	section 1.2 and Technical Volume 2
	Summary of legal orders or agreements applying to review of the Project.	section 1.2

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
1.3 Regulatory Framework	Federal and provincial legislation pertaining to the regulatory approval of the Project. Licenses, permits and authorizations needed for the Project. Requests for concurrent certification/permitting from other agencies.	section 1.3 and Technical Volume 2
1.4 Application Layout	Application structure and layout.	section 1.4
1.5 Concordance Table	Table showing concordance between the Application and the relevant sections of the ATOR.	section 1.5
<b>2. INFORMATION DISTRIBUTION AND CONSULTATION</b>		
2.1 Overview of Consultation Program	A summary of the consultation and communication plan will be provided.	sections 2.1 – 2.3
2.2 Overview of Information Distribution	Distribution of information, notifications and communication methods used.	sections 2.5 to 2.7
2.3 Consultation Activities	Summary of participation by interested parties.	section 2.4
2.4 Issues Identification	Documentation of how public and government agency issues have been, or will be addressed.	Section 2.7
2.5 Future Consultation	Proposed government agency, public and First Nations consultation during the EA review period.	sections 2.8 and 12
<b>3. PROJECT BACKGROUND</b>		
3.1 Project Background and Rationale	Information on the history of the Project.	section 3.2.1
	The objective of the Project.	section 3.1
	The project rationale, including: <ul style="list-style-type: none"> <li>▪ regional growth patterns;</li> <li>▪ existing and future road traffic conditions;</li> <li>▪ existing traffic and public transport plans.</li> <li>▪ review of regional and provincial benefits associated with the Project:</li> <li>▪ complementarity with existing and proposed regional transportation infrastructure;</li> <li>▪ federal and provincial Government participation (funding and infrastructure provisions).</li> </ul>	section 3.1.1 section 3.1.2 to 3.1.3 section 3.1.3 section 3.1.5 section 3.1.3 and 3.1.4 section 3.1.6
3.2 Project Location, Alternatives and Site Selection	Location and map of proposed road alignments and associated infrastructure.	section 3.1
	Alternatives analyzed in SW Delta and Fraser Heights for identification of the reference concept.	section 3.2
3.3 Alternatives to the Project	Alternative scenario describing regional traffic conditions if the Gateway Program projects, including SFPR, do not proceed (includes air quality effects under this alternative scenario).	section 3.1.3
3.4 Project Constraints	Development constraints faced by the Project.	section 3.4



Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
4.4 Operations Phase	Anticipated scheduling and process for relevant on and off-site operations, including road and structure maintenance, emergency procedures, waste disposal and workforce logistics.	section 4.4
4.5 Decommissioning / Major Rehabilitation	Schedule and machinery) for rehabilitation of structures or roads during the Project lifetime.	section 4.5
4.6 Capital Costs	The Application will provide a total capital cost estimate, categorized by project components.	section 4.6
4.7 Labour Force	Estimate of the labour force requirement (direct jobs only) for construction, operations and decommissioning/rehabilitation phases.	section 4.7
<b>5. SCOPE OF ASSESSMENT AND STUDY AREA</b>		
5.1 Scope of the Project	Project scope (from the Section 11 Order and the federal/provincial project work plan).	section 5.1
5.2 Scope of Assessment	Scope of issues included in the assessment.	section 5.2
	Results of public, First Nations and government agency consultations to scope the issues.	section 5.2
5.3 Project and Study Region	The study area(s) for the assessments in the Application will be defined. Result of public, First Nations and government agency consultation to define the study area.	section 5.3
5.4 Spatial and Temporal Boundaries	Temporal and spatial study boundaries.	section 5.4
<b>6. ENVIRONMENTAL ASSESSMENT METHODOLOGY</b>		
6.1 Impact Assessment Methodology		
6.1.1 General	Describe and explain method used to conduct the EA, including the rationale and method to: <ul style="list-style-type: none"> <li>▪ characterize the existing environment potentially affected (baseline conditions);</li> <li>▪ identify the project-environment interactions and the potential effects of these;</li> <li>▪ determine the mitigation measure(s);</li> <li>▪ identify any residual environmental and impact effects (after mitigation is applied); and</li> <li>▪ determine the importance (significance and likelihood) of residual effects.</li> </ul>	section 6.1
6.1.2 EC <sup>1</sup> Selection:	Criteria for determining potentially affected ecosystem components (EC).	section 6.1

<sup>1</sup> Ecosystem Components (EC) are any part of the environment that is considered important by the Proponent, members of the public, scientists, government and First Nations involved in the assessment process. Importance may be determined on the basis of cultural value or scientific concern. The specific EC considered will be defined in the Application.

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
6.1.3 Determination of Significance:	General criteria for determining significance relating to residual environmental effects.	section 6.1
6.2 Other Environmental Assessment Requirements:	Summary of other EA requirements and where these are addressed (sections 10 and 11) i.e.: <ul style="list-style-type: none"> <li>▪ assessment of potential accidents and malfunctions, as per CEAA requirements;</li> <li>▪ assessment of the effects of the environment on the project as per CEAA requirements;</li> <li>▪ a cumulative effects assessment; as per CEAA requirements;</li> <li>▪ outlines for construction and operation environmental management plans; and</li> <li>▪ an assessment of potential effects on navigation and rail crossings.</li> </ul>	section 6.2
<b>7. EXISTING ENVIRONMENT AND ASSESSMENT OF IMPACTS – BIOPHYSICAL STUDIES</b>		
7.1 Agricultural Resources	Assessment of potential impacts on biophysical and socio-economic components of farming. Inventory existing land use capability, soils, drainage, land use, infrastructure and other factors.	section 7.1.3
	Potential changes to the existing situation and the impacts on farming operations, including: <ul style="list-style-type: none"> <li>▪ footprint impacts;</li> <li>▪ potential severance or separation of existing agricultural units;</li> <li>▪ effects on farm infrastructure;</li> <li>▪ rise (speculation) or fall in land prices;</li> <li>▪ noise impacts; and</li> <li>▪ loss of agricultural land (ALR and non-ALR).</li> </ul> Duration, spatial extent and magnitude of the potential effect.	section 7.1.4
	Appropriate mitigation and/or compensation for potential impacts.	section 7.1.5

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
7.2 Air Quality (local and regional)	<p>Assessment of air quality in the local air shed, including:</p> <ul style="list-style-type: none"> <li>▪ agreement with GVRD and health authorities over the method, modelling parameters and measures of health effects used;</li> <li>▪ baseline air quality information collected at appropriate locations for the SFPR corridor;</li> <li>▪ predicted air quality concentrations (emissions and particulate) during construction and operation, and comparison with existing standards;</li> <li>▪ the influence of local weather patterns on potential air quality impacts;</li> <li>▪ analysing and discussing worst-case air quality scenarios for areas that experience worst air quality due to topography, meteorology, congestion and density;</li> <li>▪ identification of sensitive receptors and significance of air quality at these sites; and</li> <li>▪ assessing impacts of the predicted emissions on ambient air quality and human health using recognized standards (see also Section 8.4).</li> </ul> <p>Recommended measures to avoid or mitigate the impacts from construction and operation.</p> <p>Assessment of broad regional air quality issues, particularly greenhouse gas production during construction and operation, and cumulative effects of emissions including:                      Comparing other recent air quality assessments (Sea to Sky, RAV, Deltaport) with the GVRD regional emission inventory (2002) and forecast emissions to 2025 (July 2003);                      direct and indirect emissions of common air contaminants and greenhouse gases;                      benefits to emission output from reduced travel times and congestion;                      direction and magnitude of health, environmental and socio-economic effects;                      and                      a qualitative cumulative assessment of the air quality and greenhouse gas impacts of Gateway and related projects.</p>	<p>section 7.2</p> <p>section 7.2 section 7.2</p> <p>section 7.2</p> <p>section 7.2</p> <p>section 10.3</p>
7.3 Contaminated Sites	A contaminated sites impact assessment, similar to a Stage 1 Preliminary Site Investigation.	section 7.3

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
	<p>Review of available data (previous assessments, air photography, municipal information) and field reconnaissance to establish potential sites of contamination.</p> <p>Identification of sites, and the suspected contaminant(s).</p> <p>Site rating (low, medium or high) for their contamination risk and recommendation for Stage 2 Preliminary Site Investigation to further investigate the sites that:</p> <ul style="list-style-type: none"> <li>▪ are crossed by the alignment;</li> <li>▪ where there is a high risk of potential contamination; and</li> <li>▪ where there is uncertainty over the cost of potential remediation.</li> </ul>	section 7.3
	<p>Any Stage 2 assessments that have been completed by the time of reporting.</p> <p>Comprehensive review of data collected and contingent liabilities, an assessment of residual impacts from construction and a cumulative impacts analysis of construction and operation.</p>	section 7.3
7.4 Fisheries and Aquatic Resources	<p>A fisheries and aquatic resources impact assessment including:</p> <ul style="list-style-type: none"> <li>▪ a description of the sampling methodology and study area.</li> <li>▪ existing fisheries values, including the potential presence of provincial and federally threatened species, and habitat surveys used to determine the existing conditions.</li> <li>▪ fish and aquatic habitat assessment addressing potential impacts on streams and watercourses crossed or influenced by the construction and operation of the Project.</li> <li>▪ measures to avoid or mitigate predicted adverse impacts on fish and aquatic habitat from highway construction and operation techniques.</li> <li>▪ identification of the presence, significance and likelihood of residual effects after the implementation of the proposed mitigation measures and follow-up requirements.</li> <li>▪ proposed fish habitat compensation works required to achieve “no net loss” of habitat and support a CEAA conclusion on potential impacts to fisheries values.</li> </ul>	section 7.4
7.5 Hydrogeology	<p>Review of studies and identification of information gaps (including a potable water well survey).</p>	section 7.5
	<p>Data collection including: groundwater; field reconnaissance; monitoring well location; groundwater sampling; hydraulic conductivity testing; and tidal response monitoring.</p> <p>Rationale for monitoring well site selection, including potential for impacts to vegetation, wildlife and wildlife habitat, fish and fish habitat and archaeological resources;</p>	section 7.5

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
	Hydrogeological data analysis. Hydrologic base flow estimates for all watercourses that cross the proposed alignment. Baseline condition reporting, including: <ul style="list-style-type: none"> <li>▪ groundwater quality and comparison with relevant standards (link to water quality section);</li> <li>▪ compressible soils (decreased hydraulic conductivity);</li> <li>▪ shallow groundwater levels (esp. sensitive receptors);</li> <li>▪ stratigraphic profile (including groundwater fluxes); and</li> <li>▪ evaluation of hydrogeologic base flows in streams.</li> </ul>	section 7.5
	Groundwater impacts from highway construction, especially on sensitive receptors (e.g., wells, Burns Bog, wetlands, archaeological sites, stream base flow and water quality).	section 7.5
7.6 Water Quality	Water quality baseline study report describing: <ul style="list-style-type: none"> <li>▪ current (baseline) surface water quality in the study area;</li> <li>▪ sampling method, relevant significance criteria and the scopes of the studies; and</li> <li>▪ water quality parameters in the context of existing land use and implications for fish habitat.</li> </ul>	section 7.6
7.7 Wildlife, Wildlife Habitat and Vegetation	Wildlife, wildlife habitat and vegetation assessment with study methods and study area.	section 7.7
	Identification and assessment of potential impacts of the Project on wildlife, wildlife habitat and vegetation, especially species at risk, migratory birds and their habitat.	section 7.7
	Measures to avoid or otherwise mitigate negative impacts on wildlife, wildlife habitat and significant vegetation communities in the study area, including: maintaining wildlife movement/passage; impact on wildlife values; and habitat loss and fragmentation on wildlife and vegetation species.	section 7.7
	Presence, significance and likelihood of residual effects after implementing the proposed mitigation measures and follow-up requirements.	section 7.7
7.8 Archaeology and Heritage Resources	Archaeological and heritage assessment, including an archaeological impact assessment: <ul style="list-style-type: none"> <li>▪ identifying, documenting and assessing the extent and condition of archaeological sites;</li> <li>▪ a qualitative assessment of project impacts to archaeological resources; and</li> <li>▪ measures to manage identified potential impacts on archaeological and heritage sites.</li> </ul>	section 8.2

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
<b>8. EXISTING ENVIRONMENT AND ASSESSMENT OF IMPACTS – SOCIO-ECONOMIC AND COMMUNITY</b>		
8.1 Acoustic/Noise	A noise and vibration impact assessment including: <ul style="list-style-type: none"> <li>▪ an assessment of existing acoustic and vibration conditions near the proposed project, determining sensitive receptors and defining an appropriate study area;</li> <li>▪ predicted acoustic and vibration conditions associated with construction and operation;</li> <li>▪ identification of potential environmental, socio-community and human health effects associated with the Project (compared with existing situation);</li> <li>▪ appropriate measures for mitigating acoustic and vibration impacts during construction and operation as per Ministry policy and existing Surrey and Delta noise by-laws;</li> <li>▪ monitoring and follow up requirements associated with acoustic and vibration impacts from the proposed project; and</li> <li>▪ an evaluation of the effectiveness of proposed noise mitigations, including an assessment of projected noise levels after mitigation (residual noise impacts).</li> </ul>	section 8.1
8.2 Cultural and Heritage Effects	First Nations interests and views on traditional and contemporary use, & archaeology resources.	section 8.2
8.3 First Nations	Current First Nations interests (review of available information and interviews).	section 12.5
	Local and regional socio-community profile of First Nation communities whose traditional territory is on or in the vicinity of the Project.	section 12.5
8.4 Human Health	Human health risk assessment detailing the following issues: <ul style="list-style-type: none"> <li>▪ characterization of existing air quality and meteorology, using monitoring data representative of the study areas, and any available guidelines;</li> <li>▪ types and amounts of air pollutants and their impact on public health, including: diesel fumes, sensitive receptors and areas, air toxics and a PM<sub>2.5</sub> and PM<sub>10</sub> risk assessment.</li> <li>▪ prediction of the additive effect of project-related traffic emissions relative to measured concentrations of pollutants in the air shed;</li> <li>▪ mitigation for construction and operational, focussing on reducing air contaminants and greenhouse gas emissions;</li> <li>▪ the residual public health effects after mitigation; and</li> <li>▪ cross references to other information relevant to public health.</li> </ul>	section 7.2
8.5 Socio-community Issues	Socio-community assessment containing the geographic scope of the assessment.	section 8.3

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
	Socio-community components affected by the Project and assessment of effects of construction and operation including: <ul style="list-style-type: none"> <li>▪ regional and local populations and demographics;</li> <li>▪ community planning;</li> <li>▪ traffic flow and travel times;</li> <li>▪ use of institutional (school...) and other community facilities;</li> <li>▪ access to the Fraser River;</li> <li>▪ proposed commercial investment;</li> <li>▪ potential impact on present and future land uses and properties in the affected communities (including private First Nations and commercial properties); and</li> <li>▪ visual, traffic volume and lighting, and access impacts</li> </ul>	section 8.3 and section 12
	Mitigation measures to avoid or minimize adverse impacts to socio-community values.	section 8.3
8.6 Socio-economic Issues	A socio-economic impact assessment including the geographic scope of the assessment.	section 8.4
	A quantitative, or qualitative assessment (as appropriate) of the construction and operational phase economic impacts of the Project, including, but not limited to, impacts on: <ul style="list-style-type: none"> <li>▪ commercial and residential property values;</li> <li>▪ property taxes;</li> <li>▪ development opportunities and development cost charges;</li> <li>▪ employment and employment income; and</li> <li>▪ local socio-economic benefits and costs in the aggregate, and on individual communities.</li> </ul>	section 8.4
	Assessment of commercial/industrial growth potential as a function of access/proximity to the Project (proximity to major intersections or effects of road closures, delays and detours).	section 8.4
	A quantitative or qualitative description of the: <ul style="list-style-type: none"> <li>▪ economic profiles of key sectors and economic conditions/trends for Surrey and Delta;</li> <li>▪ local available labour supply and effects on employment;</li> <li>▪ estimated direct/induced employment and income created regionally and provincially; and</li> <li>▪ mitigation to avoid or minimize adverse impacts to socio-economic values.</li> </ul>	section 8.4
8.7 Traffic/ Transportation/ Road User Issues	An assessment of existing transportation issues such as the lack of network connectivity for commercial and commuter traffic, truck mode share and congestion problems as key nodes.	section 3.1

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
	Traffic volume projections to 2021 for vehicles traveling along the proposed SFPR alignment corridor, as well as alignment options located in Delta.	section 3.2
<b>9. SUMMARY OF IMPACTS, MITIGATION AND RESIDUAL EFFECTS</b>		
none	The mitigation strategies proposed for the Project (sections 7 & 8) and the predicted residual effects (after mitigation is complete).	section 9.0
	Summary of residual effects on Ecosystem Components, their significance and likelihood.	section 9.0
<b>10. OTHER CONSIDERATIONS</b>		
10.1 Accidents and Malfunctions	An assessment of the environmental effects of any potential malfunctions or accidents, which may occur in connection with construction, operation and decommissioning of the Project.	section 10.1
	An Environmental Protection Plan to address potential accidents and malfunctions.	section 11
10.2 Effects of the Environment on the Project	Potential of environmental factors (e.g., seismic activity and terrain stability, climate change, erosion and flooding) and the predicted impacts. Includes: <ul style="list-style-type: none"> <li>▪ terrain stability, geo-technical and natural hazard assessments completed for the Project;</li> <li>▪ potential for climatic fluctuations, and Fraser River flooding hazards effects; and</li> <li>▪ potential effects of extreme events (e.g., earthquakes) during construction and operation, and any mitigation measures.</li> </ul>	section 10.2
10.3 Cumulative Environmental Effects	A cumulative environmental effects assessment (CEA) including other significant projects that: are in a defined corridor of reasonable scale and significance; have received required permits and authorizations; or have secured funding, or are imminent. Includes tabular summary. The CEA considers ecosystem components that are likely to have residual impacts. The rationale for including specific EC, and definitions are in the CEA scoping. Social components are considered where they are potentially related to a change in an as a result of the Project. The CEA will be conducted in accordance with Hegmann <i>et.al.</i> (1999).	section 10.3
10.4 Navigation/Rail	Assessment of project (construction and operation) effects on commercial or recreational navigation in the Fraser River, or any other small waterways in the area of the Project. Proposed railroad crossing(s). Mitigation to reduce any adverse impacts to either navigation or rail. Identification of named works (e.g., bridges, canals, causeways, etc.) on navigable waterways.	section 4.2.2.1

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
<b>11. ENVIRONMENTAL MANAGEMENT PROGRAM</b>		
11.1 Fisheries and Wildlife Habitat Mitigation and Compensation Plans	Overall habitat impact mitigation and compensation plans including: <ul style="list-style-type: none"> <li>▪ conceptual fisheries habitat mitigation and compensation plan; and</li> <li>▪ conceptual wildlife habitat mitigation and compensation plan.</li> </ul>	section 11.1
11.2 Construction EMP	An environmental management plan describing the environmental practices and procedures for planning and construction. Includes preliminary outlines of construction EMP with commitments that shall be transferred from the Proponent to contractors. Detailed EMP will be developed and approved by relevant agencies and authorities. The Construction EMP may include: <ul style="list-style-type: none"> <li>▪ Surface Water Quality and Sediment Control Plan</li> <li>▪ Contaminated Sites Management Plan</li> <li>▪ Hazardous Waste Management and Spill Plan</li> <li>▪ Construction Waste Management Plan</li> <li>▪ Air Quality and Dust Control Plan</li> <li>▪ Noise Management Plan</li> <li>▪ Landscape Design and Restoration Plan</li> <li>▪ Terrestrial Habitat Management Plan</li> <li>▪ Archaeological Mitigation / Monitoring Plan</li> <li>▪ Traditional Use Monitoring Plan</li> <li>▪ Environmental Education and Awareness Plan</li> <li>▪ Environmental Monitoring Plan</li> </ul>	section 11.2
11.3 Operational EMP	Preliminary outline of an Operational EMP that will identify best management practices to be followed by contractors, to address environmental effects during operation, including: <ul style="list-style-type: none"> <li>▪ road and structure maintenance;</li> <li>▪ emergency maintenance;</li> <li>▪ environmental inspection and reporting; and</li> <li>▪ emergency spill response, containment and management.</li> </ul>	section 11.2
<b>12. FIRST NATIONS CONSIDERATIONS</b>		
12.1 Scope of First Nations Considerations	Identification of First Nations potentially affected by the Project, or who are likely to have an interest, and the study area used for baseline characterization and assessment of First Nations issues.	section 12.1

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
12.2 Consultation with First Nations (also see section 2)	<p>Overview of First Nations consultation at the pre-application stage; listing significant events and measures, including any consultation agreements reached with First Nations.</p> <p>Identification of consultation to distribute material to First Nations during pre-application; records of First Nations' responses and issues; documentation of relevant agreements (excluding confidential information); documentation of how issues have been addressed and the respective views of the Proponent and First Nations on resolved and unresolved issues.</p>	section 12.2
12.3 Project Setting: Traditional Use Considerations in the Vicinity of the Project	<p>A non-confidential overview of traditional use of lands and resources by First Nations.</p> <p>Culturally modified trees; rock paintings; trails; legendary land features and wildlife and vegetation species of special significance to First Nations.</p>	section 12.3
12.4 Project Setting: Archaeological Resources	<p>A non-confidential summary of identified archaeological resources in the study area.</p>	section 12.4
12.5 Project Setting: Socio-Community Considerations	<p>Socio-community profiles of First Nations communities in the study area (based on available info).</p> <p>Identified First Nations land use plans or planning objectives for areas in the vicinity of the Project.</p>	section 12.5
12.6 Potential Project Effects on First Nations Interests	<p>Specific areas where the Project could directly affect First Nations interests during construction, operations or decommissioning. Including:</p> <ul style="list-style-type: none"> <li>▪ First Nations interests in the study area that will be, or could be, affected;</li> <li>▪ impact assessment findings, indicating the potential impacts on identified First Nations interests; and</li> <li>▪ potential direct and indirect effects of the Project on First Nations interests, and how the Proponent proposes to manage these effects to reduce them to acceptable levels.</li> <li>▪ Relevant agreements with First Nations with respect to impact concerns.</li> </ul>	
12.7 Environmental Management Plan	<p>Environmental Management Plans (EMP) or other mitigation used to minimize potential project-related effects on First Nations interests.</p> <p>Monitoring for archaeological and other potential impacts on First Nations interests during construction, and a process for handling issues (e.g. stop work plans, modification of design).</p> <p>EMP specific to First Nations concerns could include:</p> <ul style="list-style-type: none"> <li>▪ Archaeological Resources Monitoring Plan; and</li> <li>▪ Traditional Use Monitoring Plan.</li> </ul>	section 12.7
12.8 Commitments to First Nations	<p>Non-confidential summary of commitments that the Proponent has made to First Nations during pre-application. These commitments may be further defined during the Application review stage.</p>	section 12.8

Terms of Reference	Project-related issues and information requirements in the Terms of Reference	Application location
<b>13. CONCLUSIONS</b>		
None	Conclusion about the likelihood for the Project to cause significant environmental, socio-economic/community or other effects, taking into account the implementation of appropriate impact management measures.	section 13
<b>14. LIST OF REFERENCES AND SUPPORTING DOCUMENTS</b>		
References to documents cited in the application. In addition, records of consultation meetings, discussion topics and any agreements with the public and First Nations are provided. Other supporting documentation referred to in the text of the Application will also be provided in the appendices.		References and Technical Volumes

