

9. SUMMARY OF IMPACTS, MITIGATION AND RESIDUAL EFFECTS

Detailed bio-physical and socio-economic studies were undertaken as part of this Application to enable the potential effects of the SFPR Project to be fully assessed. The majority of Project-related impacts were deemed to be non-significant. Where potential impacts were identified, mitigation measures have been recommended and, if required, environmental compensation applied.

This section summarizes the potential impacts, mitigation and compensation measures (if required) in tabular form (**Table 9.1**). The detailed findings of the studies, assessment of impacts and associated significance criteria (where appropriate) for each discipline study are provided in the Application, and are not reproduced here. For the potential impacts, a link to the section of the Application where the impacts are presented is provided, and for the proposed mitigation and the potential residual impacts a summary is provided.

The residual impacts identified (**Table 9.1**) are discussed further in the cumulative effects (section 10.3).

Table 9.1 Summary of impacts, mitigation and residual effects

Environmental Component	Potential Impacts	Potential Mitigation	Compensation	Significant Residual Impacts
	Yes/No			
Agricultural Resources	Yes Section 7.1.4 Tech Volume 6	Continue to avoid impacts through design changes. Continue to work closely with farmers and stakeholders through construction. Minimize extent and duration of temporary disruption to fencing, utilities and drainage Include soil removal, storage and reclamation. Compensate for loss of income from on-site construction activities. Minimize sudden loud noises near livestock. Acquire land from directly affected owners. Mitigate for indirect impacts to drainage, irrigation and road networks. Coordinate agricultural land and habitat mitigation. Agricultural Land Management Plan, in EMP. Sections 7.1.5; 11.3.12	MOT enhancement strategy fund to address impacts to productivity/capability of agricultural sector	None
Air Quality (Local)	Yes Section 7.2.5 Tech. Volume 7	Minimize equipment emissions. Minimize double-handling of fill and stockpile materials. Minimize generation of road dust. Cover haul/dump trucks carrying fine- grained materials. Ensure optimum traffic flow conditions (avoid congestion). TDM strategies, that result in more efficient use of resources (alternative transportation options). Air Quality and Dust Control Plan in EMP Sections 7.2.8; 11.3.5	None	None

Environmental Component	Potential Impacts	Potential Mitigation	Compensation	Significant Residual Impacts
Contaminated Sites	Yes Section 7.3.4 Tech Volume 8	Implementation of Tier system to identify sites. Manage sites in compliance with federal and provincial legislation. Contaminated Sites Management Plan in EMP. Sections 7.3.5; 11.3.2	None	None
Fisheries	Yes Section 7.4.4 Tech Volume 9	Relocation and redesign measures undertaken during the pre-application phase have reduced impacts by 12.6 ha to fish habitat, 4.7 ha of which is aquatic and 7.9 ha is riparian. Compensation opportunities are available for a greater area than the impacts. Best management practices for protection of habitat and for in-stream works; MOT specifications for highway construction; and monitoring procedures. MOT specifications for highway maintenance Fish Habitat and Compensation Plan in EMP. Sections 7.4.5, 7.4.6 and 11.1	A positive habitat balance for aquatic and riparian habitats can be achieved. Compensation is available for 8 ha of aquatic habitat and 17.5 ha of riparian habitat, more than the potential impacts to 3.1 ha of aquatic habitat and 14.5 ha of riparian habitat.	None
Hydrogeology	Yes Section 7.5.4 Tech Volume 10	At crossings, maintain or improve watercourse characteristics and preclude loss of channel flow into the road fill. Emergency response plan for potential hydrocarbon spills during a major vehicle accident. For Burns Bog, maintain water quality/quantity and radial water flow through road design. Maintain drainage conditions and water quality in agricultural areas through stormwater control. Bridge the Fraser Heights Wetland. Section 7.5.5.	None	None

Environmental Component	Potential Impacts	Potential Mitigation	Compensation	Significant Residual Impacts
Water Quality	Yes Section 7.6.4 Tech Volume 11	Institute process for further sampling program. Procedures for monitoring water quality during construction. Best management practices for avoiding potential construction related impacts on water quality. Surface Water Quality and Sediment Control Plan in EMP. Sections 7.6.5; 11.3.1.	None	None
Wildlife and Vegetation	Yes Section 7.7.5 Tech Volume 12	Conduct pre-construction nest surveys, as required. Minimize vegetation clearance. Use buffers and exclusion zones around active raptor/heron nests. Prohibit clearing within the critical bird breeding period. Implement wildlife protection measures in EMP. Minimize interactions between construction work sites and wildlife. Minimize duration of construction. Re-vegetate with native species. Compile emergency response plan. Maintain wildlife passage, where feasible Minimize disturbance to ditches and wetlands. Reduce impacts to Burns Bog. Provide vegetation buffers to limit bird disturbance. Erect barrier plantings to reduce potential barn owl- vehicle collisions. Use of salvage operations for wildlife. Wildlife and Habitat Management Plan in EMP. Sections 7.7.6, 7.7.8 and 11.2.	Compensation to maintain regional ecosystem function, rather than site specific impacts: Surplus Project-land with wildlife and vegetation values managed (by others) for conservation. Agricultural fields: farmland in southwest Delta. Funding programs that provide wildlife habitat through grassland set-asides, planting of cover crops, hedgerows, and grass margins along field edges. Adaptive management. Habitat enhancement and restoration.	Direct footprint impacts of 96 ha and the impacts to wildlife that rely on those habitats (including, plant communities, birds, mammals, reptiles and aquatic insects: Indirect habitat impacts due to visual and noise disturbance (water associated birds); interruption of movement patterns; and wildlife/vehicle collision mortality.

Environmental Component	Potential Impacts	Potential Mitigation	Compensation	Significant Residual Impacts
Noise	Yes Section 8.1.5 Tech Volume 13	Proper equipment maintenance, liaison with communities could expand the list of construction mitigation measures. Installation of noise barriers and / or quiet pavement pending further assessment of predicted noise levels during future design phases. Monitoring noise and effectiveness of mitigation. Noise and Vibration Management Plan in EMP Sections 8.1.5; 11.3.6	None	On average (by section), there are no residual impacts, but on a site specific level, mitigation with noise barriers limits potentially severe impacts to 7 sites, and mitigation with quiet pavement limits potentially severe impacts to one site, and possibly one school.
Archaeology Resources	Yes Section 8.2.4 Tech Volume 14	Conduct archaeological potential assessment to identify/manage potential unknown sites. For known resources use procedures for avoiding and mitigating potential construction related impacts according to impact assessment guidelines (MSRM 1998) and MOT specifications for highway construction including systematic data recovery programs and monitoring. Archaeological Mitigation / Monitoring Plan in EMP Sections 8.2.5; 11.3.7.	None	None
Socio-community	Yes Section 8.3.5 & 8.3.6 Tech Volume 15	Refining of the location of the alignment and the design infrastructure during design phase Acquisition of all or part of properties permanently affected by construction SFPR. Provision of alternative access to parcels with existing access where feasible Collaboration with local governments with respect to community planning, servicing, recreational planning (including development of alternate trail links), infrastructure requirements, and design guidelines for structural aesthetics and landscaping. Consultation with residential neighbourhoods for above issues as well as alternative access options and changes to the local road network,	Explore options for replacing lost parkland, by providing equivalents in other suitable areas. If relocation of heritage buildings is not possible, compensation as per other properties (negotiation with owners).	

Environmental Component	Potential Impacts	Potential Mitigation	Compensation	Significant Residual Impacts
		Heritage properties: provide alternate access, and relocate buildings as required. Where possible, ensure that construction is situated away from principal view corridors, or provide screening from nearby residential areas. Section 8.3.7		
Socio-economic	Yes Section 8.4.4 Tech Volume 15	Acquire all or part of properties permanently affected SFPR construction. Collaborate with local governments to facilitate development and infrastructure. Consult with property owners regarding access options and changes to local roads. Collaborate with municipalities regarding potential parcel consolidation for new development areas. Provision of signage and alternative access. Notify industrial / office property owners of temporary construction related changes. Section 8.4.5	None	